CURRENT RESEARCH ON MULTIPLE BIRTHS

As from the start of 1995, the National Library of Medicine, U.S. Public Health Service is no longer publishing the 6-monthly Current Research on Multiple Births (sponsored by the Center for the Study of Multiple Birth, Chicago Illinois), which has appeared in the *Acta Geneticae Medicae et Gemellologiae* since 1979. In the hope that it may be helpful to readers, there follows a series of notes provided by the National Library of Medicine which provide instructions for accessing current twin literature by computer and information on NLM data available on CD-ROM.

The strategy that was used to produce the bibliography first combined the retrieval from the following MeSH headings:

- **Pregnancy, Multiple**
- **Diseases in Twins**
- **Twins, Conjoined**

A new Publication Type, **Twin Study**, has only become available since the start of this year. A comprehensive search might make the following a first Search Statement:

SS # 1
pregnancy, multiple (mh) or diseases in twins (mh) or twins, conjoined (mh) or twin study (pt)

Then, depending on what an individual wants to know about the above (eg. obstetrical aspects), other MeSH headings could be combined.

We do not know whether an individual would be able to search the NLM Medline database directly (ie., using Internet access to NLM) or searching the same Medline data via CD-ROM or from another online vendor system (e.g. Dialog). Exactly how a database search is formulated depends on the system one uses to search the data. It will be best if individuals in foreign countries contact member libraries (listed on the following fact sheets in their areas, or contact the vendor if they use CD-ROM for search assistance.

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Current Research on Multiple Births

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Subject Sections *

Title, authors, and journal source, alphabetized by journal:

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Authors, titles, journal source, and abstract (if available), alphabetized and cross-indexed by all authors.

* The first three subject sections include related topics; other articles on these subjects may be found in the General section. The General section comprises the many articles that could not be classified automatically on the basis of keywords or source.

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† Ureaplasma urealyticum cultured from brain tissue of preterm twins who died of intraventricular hemorrhage. Ollikainen J, et al. **Scand J Infect Dis** 1993;25(4):529-31

† Os odontoideum in identical twins: perspectives on etiology. Kirlew KA, et al. **Skeletal Radiol** 1993 Oct;22(7):525-7

† A strategy for assembling samples of adult twin pairs in the United States. Goldberg J, et al. **Stat Med** 1993 Sep 30;12(18):1693-702

Cerebral berry aneurysms in identical twins [letter] Sharma RR, et al. **Surg Neurol** 1993 Oct; 40(4):349-50

† Female twins with severe Christmas disease (hemophilia B). Wollina K, et al. **Thromb Haemost** 1993 Nov 15;70(5):774-6

Bovine multiple birth [letter] [see comments] Dockeray J. **Vet Rec** 1993 Nov 27;133(22):555

Bovine multiple birth [letter; comment] Ferries WJ. **Vet Rec** 1993 Dec 11;133(24):603

[Fetocide in multiple pregnancy] Hansmann M. **Z Arztl Fortbild (Jena)** 1993 Nov 1; 87(10-11):839-45 **(Ger)**

† indicates that an abstract appears with the citation in the author section.

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Aarnoudse JG see **Lander M**

Abbas A, Johnson M, Bersinger N, Nicolaides K: Maternal alpha-fetoprotein levels in multiple pregnancies. Br J Obstet Gynaecol 1994 Feb; 101(2):156–8

Abouleish AE, Corn SB: Intravenous nitroglycerin for intrapartum external version of the second twin. Anesth Analg 1994 Apr;78(4):808–9

Abramowicz JS see **Sherer DM**

Achiron R see **Lipitz S**

Acton CM, Woodward CS: Acardiac twins. Australas Radiol 1993 Nov;37(4):389–92
Three cases of twin pregnancy complicated by an acardiac twin are reported. This is a rare abnormality of twins. A vascular communication exists between the twins and the usually normal twin or so called 'pump' twin may develop cardiac failure as a result of perfusion of the abnormal twin. The acardiac twin is, generally, grossly abnormal with reduction anomalies, particularly of the upper part of the body, and gross oedema. Unless this abnormality is recognized the misdiagnosis of fetal death in utero may be made and the complications of the 'pump' twin may not be predicted. Three cases are presented with only one survivor.

Adami HO see **Hsieh CC**

Adelson HG see **Check JH**

Aedtner O see **Hengst P**

Aeppli DP see **Conry JP**

Alampi G see **Buja G**

Albazzaz SJ see **Hadi HA**

Alcalay M see **Lipitz S**

Alenick DS: "Eight-chamber" view [letter] Pediatr Cardiol 1993 Oct;14(4):247

Altherr MR see **Tawil R**

Altshuler G, Hyde S: Placental pathology casebook. A bidiscoid, monochorionic placenta. J Perinatol 1993 Nov-Dec;13(6):492–3

Alvarez M see ***Ghidini A***

Ammälä P see **Kaaja R**

Anderson GA see **Brück I**

Ando J: The effects of two EFL (English as a foreign language) teaching approaches studied by the cotwin control method: a comparative study of the communicative and the grammatical approaches. Acta Genet Med Gemellol (Roma) 1992; 41(4):335–52
The present study compared two different types of English-language teaching approaches, the grammatical approach (GA) and the communicative approach (CA), by the cotwin control method. This study has two purposes: to study the effects of teaching approaches and to estimate genetic influences upon learning aptitudes. Seven pairs of identical twins (MZ) and 4 pairs of fraternal twins (DZ) participated in the experiment along with 68 other nontwin fifth graders. Each cotwin was assigned to the GA and CA respectively and received 20 hours of lessons over a 10-day period. The behavioral similarities between MZ cotwins were statistically and descriptively depicted. No major effect of either teaching approach was noted, but the genetic influence upon individual differences of learning achievement was obvious. Furthermore, an interesting interaction between the teaching approaches and intelligence was found, that is, that the GA capitalises on and CA compensates for intelligence. This interactional pattern could be interpreted as an example of genotype-environment interaction. The relationship between genetic factors and learning aptitudes is discussed.

Angi MR, Clementi M, Sardei C, Piattelli E, Bisantis C: Heritability of myopic refractive errors in identical and fraternal twins. Graefes Arch Clin Exp Ophthalmol 1993 Oct; 231(10):580–5 (35 ref.)
The existence of a visual feedback control of eye growth in humans is controversial, as the contributions of genetic and environmental factors are still unknown. To evaluate the heritability of refractive defects, we measured ocular refraction in 19 monozygote and 20 dizygote twin pairs (mean age 5 years). Monozygosity was ascertained by a common chorion, similarity of somatic traits, and identical dermatogliphes and was confirmed in myopes by blood marker diagnosis. Ocular refractive defects and axial length were evaluated by cycloplegic autorefractometry and biometry. By comparing identical and fraternal twins heritability of refractive defects was estimated to be 0.08–0.14; this low value indicates that the observed variability in refractive errors is nongenetic in origin. Three monozygote pairs were anisomyopic; differences between eyes in identical twins were related to the increased axial length of myopic eyes. In one eye, myopia was attributed to visual deprivation induced by a congenital cataract, while in five eyes it was correlated directly to the degree of astigmatic defects. The discordant axial length observed in monozygote twins is nongenetic. In agreement with previous findings reported in the literature, it is proposed that visual impoverishment of retinal images may play an early regulatory role in postnatal eye growth.

Anthony JC see **Breitner JC**

Arabin B, Gembruch U, von Eyck J: Registration of fetal behaviour in multiple pregnancy. J Perinat Med 1993;21(4):285–94
Multiple pregnancies require intensive monitoring of the fetal condition, in particular during the last months of pregnancy. Recording fetal behaviour offers a possibility of investigating the neuromotor development, in twin pregnancies even behavioural patterns of fetuses of the same gestational age and "environment" may be compared. In 25 primarily uncomplicated twin pregnancies we simultaneously recorded antepartum FHR and FM patterns in twins younger than 36 completed gestational weeks over a period of at least one hour via a new device for simultaneous registration of FM and FHR in twin pregnancies. According to our longitudinal observations we have defined a special terminology for comparing the behaviour of twins considering gestational age, differences of FHR or FM patterns and the continuity of these patterns throughout gestation. To our opinion this will open a new field not only for clinical diagnostics in complicated twin pregnancies but also for developmental research of the possible impact on the further neurological development of multiple fetuses. Human behaviour in its early stage may be compared considering even "interfetal communication".

Arduini D see **Rizzo G**

Ash RC see **Gale RP**

Asindi AA, Young M, Etuk I, Udo JJ: Brutality to twins in south-eastern Nigeria: what is the existing situation? West Afr J Med 1993 Jul-Sep;12(3):148–52
Following rumors of some persistence of abuse on twins, a survey was conducted from January through June, 1991 in the rural areas of Efik, Ibibio and Annang tribes of South-Eastern Nigeria to determine the current attitude of the people towards twins and their mothers. Of the 619 women

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interviewed, 56% cherished having twins; 35% would not desire largely because of the economic and other minor difficulties associated with their up-keep but none of these would abandon the infants. The remaining 9% hold a taboo against twins: as babies derived from the devil, non-human and punishment from the gods for sinfulness. Consequently, 2.3% and 2.6% of the mothers would have their twins rejected and killed respectively and 6% of the twin mothers would be cast out but none killed by their husbands' families. The intention to perpetuate this form of abuse was elicited in all the three tribes but seemed relatively to be most pronounced in Annang people. The information generated, though limited to rural population, suggests that the rejection of twin births has actually not yet disappeared from this part of the country. Health workers in South-Eastern Nigeria who encounter twins with failure to thrive should consider rejection as a possible contributing factor. It would need intensive moral education and religious teaching to stem this brutal culture.

Asindi AA, Young M, Imaobong Etuk HV, Vdo JJ: Brutality to twins in south-eastern Nigeria: the existing situation [letter] J Trop Pediatr 1993 Dec; 39(6):378-9

Astete C see **Daher V**

Austin MA: The Kaiser-Permanente Women Twins Study data set. Genet Epidemiol 1993;10(6):519-22
The Kaiser-Permanente Women Twins Study began with the establishment of a large registry of twins at Kaiser-Permanente, a managed health care program in Oakland, California. In 1978-79, 434 pairs of women twins, 255 monozygotic and 179 dizygotic, with average age 41 years, were recruited from this registry for a study of coronary heart disease risk factors. Previous analyses of these data have shown moderate heritability for blood pressure and high heritability for lipids, even after adjustment for differential environmental covariance between twin types. For GAW8, the data provided included age, race, weight, height, blood pressure, lipids, smoking, alcohol consumption, exercise, degree of contact between co-twins, menstrual status, and medication for hypertension. Exam 2 of this cohort was completed in 1989-90 and has recently reported nearly complete heritability for lipoprotein(a).

Avoustin P see **Briant L**

Azem F see **Grisaru D**

B

Baiget M see **López de Munain A**

Bakke AC see **Davey MP**

Balakumar K: Antenatal diagnosis of conjoined twins with multiple malformations [letter]
Indian Pediatr 1993 Apr;30(4):545-7

Ballard RA see **Leonard CH**

Ballesta F see **Kruyer H**

Barale F see **Gourdiole P**

Bardicef M see **Quintero RA**

Barkai G see **Lipitz S**

Barre M see **Pedailles S**

Bartley AJ, Jones DW, Torrey EF, Zigun JR, Weinberger DR: Sylvian fissure asymmetries in monozygotic twins: a test of laterality in schizophrenia. Biol Psychiatry 1993 Dec 15; 34(12):853-63
To address prior reports that schizophrenia is associated with loss of normal brain asymmetry and that it might be linked to a defect of a gene controlling cerebral lateralization, we measured on three-dimensional cortical renderings from magnetic resonance imaging (MRI) scans the lengths and angles of the sylvian fissures in 10 normal monozygotic (MZ) twin pairs (n = 10 pairs) and in 10 MZ pairs discordant for schizophrenia (n = 10 pairs). We confirmed in both sets of twins the expected normal asymmetries of length and angle of the sylvian fissure. We also confirmed that the length asymmetry occurs solely in the region of the planum temporale. In the discordant twins, affected and unaffected twins did not differ in asymmetry measures, thus failing to support an association between illness per se and diminished asymmetry. Moreover, the discordant twins as a group did not differ from the normal twins as a group, thus failing to confirm the hypothesis of a genetic association with abnormal asymmetry. The implications of variations in methodology and patient samples are discussed.

Barton LL, Budd SC, Morfitt WS, Peters CJ, Ksiazek TG, Schindler RF, Yoshino MT: Congenital lymphocytic choriomeningitis virus infection in twins. Pediatr Infect Dis J 1993 Nov;12(11):942-6

Baylen BG see **Gleason MM**

Beardsmore CS see **Thomas DA**

Beattie RB, Manson IW, Whittle MJ: Identical twins with trisomy 21 discordant for exomphalos. Prenat Diagn 1993 Nov;13(11):1067-70

Becker EP: [Induction of obsessions--folie a deux] Ugeskr Laeger 1993 Sep 6;155(36):2779-82 (Eng. Abstr.) **(Dan)**
The disorder folie à deux is described from the literature with the classical subdivision into four groups, and the characteristic features and involved mechanisms essential to the disorder are presented. Three cases are described, two of them concerning twins, namely a sister-sister and a brother-brother relationship, together with a mother-daughter relationship. The cases show the characteristics in folie à deux: 1. An intimate relationship; 2. Social isolation; 3. Delusions similar in content. Ways of treatment are described.

Becker R, Novak A, Rudolph KH: A case of occipital encephalocele combined with right lung aplasia in a twin pregnancy. J Perinat Med 1993;21(3):253-8
A case of occipital encephalocele combined with right-sided pulmonary agenesis in one sibling of a twin gestation is presented. Both, encephalocele and lung aplasia, are rare conditions, the former occurring with a frequency of 1:3000-1:30,000, the latter in 1:10,000-1:30,000. Although both conditions may show concomitant malformations, to our knowledge this is the first case of a combination of these two malformations to be reported.

Ben-Hur H see **Blickstein I**

Ben-Nun I, Cohen I, Shulman A, Fejgin M, Goldberger S, Beyth Y: The inability of preovulatory ovarian scan to predict multifetal pregnancy occurrence in a follow-up of induction of ovulation with menotropins. Fertil Steril 1993 Nov;60(5):781-5
OBJECTIVE: To establish the predictive role of preovulatory ovarian ultrasonography in the occurrence of multiple pregnancy after hMG and hCG treatment for anovulatory infertility. DESIGN: Prospective. SETTING: Outpatient Infertility Clinic. PATIENTS: Ninety-five anovulatory women who conceived after gonadotropin therapy. INTERVENTION: Induction of ovulation by hMG and hCG monitored by plasma E2 measurements and ovarian ultrasonography. MAIN OUTCOME MEASURES: All follicles visualized on the day of hCG administration were recorded and divided into the following four groups: group I, 10 to 12 mm;

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group II, 13 to 15 mm; group III, 16 to 18 mm; and group IV, 19 mm and larger. The sonographic findings were statistically evaluated to 80 singletons and 45 multiple pregnancies. RESULTS: No statistical correlation was found to exist between the number of follicles from the different groups and the number of fetuses. CONCLUSIONS: The number and sizes of follicles visualized on the day of hCG administration have no predictive value regarding the occurrence of a multiple pregnancy.

Benacerraf BR see **Cilento BG Jr**

Benirschke K: Intrauterine death of a twin: mechanisms, implications for surviving twin, and placental pathology. Semin Diagn Pathol 1993 Aug; 10(3):222–31 (31 ref.)
In multiple gestations, intrauterine death of one fetus occurs frequently. Sonographic studies indicate that many twin pregnancies are converted in early pregnancy to singletons. The "vanished" twin is sometimes recognized as a fetus papyraceous (compressus) incorporated into the placenta of the survivor. Death of one twin later in pregnancy may have serious implications for the survivor, especially in cases of monochorionic twins. One postulated mechanism has been that thromboplastic proteins from the dead twin are transfused into the survivor's circulation, resulting in disseminated intravascular coagulation. More recently it has been proposed that massive blood loss may occur from the survivor into the more relaxed circulation of a dead monochorionic twin through vascular anastomoses. These mechanisms may explain the higher frequency of cerebral palsy in monochorionic twins. These concepts emphasize the importance of careful examination and thoughtful interpretation of twin placentas.

Benshushan A, Lewin A, Schenker JG: Multifetal pregnancy reduction: is it always justified? Fetal Diagn Ther 1993 May–Jun;8(3):214–20 (34 ref.)
In the present study we summarized the world literature on first trimester multifetal pregnancy reduction between 1985 and 1992 and added our own experience. Our aim was to reach a comprehensive view on the survival rate of reduced high multifetal pregnancies, as the data in various studies are somewhat confusing, possibly as a result of the small number of cases. The data so gathered were classified by the number of fetuses. Of 94 triplet pregnancies reduced to twins 91.6% survived. Of 108 quadruplet pregnancies reduced to twins 92.6% survived. Of 40 quintuplet pregnancies 72.5% survived, and of 93 septuplets or more 87.1% survived. The outcome of pregnancies reduced to triplets did not differ from the outcome of pregnancies reduced to twins, with a survival rate of 85.7 and 72.5%, respectively. In our opinion, in view of the infertility history of many of these patients, the risk of pregnancy loss, the high survival rate of triplets and fetal reduction in triplet pregnancies in this group of patients may be unjustified. Accordingly, our policy in cases where the patients demand or when reduction is done early in pregnancy to reduce the triplets.

Benshushan A see **Mordel N**

Bergeman CS see **Coccaro EF**

Berkman LF see **Marenberg ME**

Berkovic SF, Howell RA, Hay DA, Hopper JL: Twin birth is not a risk factor for seizures. Neurology 1993 Dec;43(12):2515–9
There is a belief that perinatal factors are a major cause of epilepsy. We studied a community-based sample of twins, a group with a marked excess of adverse perinatal events. The observed number of non-twin siblings with seizures did not differ from that predicted by the age-specific cumulative incidence rate of seizures (4.2% at age 10 years) in the twins. The types of epilepsies in the twins were largely benign and self-limited and not those associated with brain damage. Zygosity, birth order, and birth weight did not predict affected status. Within affected sibships, the frequency of seizures in co-twins of dizygotic probands (9%) was not different from the frequency in non-twin siblings (12%) but was much less than the frequency in co-twins of monozygotic probands (38%; $p < 0.001$), reflecting a major genetic component to certain epilepsies. These data show that twins do not have an increased risk of seizures and strongly suggest that perinatal factors have little bearing on the etiology of the common epilepsies in the community.

Berkowitz RL see **Lynch L**

Berkowitz RS see **Steller MA**

Berle P see **Queck M**

Bernardi C see **Switala I**

Bernstein MR see **Steller MA**

Bersinger N see **Abbas A**

Bessis JL see **Pedailles S**

Beyth Y see **Ben-Nun I**

Biadaioli R see **Pezzati M**

Bias WB see **Johns DR**

Biben M: Stillbirth of twins in a squirrel monkey (Saimiri boliviensis peruviensis). J Med Primatol 1993 Jun;22(4):276–7
This is the first published report of twinning in a squirrel monkey (genus Saimiri). The mother survived but the twins, both male and close to full term, were stillborn.

Bisantis C see **Angi MR**

Blaese RM see **Walker R**

Blickstein I, Weissman A, Ben-Hur H, Borenstein R, Insler V: Vaginal delivery of breech-vertex twins. J Reprod Med 1993 Nov;38(11):879–82
The safety of vaginal birth for breech-vertex twins has not been addressed directly before. We retrospectively compared the perinatal outcome of two groups of breech-vertex twins: 24 delivered vaginally and 35 delivered abdominally. Vaginal delivery was allowed under the same protocol developed for singletons in breech presentation. Both groups had similar maternal and neonatal characteristics except for a significantly higher rate ($P = .003$) of pregnancies after infertility in the abdominal delivery group. Intergroup differences in perinatal outcome, as measured by Apgar scores and morbidity and mortality cases, were not significant. Our data suggest that if measures for safe vaginal delivery are taken, this route appears to incur no morbidity and mortality for breech-vertex twins.

Blickstein I see **Lurie S**

Bliss DP Jr see **Hing A**

Bongain A, Constantopoulos P, Castillon JM, Ibghi W, Isnard V, Gillet JY: [Simultaneous pregnancy in each cavity of a bicornuate bicervical uterus with a double vagina] Rev Fr Gynecol Obstet 1994 Jan;89(1):32–5 (11 ref.) (Eng. Abstr.) **(Fre)**
A case of twin pregnancy in a bicervical uterus with double vagina is reported. The malformation was known before conception. Caesarean section was performed for premature rupture of the membranes at 34 weeks. This enabled the extraction of two low-birth-weight premature infants free of any particular pathology. The possibility of twin pregnancy in a bicervical bicornuate uterus is 1/1,000,000 and implies the maturation of at least two oocytes. This is a high risk pregnancy.

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Spontaneous abortions, prematurity (40%), low-birth-weight (25%) are the most notable complications. Although the probability of dynamic dystocia is multiplied by 7, vaginal delivery is not excluded when the obstetric past history is satisfactory and the presentation of both twins cephalic. Caesarean involves hysterotomy of each horn and raises no special technical problems. Double delivery increases the risk of hemorrhage.

Boomsma DI, Hennis BC, van Wees AG, Frants RR, Kluft C: A parent-twin study of plasma levels of histidine-rich glycoprotein (HRG). Thromb Haemost 1993 Nov 15;70(5):848-51
Histidine-rich glycoprotein (HRG) is a non-enzymatic glycoprotein that acts as a modulator of several plasma proteins involved in coagulation and fibrinolysis. The contributions of genetic and environmental influences to inter-individual variation in plasma levels of HRG were studied in 160 Dutch families consisting of adolescent twin pairs and their parents. Results showed that 69% of the variance in plasma HRG concentrations could be accounted for by genetic factors. Heritability was the same in males and females and in parents and their offspring. There was no association between HRG levels of husband and wife and no evidence was found for the influence of shared family environment on the resemblance between relatives.

Boomsma DI see **Orlebeke JF**
Boraas JC see **Conry JP**
Borenstein R see **Blickstein I**
Bortin MM see **Gale RP**
Botchan A see **Yaron Y**
Bouchard TJ Jr see **Conry JP**
Bouchard TJ Jr see **Lykken DT**
Bovicelli L see **Zerbini M**
Bowen DJ see **Wollina K**

Braat DD: Multiple follicular growth under pulsatile gonadotrophin releasing hormone stimulation. Hum Reprod 1993 Nov;8 Suppl 2:189-92 (11 ref.)
Pulsatile gonadotrophin releasing hormone (GnRH) treatment in patients with secondary hypothalamic amenorrhoea results in higher multiple pregnancy rates than expected. This multiple pregnancy rate is significantly higher when conception occurs during the first treatment cycle and when higher pulse doses are used. This is probably due to higher follicle stimulating hormone (FSH) levels, leading to multiple follicular growth. The endocrinology of pulsatile i.v. GnRH treatment cycles in patients with hypothalamic amenorrhoea as well as in patients with normal cycles revealed higher FSH levels during the first days of treatment compared with unstimulated control cycles. It was possible to induce multiple follicular growth in normally cycling women with pulsatile GnRH. To prevent multiple pregnancies in patients with hypothalamic amenorrhoea, a low pulse dose should be used, especially during the first treatment cycles.

Braude PR see **Hsu CC**
Braungart JM see **Plomin R**
Breckwoldt M see **Prömpeler HJ**

Breitner JC, Gau BA, Welsh KA, Plassman BL, McDonald WM, Helms MJ, Anthony JC: Inverse association of anti-inflammatory treatments and Alzheimer's disease: initial results of a co-twin control study. Neurology 1994 Feb;44(2):227-32
We conducted a co-twin control study among 50 elderly twin pairs with onsets of Alzheimer's disease (AD) separated by 3 or more years. Twenty-three male pairs (46%) were screened from the (U.S.) National Academy of Sciences-National Research Council Registry (NAS-NRC Registry) of World War II veteran twins; others (mostly women) had responded to advertisements or were referred from AD clinics. Twenty-six pairs (52%) were monozygous. The onset of AD was inversely associated with prior use of corticosteroids or ACTH (odds ratio [OR], 0.25; 95% confidence interval [CI], 0.06 to 0.95; $p = 0.04$). Similar but weaker trends were present among pairs discordant for history of arthritis or for prior daily use of nonsteroidal anti-inflammatory drugs (NSAIDs) or aspirin. The association was strongest when we combined use of steroids/ACTH or NSAIDs post hoc into a single variable of anti-inflammatory drugs (AIs) (OR, 0.24; CI, 0.07 to 0.74; $p = 0.01$). The inverse relation was strong in female (volunteer) twin pairs but was not present in the younger men from the NAS-NRC Registry. AIs had typically been taken for arthritis or related conditions, but a similar result was apparent after controlling statistically for the arthritis variable (OR, 0.08; CI, 0.01 to 0.69; $p = 0.02$). AIs have been proposed as a means of retarding the progression of AD symptoms, and these data suggest that AIs may also prevent or delay the initial onset of AD symptoms. Because of limitations in the case-control method, our results require corroboration with hypothesis-driven research designed to control bias and confounding.

Briant L, Avoustin P, Clayton J, McDermott M, Clanet M, Cambon-Thomsen A: Multiple sclerosis susceptibility: population and twin study of polymorphisms in the T-cell receptor beta and gamma genes region. French Group on Multiple Sclerosis. Autoimmunity 1993;15(1):67-73
Multiple sclerosis (MS) is a demyelinating auto-immune disease of the central nervous system with a suspected genetic component. Previous publications have demonstrated that MS susceptibility is influenced by Major Histocompatibility Complex (MHC) genes and recent studies have focused on additional susceptibility genes. The accumulation of activated T-cells in demyelinating MS lesions, the possible auto-immune mechanism of this disease and the functional relationship between MHC and T cell receptor (TCR) molecules support the hypothesis that TCR genes are good candidates to influence MS development. Published results in this domain are conflicting and still a matter of controversy. In the present study we analysed the influence of V beta, C beta, P lambda G3 and V gamma gene polymorphisms defined by Restriction Fragments Length Polymorphism (RFLP) on 48 pairs of monozygotic and dizygotic twins with at least one of each pair affected, and also in 63 unrelated MS patients for V gamma gene polymorphism. These results have been compared with those in the non affected twins and with data from a control group (Beall et al., 1989) regarding C beta and V beta polymorphisms and with a local control population for V gamma. No significant correlation between C beta, V gamma or P lambda G3 polymorphisms and MS was found, only a non significant tendency to reduced P lambda G3 allele sharing among dizygotic non concordant twin pairs was observed. However one V beta 11, 25 kb allele and a haplotype defined by V beta 11 and C beta alleles showed a correlation with MS susceptibility of borderline significance.(ABSTRACT TRUNCATED AT 250 WORDS)

Brück I, Anderson GA, Hyland JH: Reproductive performance of thoroughbred mares on six commercial stud farms. Aust Vet J 1993 Aug;

AUTHOR SECTION

70(8):299–303
The records of 1630 mare years from 6 Thoroughbred stud farms in south eastern Australia were analysed for the years 1981 to 1986. Overall pregnancy and foaling rates were 83.9% and 69.3%, respectively. When calculated per served oestrous cycle, pregnancy and foaling rates were 54.7% and 43.1%, respectively. Pregnancy and foaling rates were higher ($P < 0.001$) for mares 3 to 10 years of age than for older mares. There was no difference in the pregnancy rates of maiden, barren and foaling mares. The foaling rate was significantly higher ($P < 0.001$) in mares that became pregnant during the first served oestrous cycle (77.8%) than in mares that needed two served oestrous cycles to become pregnant (65.4%). Of all diagnosed pregnancies, 19.5% were not completed. Pregnancy loss was lower ($P < 0.05$) in maiden (12.4%) than in barren (19.7%) or foaling (20.9%) mares. Twins were diagnosed in 7.8% of all pregnancies. If one conceptus was lost without external interference, 84.1% of pregnancies went to term. If one conceptus was manually crushed, 55.9% of pregnancies were maintained. If prostaglandin was used to terminate twin pregnancies, 60% of mares so treated produced foals the following year.

Bryan E see **Fisk NM**

Budd SC see **Barton LL**

Budorick NE see **Pretorius DH**

Buja G, Nava A, Daliento L, Scognamiglio R, Miorelli M, Canciani B, Alampi G, Thiene G: Right ventricular cardiomyopathy in identical and nonidentical young twins. Am Heart J 1993 Nov; 126(5):1187–93
We describe the first sets of identical and nonidentical twins with right ventricular cardiomyopathy (RVC). Pair A: A 12-year-old boy was referred because of palpitation and syncope. Clinical and instrument examinations revealed an enlarged and depressed right ventricle (end-diastolic volume = 110 ml/m2; ejection fraction = 44%), spontaneous ventricular tachycardia, and fatty-fibrous infiltrates in the biopsy specimens. His asymptomatic, monozygotic twin showed localized involvement of the right ventricle with isolated, ventricular extrasystoles. Pair B: These 18-year-old nonidentical twin boys showed diffuse right ventricular involvement (end-diastolic volume = 110 ml/m2 and 114 ml/m2; ejection fraction = 30% and 24%, respectively), induction of sustained and nonsustained ventricular tachycardia, respectively, and fibrosis on endomyocardial biopsy. One of the boys died suddenly at rest after documented ventricular fibrillation. These cases support the hypothesis of a genetic etiology with a minor role for genotype and point to the important influence of environmental factors in determining the clinical features of the disease.

Burke PH, Healy MJ: A serial study of normal facial asymmetry in monozygotic twins. Ann Hum Biol 1993 Nov-Dec;20(6):527–34
Asymmetry of the soft tissues of the face was measured by comparing three pairs of bilateral facial parameters connecting the landmarks external canthus, tip of nose and angle of mouth. The subjects were six pairs of monozygotic twins (eight girls and four boys) in the age range 8–19 years. A clinical contour mapping technique known as short-base stereophotogrammetry provided life-size facial maps on which the parameters were measured in three dimensions. The study was based on annual serial records over an average period of 9 years for each pair, and was almost entirely longitudinal. The asymmetry in millimetres was given a positive or negative sign, depending on whether right or left side dominated. Asymmetry in the facial parameters was found to be very small, amounting at most to a few millimetres, and was not much larger than the measuring error of the method. Nevertheless, asymmetry was statistically significant ($p < 0.05$) in 12 out of 60 indicators, and of these seven were at $p < 0.01$ level. Asymmetry could not be related to twin zygosity, adolescence or age.

C

Cakmakci M see **Geroulanos S**

Cambon-Thomsen A see **Briant L**

Cambon-Thomsen A see **Roth MP**

Campbell WM see **Egan JF**

Campos J see **Plomin R**

Canciani B see **Buja G**

Carbone C see **Pezzati M**

Carbonell P see **Kruyer H**

Cardon LR see **Colletto GM**

Carlan SJ, Greenbaum LD, Parker JV, Pena AJ, Esmail-Rawji H, Jones MH: Intra-amniotic membranes following amniocentesis.
J Clin Ultrasound 1993 Jul-Aug;21(6):402–4

Carmelli D see **Reed T**

Carpenter R see **Thomas DA**

Carter CS see **Walker R**

Carthy D see **Hajeer AH**

Carthy D see **Silman AJ**

Cast IP see **Sharma RR**

Castillon JM see **Bongain A**

Cates R see **Heath AC**

Cawley MI see **Cook NJ**

Cefalo RC see **Mitra AG**

Champagne E see **Roth MP**

Champlin RE see **Gale RP**

Chan YF, Ho PC: Bilateral tubal pregnancies after pronuclear stage embryo tubal transfer to 1 tube. Aust N Z J Obstet Gynaecol 1993 Aug;33(3):315–6

Chang L see **Walker R**

Charrel M see **Millet V**

Chase JS see **Check JH**

Check JH, Schubert B, Chase JS: Fetal outcome of triplets in a Turner mosaic. J Perinat Med 1993; 21(4):279–83
Pregnancies are now being reported resulting from fertilization of donor oocytes in women with ovarian failure. A case of triplets in a Turner mosaic is reported herein following transfers of embryos resulting from donor oocytes. She had previously demonstrated a normal sized uterine cavity by hysterosalpingography. The opinion from our group was that she should consider selective reduction but a perinatology consult thought she should have a favorable outcome. Her pregnancy was complicated by polyhydramnios, pre-term labor, and eventual fetal demise at 25 and 27 weeks of all three fetuses. Natural pregnancies in patients with gonadal dysgenesis have been reported in at least 138 patients. Many aborted or had stillbirths and this high rate of fetal mortality has been ascribed to chromosomal abnormalities. The continued use of donor oocytes will provide data to evaluate whether there will continue to be a higher spontaneous abortion rate and complications in second and third trimesters in Turner's pregnancies even in single pregnancies. The outcome of this case can at least be provided to future gonadal dysgenesis patients with triplets to help them in their decision as to whether or not to have selective reduction.

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Check JH, Chase JS, Adelson HG, Lauer C, Schubert B: A conservative treatment protocol with human menopausal gonadotropins aimed at reducing multiple births. J Perinat Med 1993;21(4):315–9
In multicenter studies involving 3002 courses of human menopausal gonadotropins (hMG) therapy in 1286 patients, 20% of the patients who delivered had multiple gestations; 75% of these were twins and 25% were triplets or higher parity. Our stimulation regimen is very conservative in that we 1) try to allow a female with LPD and regular cycles but not reaching a mature follicle to first select her dominant follicle and wait until the serum E2 reaches approximately 100 pg/mL then add the hMG. With anovulatory women we frequently begin with only 75 IU hMG and gradually increase the hMG dosage. Using this approach we have usually attained at least a 70% pregnancy rate in six months. A study was performed to see if this conservative approach resulted in a decreased multiple birth rate percentage especially with triplets or more. The study was to evaluate the outcome of 241 consecutive pregnancies in which hMG was the sole therapy. There were 203 with one gestation and 38 with multiples. Twins--32; triplets--6. Thus 15% (38/241) had multiple births; six of 38 (15%) of the multiples had triplets or more. Though our multiple birth rate and especially higher parity rate appears to be lower than average no statistical difference was found. Thus even with conservative use of hMG multiple births cannot be easily avoided.

Check JH, Nowroozi K, Vetter B, Rankin A, Dietterich C, Schubert B: The effects of multiple gestation and selective reduction on fetal outcome.
J Perinat Med 1993;21(4):299–302
A group of 32 women with at least 3 or more viable fetuses by sonography at approximately 8 weeks gestation were given the option of selective reduction. They were advised that this was a relatively new procedure but heretofore in a small series was not associated with a significant increase in fetal demise. Only 7 of 32 women chose this option. six of these 7 had triplets reduced to twins, 1 woman had quadruplets reduced to twins. Thirteen of 14 viable babies were successfully delivered at a mean of 36.8 weeks gestation; 2 of 7 (28.6%) delivered before 37 weeks. In contrast, 7 of 25 (24%) not having reduction lost all babies (6 triplets, 1 quadruplet). Four other women lost at least 1 of their gestations (total of 5 babies). Pre-term deliveries (< 37 weeks) occurred in 16 of 18 (88.8%) patients delivering at least 1 live baby, with a mean of 33.7 weeks gestation. Thus the high rate of total fetal loss and prematurity for multiple gestation and the low pregnancy wastage and pre-term delivery rate following selective reduction might make the latter a reasonable therapeutic option to patients interested in having the best chance of delivering healthy viable babies.

Chen CJ see **Hsieh TT**

Chescheir NC see **Mitra AG**

Chou YH, Tsou Yau KI, Wang PJ, Shen YZ, Lee CY: Multicystic encephalomalacia in a surviving monochorionic twin. Acta Paediatr Sin 1993 Nov-Dec;34(6):474–9
From a recent monochorionic diamniotic twin pregnancy seen at this hospital, one of the twins died in utero at 37 weeks' gestation. The other twin, a male infant, was delivered by Cesarean section because of fetal distress, with resuscitation performed in the delivery room. The infant developed generalized tonic seizure shortly after stabilization, and was put on anticonvulsants. The initial brain echography was normal; follow-up echograms and CT scans performed at 8 and 12 days old, respectively, revealed diffuse low density over both side of cerebral hemisphere. At one month old, the infants's brain echogram showed diffuse cystic encephalomalacia. At four months, he was noted to be spastic and significantly delayed in neurodevelopment. Disseminated intravascular coagulation caused by fetal-to-fetal transfer of thromboplastic material from the dead fetus was considered as the most possible cause of the neurological complication in this patient. In addition, perinatal hypoxic-ischemic insult may also have been a superimposed, influencing factor.

Christensen K, Fogh-Andersen P: Cleft lip (+/- cleft palate) in Danish twins, 1970–1990.
Am J Med Genet 1993 Nov 1;47(6):910–6
A classical twin study is one of the best methods to address the open question of the role of genes and environment in the cause of cleft lip with or without cleft palate [CL(P)]. In addition, when twin concordance rates are combined with information about the risk for CL(P) to more remote relatives, they can help to establish the most likely mode of inheritance for CL(P). The present study was based on three nation wide ascertainment sources of CL(P) in twins in Denmark during the period 1970–1990. The Danish surgical files were found suitable for ascertaining twins with non-syndromic CL(P) and a total of 39 pairs was identified through these files. In more than 70% of the cases, the zygosity assignment was based on unlike-sex or an extensive panel of blood, serum, and enzyme types. More mono- and dizygotic twin (CL(P) cases than expected were found, although the difference was not significant. The proband concordance rate for CL(P) was 60% in monozygotic twins and 10% in dizygotic twins; six cases were of unknown zygosity. This finding indicates that genetic factors play a major role in the cause of CL(P) but environmental and/or stochastic factors are probably acting too. When the familial recurrence patterns analyzed by Mitchell and Risch [1992: Am J Hum Genet 51:323–332] are interpreted in light of these new estimates of monozygotic concordance, they provide further evidence for the finding that no single locus can account for more than a six-fold increase in risk to first-degree relatives.

Christensen K, Fogh-Andersen P: Isolated cleft palate in Danish multiple births, 1970–1990.
Cleft Palate Craniofac J 1993 Sep;30(5):469–74
The etiology of most cases of isolated cleft palate (CP) is unknown. The relative importance of genes and environment can be studied using the classical twin method but only few and potentially highly selected CP twin data are available. The present CP twin study was based on four Danish nationwide ascertainment sources of CP multiple births in the period 1970–1990. The ascertainment sources covered the time period from 15 completed weeks of pregnancy to adolescence for the older cohorts. A total of 18 CP cases in multiple births were identified; two monozygotic twin pairs of which one was concordant and eight were dizygotic, discordant twin pairs. Three cases were from two triplet sets, and four discordant twin pairs were of unknown zygosity. The twin concordance rates suggest that genetic factors play a major role in the etiology of CP, but environmental and/or stochastic factors are probably acting as well.

Christian JC see **Reed T**

Cianciulli D see **Pezzati M**

Cilento BG Jr, Benacerraf BR, Mandell J: Prenatal

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and postnatal findings in monochorionic, monoamniotic twins discordant for bilateral renal agenesis–dysgenesis (perinatal lethal renal disease). J Urol 1994 Apr;151(4):1034–5
We report on a male twin born with no functional renal tissue and without the extrarenal manifestations of Potter facies, skin changes, club feet and pulmonary hypoplasia. The monoamniotic co–twin had normal renal function, thereby maintaining sufficient amniotic fluid to avoid the classic presentation of Potter's syndrome. Prenatal diagnosis of this condition allowed prompt confirmation of these findings and support for the parents without unnecessary intervention. This experiment of nature demonstrates the necessity of normal renal function in the maintenance of amniotic fluid and its relationship to the proper development of the pulmonary and integumentary systems.

Clanet M see **Briant L**
Clanet M see **Roth MP**
Clayton J see **Briant L**
Clayton J see **Roth MP**
Clementi M see **Angi MR**
Clifford CA see **Hopper JL**
Cobo AM see **López de Munain A**

Coccaro EF, Bergeman CS, McClearn GE: Heritability of irritable impulsiveness: a study of twins reared together and apart. Psychiatry Res 1993 Sep; 48(3):229–42 (77 ref.)
The heritability of self-reported personality traits related to impulsiveness, irritability, and the inhibition of assertive or aggressive behavior was examined in up to 500 healthy monozygotic and dizygotic twin pairs raised together or apart. Two factors related to "(lack of) assertiveness/aggression" (Factor I) and "impulsive irritability" (Factor II) were examined using traditional and model-fitting procedures. Results of model-fitting procedures were consistent with a genetic, but not a shared environmental, influence for both factors. Further analysis suggested a nonadditive genetic influence for Factor II and an additive influence for Factor I. Bivariate model-fitting analyses suggest that self-reported "irritable impulsiveness" and "(lack of) assertiveness/aggressiveness" show substantial, though different, genetic influences.

Cohen I see **Ben-Nun I**
Collantes García C see **Guerrero Vázquez J**

Colletto GM, Cardon LR, Fulker DW: A genetic and environmental time series analysis of blood pressure in male twins. Genet Epidemiol 1993;10(6):533–8
Systolic and diastolic blood pressures were measured on 254 monozygotic (MZ) and 260 dizygotic (DZ) male twin pairs, during middle age (average age 48 years) and at two later age points. Genetic and environmental components of covariation were modeled by time series. For both measures, shared environmental influences were absent and specific environmental influences were largely time–specific. Although heritability was about 0.5 at each time point, genetic variation present at middle age contributed only about 60% to that present 9 years later, the remaining 40% being new. Fifteen years later, at the third time point, no new genetic variation was evident, variation in individual differences being entirely attributable to genetic differences laid down at the two earlier ages.

Compston DA see **Mumford CJ**

Conry JP, Messer LB, Boraas JC, Aeppli DP, Bouchard TJ Jr: Dental caries and treatment characteristics in human twins reared apart. Arch Oral Biol 1993 Nov;38(11):937–43
The 'reared apart' model, eliminating the effect of common environmental factors, is used extensively in twins research. In this study, teeth present (TP), teeth present excluding third molars (TPX3), teeth restored (TR), teeth restored index (TRI), surfaces restored (SR), surfaces restored index (SRI) and surfaces restored or carious (SRCI), were compared in 46 monozygotic (MZ) twin pairs and 22 dizygotic (DZ) twin pairs separated during infancy and raised apart. The dental examination included charting, panoral and bitewing radiographs, study models and a questionnaire. Data were analysed using intraclass correlations (ICC) and analysis of variance (corrected for age and sex). For all characteristics, the MZ pairs showed greater within–pair similarity than DZ pairs. For MZ pairs, the ICC values for the dental characteristics were all statistically significant ($p < 0.005$): TP, 0.45; TPX3, 0.49; TR, 0.57; TRI, 0.61; SR, 0.46; SRI, 0.67; SRCI, 0.58. For DZ pairs, none of the ICC values reached statistical significance: TP, 0.04; TPX3, 0.11; TR, 0.30; TRI, 0.31; SR, 0.20; SRI, 0.17; SRCI, 0.26. Despite subjects being reared in different environments, receiving different diets and different dental professional care, the MZ findings demonstrated significant genetic variance (45–67%) for the number of teeth present, number of teeth and surfaces restored, and caries present; the DZ data supported this conclusion. These findings provide new evidence for a genetic contribution to dental caries.

Constantopoulos P see **Bongain A**

Cook NJ, Silman AJ, Propert J, Cawley MI: Features of systemic sclerosis (scleroderma) in an identical twin pair. Br J Rheumatol 1993 Oct;32(10):926–8
The aetiology of systemic sclerosis (scleroderma) is unknown but it is thought to have both genetic and environmental components. The familial incidence of the disease is very low and we have been able to find only one report of scleroderma in identical twins which was in the Russian literature. We report here on a set of identical twins and their mother who all had features of systemic sclerosis.

Cooper BA see **Leonard CH**
Cooper L see **Dungy CI**
Coppin H see **Roth MP**

Corey LA, Nance WE, Hofstede P, Schenkein HA: Self-reported periodontal disease in a Virginia twin population. J Periodontol 1993 Dec;64(12):1205–8
To investigate the contribution of genetic factors in the etiology of periodontal disease, questionnaire data were collected on 4,908 twin pairs included in the population-based Virginia Twin Registry. A history of periodontal disease was reported in 420 individuals who were members of 116 monozygotic (MZ) and 233 dizygotic (DZ) twin pairs. The mean age at diagnosis in this sample was 31.4 +/- 0.7 years and was significantly earlier in females than males (30.1 vs. 33.0 years, $P < 0.025$). Proband-wise concordance rates were 0.38 for MZ and 0.16 for DZ twins. There were no differences in concordance rate between same and opposite-sexed dizygotic twins. These findings provide evidence that genetic factors make an important contribution to risk for adult-onset periodontal disease.

Corley R see **Plomin R**
Corn SB see **Abouleish AE**
Corteville J see **Hing A**
Cosenza E see **Pezzati M**
Cotton DB see **Quintero RA**
Cox TM see **Reardon DM**
Crow T see **Polymeropoulos MH**
Cummins SK see **Grether JK**
Cvitkovic M see **Dumic M**
Cyran SE see **Gleason MM**

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Czekalski S see **Syrenicz A**
Czubak M see **Iwaszkiewicz E**

D

Dabancens A see **Daher V**
Dabbagh J see **Machin GA**
Daher V, Youlton R, Nazer J, Jorquera H, Astete C, Tobella L, Salazar S, Dabancens A: [Identical monozygotic triplets: the 1st case in Chile (letter)] Rev Med Chil 1993 Apr;121(4):456–8 **(Spa)**
Daikoku NH, Graham D, Gopal JJ, Frattarrola IG, Rock JA: Delayed birth intervals of immature fraternal triplets in preterm labor. A case report. J Reprod Med 1993 Sep;38(9):734–6
The preterm birth of immature triplets before 28 weeks is associated with excess morbidity and mortality risks attributable to extreme immaturity. We report a case of fraternal triplets in preterm labor in which the second and third triplet births were delayed 11 days after the first birth, at 26 4/7 weeks' gestation. The later-born sibs were heavier at birth and throughout their neonatal course in the hospital and suffered less severe complications as compared to the first-born triplet. Delayed birth intervals of triplets in preterm labor should be considered to improve perinatal salvage of immature triplets, although a successful outcome is rare and unexpected.
Daliento L see **Buja G**
Danford DA, McManus BM, Nielsen SM, Levine MG, Needelman HW: Definition of inseparably fused ventricular myocardium in thoracopagus: fetal echocardiographic utility and pathologic refinement. Pediatr Cardiol 1993 Oct;14(4):242–6
Correlative echocardiographic and pathological findings in a thoracopagus with conjoined hearts are reported. One twin had tricuspid atresia with discordant atrioventricular connections and concordant ventriculoarterial connections. The morphologic right ventricle was hypoplastic and there was a large muscular ventricular septal defect. The other twin had hypoplasia of the mitral valve anulus and left ventricle with double-outlet right ventricle and pulmonary valve atresia. The tricuspid valve was severely insufficient in part because of a large orifice and redundant, elongated leaflets with abnormal chordal attachments. The left ventricles of these two twins shared a perforated common "free wall" with at least two large defects allowing mixing of the circulations at that level. Not all anatomic details were established conclusively by fetal echocardiography; however, sufficient diagnostic information was obtained to support a decision not to aggressively resuscitate these twins after elective cesarean delivery at 31 weeks' gestation.
Davey MP, Meyer MM, Bakke AC: T cell receptor V beta gene expression in monozygotic twins. Discordance in CD8 subset and in disease states. J Immunol 1994 Jan 1;152(1):315–21
The peripheral T cell repertoire is shaped by positive and negative selection. These intrathymic events are dependent on the direct interaction of MHC and TCR molecules. Inasmuch as one possible mechanism for HLA-linked disease involves the role that these molecules play in shaping the peripheral T cell repertoire, an understanding of how stable the repertoire remains is an important question that will influence future studies. The purpose of this study was to analyze the stability of the T cell repertoire in monozygotic twins. To investigate this question the percentage of CD4 and CD8 T cells expressing TCR V beta gene products was determined for seven sets of healthy monozygotic twins ages 2 through 44. V beta expression was determined by three-color flow cytometric analysis using antibodies to V beta-5.1, -5.2, -5.3, -6.7, -8, and -12. The percentage of CD4 cells expressing each V beta gene was highly concordant between twins. In contrast, differences were noted for V beta expression within the CD8 subset. This was especially marked when sets of twins were studied ($n = 3$) where one individual had an underlying disease. Although expression in the CD4 subset was again concordant, significant differences were noted within the CD8 subset compared to the healthy twin. These data indicate that in both health and disease, the CD4 T cell repertoire is tightly regulated although often sizable differences have developed in the CD8 compartment.
Deapen D see **Richardson JL**
de Faire U see **Marenberg ME**
DeFries JC see **Gillis JJ**
DeFries JC see **Stevenson J**
Degaute JP, Van Cauter E, van de Borne P, Linkowski P: Twenty-four-hour blood pressure and heart rate profiles in humans. A twin study. Hypertension 1994 Feb;23(2):244–53
To delineate the relative roles of genetic and environmental factors on physiological variations of blood pressure and heart rate, we performed 24-hour ambulatory blood pressure monitorings with simultaneous polygraphic sleep recordings in 28 monozygotic and 16 dizygotic healthy young male twin pairs investigated in a standardized physical and social environment. Blood pressure and heart rate were measured every 10 minutes for 24 hours. A best-fit curve based on the periodogram method was used to quantify changes in blood pressure and heart rate over the 24-hour span. Surprisingly, monozygotic twins as a group tended to have higher blood pressure values than dizygotic twins, and this difference reached the level of significance for daytime systolic blood pressure ($P < .005$). Although environmental influences largely controlled the mean levels and characteristics of the 24-hour systolic blood pressure variations, significant genetic effects were demonstrated for the mean levels and 24-hour patterns of diastolic blood pressure and heart rate. For both diastolic blood pressure and heart rate, the genetic effects concerned largely the same characteristics of the 24-hour profiles: the 24-hour mean, the daytime mean, the value of the evening acrophase, and the value of the major acrophase. Moreover, there was a strong genetic influence for the amplitude of the 24-hour rhythm of heart rate.
Degen HE see **Degen R**
Degen R, Degen HE: [Genetic aspects of symptomatic epilepsy based on waking and sleep EEG recordings in siblings] Nervenarzt 1993 Aug;64(8):504–10 (Eng. Abstr.) **(Ger)**
Waking and sleep EEG-recordings were carried out in siblings of patients with various idiopathic and symptomatic seizure types. Rates of epileptic activity (e.a.) were found in the symptomatic ones varying between 24.1% (Complex partial seizures) and 46.7% (Symptomatic absences). 1/4 to 1/2 of the e.a. was recorded exclusively in sleep, so that sleep recordings are also necessary for such investigations. 2.5–4/sec. spike wave-complexes were predominantly seen; benign foci and photosensitivity were recorded in a smaller number of siblings. More e.a. was observed in idiopathic (72%) than in symptomatic absences (46.7%). On the other hand

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the same rates (42:41%) as well as almost the same EEG-patterns were found in idiopathic and symptomatic generalized tonic-clonic seizures. When counting the single epileptic discharges more e.a. was seen in siblings of patients with the idiopathic type than the symptomatic one (one discharge every 53 sec.:229.3 sec.). Most e.a. was found in the age group 6–14 years in siblings of all seizure types; therefore, this age dependent penetrance does not depend on the seizure type, but on the recorded spike wave-complexes, benign foci and photosensitivity which occur most frequently in this age range. A multi-factorial mode of inheritance is assumed.

Degoul F, Diry M, Pou-Serradell A, Lloreta J, Marsac C: Myo-leukoencephalopathy in twins: study of 3243-myopathy, encephalopathy, lactic acidosis, and strokelike episodes mitochondrial DNA mutation. Ann Neurol 1994 Mar;35(3):365–70
Two dizygotic twins with myopathy and leukoencephalopathy are described. The female twin had an incomplete form of MELAS syndrome (myopathy, encephalopathy, lactic acidosis, and strokelike episodes) with severe myopathy, epileptic seizures without strokelike episodes. The male twin presented clinical features exclusively of myopathy and subclinical leukoencephalopathy. The MELAS mitochondrial DNA point mutation (MELAS-3243) was found by southern blot and polymerase chain reaction in muscle, skin fibroblasts, and blood of the female twin and was not detected in the skin fibroblasts nor in the blood of the mother, nor in any of the tissues tested in the male twin. The absence of mutation in male twin tissues raises questions about the pathogenetic significance of the mutation in this family.

Dehaene P see **Streissguth AP**
DeLisi LE see **Polymeropoulos MH**
Della-Latta P see **Oleinik EM**
de Paz Aparicio P see **Guerrero Vázquez J**
Detterman DK see **Thompson LA**
Deutinger J see **Maly Z**
Devoe LD see **Vandermolen DT**
Devroey P see **Staessen C**
Dhar MG see **Even MD**
Diaz MO see **Gill Super HJ**

Dickey RP, Olar TT: Hormone treatment for infertility. Restrictions won't prevent multiple pregnancies [letter] BMJ 1993 Nov 13; 307(6914):1281–2

Dietsch B see **Richardson JL**
Dietterich C see **Check JH**
Dimitrov I see **Shtereva K**
Diry M see **Degoul F**

Ditto B: Familial influences on heart rate, blood pressure, and self-report anxiety responses to stress: results from 100 twin pairs. Psychophysiology 1993 Nov;30(6):635–45
Two hundred healthy adolescent to middle-aged individuals (12–44 years, M = 20 years) were tested in a standardized stress protocol. These individuals comprised 20 monozygotic female, 20 monozygotic male, 20 same-sex dizygotic female, 20 same-sex dizygotic male, and 20 opposite-sex dizygotic twin pairs. Familial influences on heart rate, blood pressure, and self-report anxiety responses to four different kinds of stressors (Visual-Verbal Test for Conceptual Thought, mental arithmetic, isometric handgrip, cold pressor) were assessed using biometrical genetic model fitting. Evidence of significant genetic effects on resting heart rate and blood pressure was obtained, providing heritability estimates of .65, .63, and .58 for resting heart rate and systolic and diastolic blood pressure, respectively. Cardiovascular reactivity to the Visual-Verbal Test, mental arithmetic, and the cold pressor test appeared to be primarily influenced by genetic and idiosyncratic (nonfamilial) environmental factors, whereas reactivity to handgrip was more related to effects of the family environment. The results of multivariate model fitting suggested that the genetic effects on reactivity were relatively independent of those affecting resting heart rate and blood pressure and that there was significant overlap of genetic influences on heart rate and blood pressure responses to the two active coping tasks.

Dockeray J: Bovine multiple birth [letter] [see comments] Vet Rec 1993 Nov 27;133(22):555

Domenici R see **Marziani R**
Dommergues M see **Evans MI**
Donis-Keller H see **Hing A**
Dorembus D see **Mordel N**
Douge C see **Gourdiole P**
Dowton SB see **Hing A**
Drobná H see **Plank K**
du Bois A see **Prömpeler HJ**
Ducloy AS see **Switala I**
Dudenhausen JW see **Kainer F**

Duffy DL, O'Connell DL, Heller RF, Martin NG: Risk factors for atherosclerosis in twins. Genet Epidemiol 1993;10(6):557–62
We performed multivariate genetic analyses of cardiovascular risk factors from two sets of data on US and Australian female twins. Similar models for body mass index (BMI), serum low density (LDL) and high density (HDL) lipoproteins, including age as a covariate, were fitted successfully to both groups. These suggested that BMI, or genes responsible for a significant proportion of the variance of BMI, explained correlations between lipid subfractions, as well as those between blood pressure and lipid subfractions, especially HDL.

Dufour P see **Switala I**

Dukovski A, Shtereva K: [Twin pregnancy and the intrauterine death of one twin] Akush Ginekol (Sofiia) 1992;31(1):25–7 (13 ref.) **(Bul)**

Dukovski A see **Shtereva K**
Dumez Y see **Evans MI**

Dumic M, Vukovic J, Cvitkovic M, Medica I: Twins and their mildly affected mother with Weaver syndrome. Clin Genet 1993 Dec;44(6):338–40
A pair of twins, a brother and sister, with the complete form of Weaver syndrome (overgrowth, macrocephaly, facial, skeletal, nail and feet anomalies) and their mildly affected mother are reported, suggesting autosomal dominant inheritance. They all have plantar and palmar hyperhydrosis and twins also have nail dysplasia, symptoms which have not yet been described in this syndrome.

Dungy CI, Cooper L, Wacker D: Behavioral problems among twins. J Dev Behav Pediatr 1993 Oct; 14(5):336–9
Despite the frequency of multiple births, little information is available to assist parents and health professionals in the identification and management of behavior problems in multiple-birth siblings. Three case reports are presented that describe quarreling, aggression, and feeding problems among twins. To develop intervention strategies most appropriate for the problem behavior, it is important to determine whether (1) parents are able to effectively implement the intervention strategy, (2) behavior is isolated to one sibling, and (3) different

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reasons are responsible for similar behavior in siblings. Structured observations were used to determine whether the undesired behavior occurred to escape nonpreferred activities, gain access to preferred activities, or obtain parental attention. The cases provide a framework to facilitate the identification and management of common behavior problems occurring among multiple-birth siblings.

Dvořáková M see **Preiss J**

Dyke J see **Valduss D**

E

Eaves L see **Kendler KS**

Eaves LJ see **Heath AC**

Eaves LJ see **Kendler KS**

Eaves LJ see **Weissbecker KA**

Eberle AM, Levesque D, Vintzileos AM, Egan JF, Tsapanos V, Salafia CM: *Placental pathology in* discordant twins. Am J Obstet Gynecol 1993 Oct; 169(4):931-5

OBJECTIVE: The aim of this study was to evaluate placental abnormalities in relation to birth weight discordance in dichorionic and monochorionic twins. STUDY DESIGN: The maternal charts and placental abnormalities of 147 structurally normal twin pairs with cords labeled at delivery were reviewed. The placental weight belonging to each twin was determined by measuring the length, width, and thickness in each of the two placental disks. Placental weight, chorionicity, infarction, abruptio placentae, decidual vascular abnormality, villous fibrosis and hypovascularity, chronic villitis, and intraplacental thrombi were also assessed. Birth weight was discordant if > or = 20%. The data were analyzed with chi 2 and analysis of variance after log transformation of skewed discordancy values. RESULTS: Of the 147 twin pairs, 99 were dichorionic and 48 monochorionic. Placental weights were known for 91 dichorionic and 40 monochorionic twins. Of the lighter cotwins in dichorionic twin pairs 36.3% (33/91) belonged to the heavier placenta, 49.5% (45/91) belonged to the lighter placenta, and 14.3% (13/91) had an equal share of the placental weight with the heavier sibling ($p < 0.05$). In 42.4% (42/99) the lighter dichorionic twin had more placental lesions than the heavier twin, in 38.4% (38/99) the same number of lesions were present in both placentas, and in 19.2% (19/99) the heavier twin had more placental lesions. There was linear correlation between percent discordance and number of placental lesions in the lighter twin. In dichorionic twins 18 of the 99 (18.1%) were discordant. In 77.8% (14/18) the lighter twin had more placental lesions than the heavier twin, in 16.7% (3/18) the number of lesions was the same in both, and in 5.6% (1/18) the heavier twin had one more lesion than the lighter twin ($p < 0.05$). In monochorionic twins, regardless of birth weight discordance, no differences in placental abnormalities were observed. CONCLUSIONS: In dichorionic twins significant birth weight discordance was attributable not to differences in placental weight but to a greater number of placental lesions in the lighter twin than in the heavier twin ($p < 0.05$). This did not hold true for monochorionic twins.

Edvardsen J see **Torgersen S**

Egan JF, Petrikovsky BM, Vintzileos AM, Rodis JF, Campbell WM: Combined pentalogy of Cantrell and sirenomelia: a case report with speculation about a common etiology. Am J Perinatol 1993 Jul; 10(4):327-9 (13 ref.)

A case of combined pentalogy of Cantrell with sirenomelia in a monozygotic twin is described. Similar cases from the world literature are reviewed. Current concepts on the etiology of anterior midline ventral wall defects and sirenomelia are detailed. It has been proposed that anterior midline ventral wall defects may be caused by either monozygotic twinning or vascular dysplasia. Likewise, a vascular steal phenomenon causes sirenomelia. A common etiology for these defects, an alteration in vascular development, is proposed.

Egan JF see **Eberle AM**

Eisen SA, Lyons MJ, Goldberg J, True WR: The impact of cigarette and alcohol consumption on weight and obesity. An analysis of 1911 monozygotic male twin pairs. Arch Intern Med 1993 Nov 8; 153(21):2457-63

BACKGROUND: The objective of this investigation was to examine the relationships among cigarette and alcohol consumption and weight and obesity. Although previous research demonstrated that smoking is associated with reduced weight, data on the relationship between alcohol consumption and weight are conflicting. In addition, the influence of smoking cessation on the risk of obesity at a level that adversely affects health has not been fully examined. METHODS: By means of a cotwin-control research design, cigarette and alcohol consumption and weight measurements derived from 1911 male, monozygotic twins were compared with those of their identical siblings. This approach eliminates confounding from a large number of measurable and unmeasurable environmental experiences and the well-documented influence of inherited factors on weight and cigarette and alcohol consumption. RESULTS: After adjustment for a variety of socioeconomic factors, light (one to 19 cigarettes daily), moderate (20 to 29 cigarettes daily), and heavy (> 29 cigarettes daily) smokers were an average of 3.2, 2.4, and 4.0 kg lighter, respectively, than nonsmokers. Past smokers demonstrated a 33% higher prevalence of clinically significant obesity (body mass index > 27.8 kg/m2) by comparison with their currently smoking siblings (26.5% vs 19.9%, respectively; difference, $P < .001$) and a 1.8 times increased risk (95% confidence interval, 1.1 to 2.9) of clinically significant obesity by comparison with heavy smokers. By contrast, alcohol consumption had no significant influence on weight or obesity. CONCLUSIONS: Smoking cessation efforts provided by health practitioners to men should consider routinely offering a weight management component to reduce weight gain and further improve the well-documented health benefits of not smoking. It may not be necessary for alcohol treatment programs to adopt a similar policy.

Eisen SA see **Goldberg J**

Ekbom A see **Hsieh CC**

Eliot B see **Mascarenhas L**

Emde RN see **Plomin R**

Eriksson AW see **Orlebeke JF**

Erlich R see **Zemlickis D**

Esmail-Rawji H see **Carlan SJ**

Essaket S see **Roth MP**

Estivill X see **Kruyer H**

Etuk I see **Asindi AA**

Eufinger H, Rand S, Scholz W, Machtens E: Clefts of the lip and palate in twins: use of DNA fingerprinting for zygosity determination. Cleft Palate Craniofac J 1993 Nov;30(6):564-8

The study of twins is a well-established method for

AUTHOR SECTION

evaluating the relative roles of heredity and environmental factors in the etiology of diseases. Conclusions depend on zygosity determination and on the classification of minor forms of diseases. This paper reports on ten (5 mono- and 5 dizygotic) out of thirteen twin pairs among 1039 patients with cleft lip and palate (n = 677) or cleft palate (n = 362). Zygosity was determined using "DNA fingerprinting" on blood samples in all 10 pairs and on cleft-associated tissue in one pair. Including minor forms of clefting, two of five pairs of monozygotic and two of five pairs of dizygotic twins of the same sex showed concordance. "DNA fingerprinting" should be established as a definitive method for zygosity determination, and the calculation of concordance rates should always include minor forms of diseases.

Evans MI, Dommergues M, Timor-Tritsch I, Zador IE, Wapner RJ, Lynch L, Dumez Y, Goldberg JD, Nicolaides KH, Johnson MP, et al: Transabdominal versus transcervical and transvaginal multifetal pregnancy reduction: international collaborative experience of more than one thousand cases. Am J Obstet Gynecol 1994 Mar;170(3):902–9
OBJECTIVES: Two major approaches for multifetal pregnancy reduction have been developed over the past several years: transabdominal potassium chloride by injection and pelvic procedures by either transcervical aspiration or transvaginal potassium chloride injection or by an automated spring-loaded puncture device. The purpose of this study was to create the largest database from among the world's largest centers to assess possible differences in efficacy and complication rates by transabdominal or transcervical or multifetal pregnancy reduction. STUDY DESIGN: Data on over 1000 completed pregnancies that underwent multifetal pregnancy reduction by both methods from major centers with among the highest worldwide experience were combined. Transabdominal cases were divided temporally (1986 through 1991 and 1991 through 1993). RESULTS: Transabdominal multifetal pregnancy reduction was successfully performed on 846 patients and transcervical or transvaginal on 238 patients. Transcervical or transvaginal reduction is performed earlier and starts and finishes with fewer embryos. In 12.6% of cases transcervical or transvaginal reduction left a singleton as opposed to 4.4% for transabdominal reduction. Pregnancy losses (up to 24 weeks) were observed in 13.1% of transcervical or transvaginal cases and in 16.2% of transabdominal cases early in the series and 8.8% of late transabdominal cases. Transcervical or transvaginal reduction may be safer very early in gestation and transabdominal safer later in the first trimester. Premature deliveries were comparable, with only about 5% delivered between 25 and 28 weeks. The smaller starting numbers for transcervical and transvaginal reduction may explain a slightly higher term delivery rate. The transabdominal route tends to reduce the fundal embryos and the transcervical and transvaginal the lower ones. The significance of this is not clear. CONCLUSIONS: (1) Multifetal pregnancy reduction by either method is a relatively safe and efficient method for improving outcome in multifetal pregnancies. (2) More than 84% are delivered at > 33 weeks. (3) The experience and preference of the operator are probably the key determinants for an individual patient. (4) An inverse relationship of starting and finishing number to loss rates and gestational age at delivery suggests that there still is a cost of iatrogenic multifetal pregnancies, even if multifetal pregnancy reduction can be successfully performed.

Evans MI see **Quintero RA**

Even MD, Dhar MG, vom Saal FS: Transport of steroids between fetuses via amniotic fluid in relation to the intrauterine position phenomenon in rats. J Reprod Fertil 1992 Nov;96(2):709–16
In litter-bearing mammals, the course of development of male and female fetuses is affected by the presence of other fetuses of the same or opposite sex located nearby within the uterus. The transport of testosterone between rat fetuses was examined by implanting a Silastic capsule containing [3H]testosterone into the amniotic sac of a fetus at either the ovarian or cervical end of a uterine horn on days 19 and 20 of pregnancy. The amount of testosterone that was recovered from the amniotic fluid of other fetuses 12 h later was determined. The amniotic fluid surrounding the adjacent fetus on the cervical side of the implanted fetus contained three times as much [3H]testosterone as did the adjacent fetus on the ovarian side, regardless of where in the uterus the implant was made. The movement of dye injected into the uterine lumen was towards the cervix. Intraluminal fluid movement may thus mediate the greater transport of [3H]testosterone towards the cervix than towards the ovary. Our findings support the hypothesis that transport of testosterone between fetuses occurs across the fetal membranes via diffusion, such that any fetus (male or female) located between male fetuses receives the greatest supplement of testosterone.

Ezra Y see **Mordel N**

F

Fabsitz RR see **Reed T**

Falk RT see **Harris EL**

Fardella P see **Hasbún J**

Farhan A see **Silman AJ**

Feasby TE see **Tawil R**

Fejgin M see **Ben-Nun I**

Ferries WJ: Bovine multiple birth [letter; comment] Vet Rec 1993 Dec 11;133(24):603

Finch SJ see **Schwartz JE**

Finkel D, McGue M: The origins of individual differences in memory among the elderly: a behavior genetic analysis. Psychol Aging 1993 Dec; 8(4):527–37
The purpose of this investigation was to apply behavior genetic methods to investigate individual differences in memory performance. Memory and various cognitive and lifestyle variables were obtained from 93 monozygotic twin pairs and 67 dizygotic twin pairs aged 60–88 years as part of the Minnesota Twin Study of Adult Development and Aging. Univariate analysis, used to determine the relative influence of genetic and environmental factors on 4 measures of memory (word recall, immediate and delayed text recall, and figure memory), suggested that 55% of the variance in memory performance could be attributed to genetic factors. Bivariate analysis was used to determine the specific variables that mediate the genetic and environmental influences on memory. Results suggested that the relationship between memory and cognitive variables was genetic in nature, whereas the nature of the relationship between memory and lifestyle variables was environmental.

Fischbein S, Guttman R: Twins' perception of their environment: a cross-cultural comparison of changes

AUTHOR SECTION

over time. Acta Genet Med Gemellol (Roma) 1992; 41(4):275–86
In a previous Swedish twin project (the SLU-project), approximately 300 MZ and DZ twin pairs and controls were followed through the Swedish compulsory school from grade 3 to grade 9. Results from this study indicated an increase of genetic influences on school achievement over time for children from a permissive home environment and a decrease for children from a restrictive home environment. These types of data have generated a more general model for studying heredity–environment interaction in educational settings. To test this model, a cross-cultural comparison over time of twins and controls in the Israeli kibbutz school and in the Swedish compulsory school has been made. Restrictions on the child were originally assumed to be more apparent in the kibbutz environment.

Fisk NM, Bryan E: Routine prenatal determination of chorionicity in multiple gestation: a plea to the obstetrician. Br J Obstet Gynaecol 1993 Nov; 100(11):975–7

Flerlage M see **Martin R**

Floderus B see **Marenberg ME**

Floyd RC see **Wax JR**

Fogarty JP: Twin vaginal delivery after a previous cesarean delivery for twins.
J Am Board Fam Pract 1993 Nov–Dec;6(6):600–3

Fogh-Andersen N see **Thomsen JK**

Fogh-Andersen P see **Christensen K**

Foglia RP see **Hing A**

Follmann D see **Knox SS**

Fortier B see **Switala I**

Fox H see **MacGregor AJ**

Frants RR see **Boomsma DI**

Frattarrola IG see **Daikoku NH**

Frederigue Júnior U see **Richieri-Costa A**

Freeman AI see **Gill Super HJ**

Frisch LS, Mimouni F: Hypomagnesemia following correction of metabolic acidosis: a case of hungry bones. J Am Coll Nutr 1993 Dec;12(6):710–3
Severe symptomatic hypomagnesemia (0.15 mmol/L [0.3 mEq/L]) and hypocalcemia (1.47 mmol/L [5.9 mg/dL]) occurred in a 4-week-old infant coincidental with correction of a severe renal tubular acidosis with alkali therapy. The patient had no evidence of gastrointestinal abnormality and magnesium (Mg) intake was adequate for age and weight. Extreme renal conservation of Mg was observed, supporting the presence of Mg depletion. We suggest that Mg depletion in this infant occurred due to acidosis-induced bone demineralization and that symptomatic hypomagnesemia was precipitated by rapid remineralization accompanying correction of systemic acidosis. This patient represents a novel case of hungry bone syndrome (HBS). Since HBS has not been described previously in patients with acidosis undergoing therapy, several other factors may have contributed to this patient's severe hypomagnesemia, namely, prematurity, twin status, severity of acidosis, rapidity of correction of acidosis, catch-up growth and calcium supplementation. Clinicians should be vigilant for HBS in infants with severe acidosis undergoing alkali therapy.

Fujihara T see **Toyoshima M**

Fujiki K see **Kato K**

Fukumitsu K see **Takauchi Y**

Fukushima N see **Nako Y**

Fulker DW see **Colletto GM**

Fulker DW see **Gillis JJ**

Fulker DW see **Plomin R**

G

Gabriel CM see **Zuckerman MA**

Gaillard JL see **Szatmari A**

Gale RP, Horowitz MM, Ash RC, Champlin RE, Goldman JM, Rimm AA, Ringdén O, Stone JA, Bortin MM: Identical-twin bone marrow transplants for leukemia. Ann Intern Med 1994 Apr 15; 120(8):646–52
OBJECTIVE: To compare outcomes of identical-twin with HLA-identical sibling bone marrow transplants for leukemia. DESIGN: Matched-pair analysis comparing relapse, treatment-related mortality, and leukemia-free survival in cohorts matched for disease and variables correlated with transplant outcome, with and without adjustment for graft-versus-host disease. SETTING: 163 institutions worldwide between 1978 and 1990, reporting to the International Bone Marrow Transplant Registry. PARTICIPANTS: 103 identical-twin transplants: 24 for acute lymphoblastic leukemia (ALL) in first remission, 45 for acute myelogenous leukemia (AML) in first remission, and 34 for chronic myelogenous leukemia (CML) in first chronic phase. Results were compared with those in 1030 concurrent HLA-identical sibling transplants matched for prognostic factors. RESULTS: Three-year probabilities of relapse after identical-twin compared with HLA-identical sibling transplants were as follows: ALL, 36% (95% CI, 17% to 55%) compared with 26% (CI, 20% to 32%); AML, 52% (CI, 37% to 67%) compared with 16% (CI, 12% to 20%); and CML, 40% (CI, 23% to 57%) compared with 7% (CI, 4% to 10%). Increased relapse risks in AML and CML persisted after adjusting for graft-versus-host disease (relative risk, 3.1 [CI, 1.9 to 5.1] and 5.5 [CI, 2.8 to 11.0], respectively). Although twins had less treatment-related mortality than HLA-identical siblings, leukemia-free survival was similar. Three-year leukemia-free survival probabilities after twin compared with HLA-identical sibling transplants were as follows: ALL, 57% (CI, 37% to 77%) compared with 58% (CI, 52% to 64%); AML, 42% (CI, 27% to 57%) compared with 55% (CI, 50% to 60%); and CML, 59% (CI, 42% to 76%) compared with 61% (CI, 56% to 66%). CONCLUSIONS: Identical-twin transplants in AML and CML are associated with increased relapse risk compared with HLA-identical sibling transplants. A similar trend was observed in ALL but was not statistically significant. Increased relapse in twin transplants is not explained by lack of graft-versus-host disease. Leukemia-free survival after twin and HLA-identical sibling transplants is similar because increased relapse in twins is offset by decreased treatment-related mortality.

Galeano C see **Marziani R**

Galecki W see **Iwaszkiewicz E**

Gallinella G see **Zerbini M**

Garcés Ramos A see **Guerrero Vázquez J**

Garden RJ see **Weiss RE**

Gau BA see **Breitner JC**

Gembruch U see **Arabin B**

Genest DR see **Steller MA**

Gentilomi G see **Zerbini M**

Geroulanos S, Jaggi F, Wydler J, Lachat M, Cakmakci M: [Thoracopagus symmetricus. On the separation of Siamese twins in the 10th century A. D. by Byzantine physicians] Gesnerus 1993;50 (Pt 3-4):179–200 (Eng. Abstr.) **(Ger)**
The byzantine author, Leon Diakonos, mentions in

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974/975 A.D. a pair of "siamese twins", e.g., a thoracopagus symmetricus. He had seen them personally several times in Asia Minor when they were about 30 years old. This pair is possibly the same that was "successfully" surgically separated after the death of one of the twins in the second half of the 10th century in Constantinople. This operation is mentioned by two historiographs, Leon Grammatikos and Theodoros Daphnopates. Although the second twin survived the operation, he died three days later. In spite of its lethal outcome, the operation left a long-lasting impression on the historians of that time and was even mentioned 150 years later by Johannes Skylitzes. Furthermore, the manuscript of Skylitzes, now in the library of Madrid, contains a miniature illuminating this operation. This is likely to be the earliest written report of a separation of siamese twins illustrating the high standard of byzantine medicine of that time.

Ghidini A, Lynch L, Hicks C, Alvarez M, Lockwood CJ: The risk of second-trimester amniocentesis in twin gestations: a case-control study. Am J Obstet Gynecol 1993 Oct;169(4):1013-6
OBJECTIVE: Pregnancy outcomes in patients with twin pregnancy undergoing second-trimester amniocentesis for fetal karyotype assessment were compared in a case-control study with twin pregnancies undergoing routine ultrasonographic studies at similar gestational ages. STUDY DESIGN: All spontaneous and induced twin gestations that underwent ultrasonographic examination between 14 and 20 weeks were compiled for the period January 1987 through January 1992. Patients having undergone multifetal reduction or chorionic villous sampling and those with fetal anatomic or chromosomal anomalies, discordant growth (> 20%), death, or a monoamniotic sac detected at ultrasonography were excluded. RESULTS: The mean (+/- SD) maternal age was significantly higher among the 101 cases than among the 108 controls (35.2 +/- 3.5 vs 30.4 +/- 5.3 years, respectively; $p < 0.01$). No differences were noted in gravidity, parity, number of prior spontaneous losses, or gestational age at ultrasonography between the two groups. The fetal loss rate was similar among cases and controls (seven of 202 [3.5%] vs seven of 216 [3.2%], relative risk 1.07, 95% confidence intervals 0.3 to 3.5). No losses occurred within 3 weeks of the procedure. Gestational age at delivery, birth weight, mean Apgar scores at 1 and 5 minutes, and length of neonatal stay were not significantly different between cases and controls. CONCLUSIONS: Second-trimester amniocentesis in twin pregnancies is apparently not associated with excess pregnancy loss.

Gibellini D see **Zerbini M**

Gilger JW see **Stevenson J**

Gill Super HJ, Rothberg PG, Kobayashi H, Freeman AI, Diaz MO, Rowley JD: Clonal, nonconstitutional rearrangements of the MLL gene in infant twins with acute lymphoblastic leukemia: in utero chromosome rearrangement of 11q23. Blood 1994 Feb 1; 83(3):641-4
Rearrangements of chromosome band 11q23 are common in infant leukemias, comprising more than 70% of the observed chromosome abnormalities in children less than 1 year of age. The MLL gene, which is located at the 11q23 breakpoint in infant, childhood, and adult acute leukemias, has been cloned and has homology to the Drosophila trithorax gene. The breakpoints in MLL are restricted to an 8.3-kilobase pair (kb) region of the gene that is involved in translocations with as many as 29 other chromosomal regions in a number of phenotypically distinct acute leukemias. We have detected an identical, clonal, nonconstitutional rearrangement of the MLL gene in peripheral blood cells from a pair of female infants twins with acute lymphoblastic leukemia (ALL) and a t(11;19)(q23;p13.3). The detection of nonidentical IGH rearrangements suggests that the MLL rearrangement took place in a B-cell precursor or hematopoietic stem cell in one twin which was transferred in utero to the other fetus resulting in ALL with an identical aneuploid karyotype in both infants. We speculate that the other MLL-related infant leukemias may also develop in utero, and that the rearrangements may occur consistently in stem cells or early precursor cells, accounting for the frequency of mixed-lineage leukemia in infants.

Gillet JY see **Bongain A**

Gillis JJ, DeFries JC, Fulker DW: Confirmatory factor analysis of reading and mathematics performance: a twin study. Acta Genet Med Gemellol (Roma) 1992;41(4):287-300
Reading and mathematics performance data from a sample of 264 reading-disabled twin pairs and 182 matched control twin pairs were subjected to multivariate behavior genetic analysis. The factor structure of reading and math performance measures was found to be highly similar for both groups. Consistent with previous findings obtained using alternative methods, a significant heritable component to individual differences in reading performance was found both within the reading-disabled ($h2 = 0.78$) and control ($h2 = 0.74$) twin samples. In addition, a substantial genetic influence on mathematics performance was found ($h2 = 0.51$ and 0.60 in the reading-disabled and control samples, respectively), although shared environmental influences common to both members of a twin pair also contribute significantly to the variance in math scores of both groups ($c2 = 0.44$ and 0.37). Moreover, genetic influences accounted for 98% of the observed correlation between reading and math performance within the sample of reading-disabled twin pairs, and for 55% of the observed correlation in the control sample. Thus, individual differences in both reading and mathematics performance are highly heritable and appear to be caused by many of the same genetic influences.

Gillis JJ see **Stevenson J**

Giuliano A see **Sepúlveda WH**

Gleason MM, Weber HS, Cyran SE, Baylen BG, Myers JL: Idiopathic infantile arterial calcinosis: intermediate-term survival and cardiac sequelae. Am Heart J 1994 Mar;127(3):691-5 (17 ref.)

Glover G see **Kruyer H**

Gold RH see **Kirlew KA**

Goldberg J, Henderson WG, Eisen SA, True W, Ramakrishnan V, Lyons MJ, Tsuang MT: A strategy for assembling samples of adult twin pairs in the United States. Stat Med 1993 Sep 30;12(18):1693-702
In this paper we develop a methodology for the identification of large numbers of U.S. adult twin pairs. Data for this study derive from the U.S. Department of Defense and the Vietnam Era Twin (VET) Registry. The Department of Defense identified potential male twins (n = 10,002) using a computerized record linkage algorithm based on the same last name, same date of birth, and the same first five digits of the Social Security number. Twinship was confirmed by comparison with the Vietnam Era Twin Registry. We developed a logistic

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regression model that predicts the probability that a paired record identifies twins based on the absolute difference in the last four digits in the Social Security number, the age of issuance of the Social Security number, and the frequency of occurrence of the last name. We used the estimated coefficients derived from this regression model to assign predicted probabilities of being a twin to each matched record. There is a close correspondence between the observed and expected number of twins when evaluated across deciles of predicted probabilities of being a twin; the value of the Harrell's c index (c = 0.68 +/- 0.0004) indicates the overall predictive accuracy of the regression equation. The results from this study demonstrate the feasibility of identifying adult male-male twin pairs from any large computerized database that contains name, date of birth and Social Security number. However, the selection criteria used in the creation of the computer database must be clearly specified to avoid constructing a biased sample of twins.

Goldberg J see **Eisen SA**
Goldberg JD see **Evans MI**
Goldberger S see **Ben-Nun I**
Goldman JM see **Gale RP**
Goldman M see **Hsieh CC**
Goldstein AM see **Harris EL**
Goldstein DP see **Steller MA**
Goodenough PC see **Thomas DA**
Gopal JJ see **Daikoku NH**
Gosch A see **Pankau R**
Gottesman II see **Resnick SM**

Gourdiole P, Pequegnot C, Douge C, Barale F: [Myocardial postpartum hypokinesia: role of salbutamol (letter)] Ann Fr Anesth Reanim 1993; 12(3):334-5 **(Fre)**

Graham D see **Daikoku NH**
Graham JM Jr see **Sharony R**

Gray TM: Gentamicin pharmacokinetics in term newborn twins. Clin Pharm 1993 Aug;12(8):615-6

Greenbaum LD see **Carlan SJ**

Gregersen PK: Discordance for autoimmunity in monozygotic twins. Are "identical" twins really identical? Arthritis Rheum 1993 Sep;36(9):1185-92 (59 ref.)

Grether JK, Nelson KB, Cummins SK: Twinning and cerebral palsy: experience in four northern California counties, births 1983 through 1985. Pediatrics 1993 Dec;92(6):854-8
BACKGROUND. Twinning is associated with heightened risk of cerebral palsy (CP) and is increasing in the United States and elsewhere. METHODS. Twins with moderate or severe congenital CP were identified in a cohort of 155,572 children born 1983 through 1985 in four northern California counties and surviving to 3 years. The prevalence of CP in twins and factors associated with increase in risk were examined. RESULTS. Among 2985 twins, 20 children in 18 pairs had CP. The prevalence of CP was 6.7 per thousand 3-year-old twin children (95% confidence interval [CI], 4.2 to 11), 12 per thousand twin pregnancies (95% CI, 7.2 to 19), and 1.1 per thousand singletons (95% CI, 0.97 to 1.3). Ten percent of all CP was in twins; 22% of CP in infants of less than 1500 g birth weight occurred in twins. Twins were over-represented among very low birth weight infants but their risk of CP was comparable with that of very low birth weight singletons. Twins born weighing 2500 g and more had a CP risk 3.6 times that of singletons of similar weight. In children who survived fetal death of a co-twin, CP was 108 times more prevalent (95% CI, 42 to 273) than in singletons and 13 times more prevalent (95% CI, 4.5 to 37) than in twins whose co-twin was born alive. The CP rate in unlike-sex pairs was 13 per thousand (95% CI, 4.8 to 32), not significantly different from 11 per thousand (95% CI, 5.7 to 19) for like-sex pairs. CONCLUSION. Twin pregnancies produced a child with CP 12 times more often than singleton pregnancies. The heightened risk was largely related to the tendency of twins to be low in birth weight and to a greater risk of CP in twins of normal birth weight compared with singletons of similar weight. Twins of unlike-sex pairs, necessarily dizygotic, were not at lower risk than like-sex pairs. The current increase in multiple births is likely to contribute more children with CP.

Griggs RC see **Tawil R**
Grim CE see **Rao RM**

Grisaru D, Lessing JB, Azem F, Niv J, Kupferminc M, Peyser MR: An atypical case of hemolysis, elevated liver enzymes and low platelet count (HELLP) syndrome. Int J Gynaecol Obstet 1994 Jan;44(1):67-9
An atypical case of HELLP syndrome is reported. The case is unique in that the patient lacked the usual symptoms and signs of hypertension, abdominal right upper quadrant pain, and tenderness. Early detection and immediate delivery resulted in a successful outcome.

Grove JS, Zhao LP, Quiaoit F: Correlation analysis of twin data with repeated measures based on generalized estimating equations. Genet Epidemiol 1993;10(6):539-44
Repeated measures allow additional tests of common assumptions in twin correlation analysis. Analysis of log serum triglyceride level in NHLBI male twins using generalized estimating equations disclosed that the mean and variance shifted across exams, presumably because of changes in laboratory practice.

Grunert E see **Steffen S**
Guerra B see **Zerbini M**

Guerrero Vázquez J, de Paz Aparicio P, Olmedo Sanlaureano S, Omeñaca Teres F, Luengo Casasola JL, Garcés Ramos A, Collantes García C: [Discordant acquired immunodeficiency syndrome in dizygotic twins] An Esp Pediatr 1993 Nov; 39(5):445-7 **(Spa)**

Guion-Almeida ML see **Richieri-Costa A**
Guttman R see **Fischbein S**

Guze SB: Genetics of Briquet's syndrome and somatization disorder. A review of family, adoption, and twin studies. Ann Clin Psychiatry 1993 Dec; 5(4):225-30 (20 ref.)

H

Hadi HA, Albazzaz SJ: Measurement of pulmonary capillary pressure during ritodrine tocolysis in twin pregnancies: a new noninvasive technique. Am J Perinatol 1993 Sep;10(5):351-3
Five twin pregnant women were studied during treatment of preterm labor with ritodrine. Maternal pulmonary capillary pressure (PCP) and cardiac function were measured by noninvasive simultaneous recordings of the indirect carotid pulse, electrocardiography, phonocardiography, and M-mode echocardiography. Pulmonary capillary pressure significantly increased from the control value of 9 +/- 3.0 to 18 +/- 2.2 mmHg during the infusion period of therapy. Cardiac index and preejection period to left ventricular ejection time ratio were also increased during treatment with

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ritodrine. Our findings suggest that noninvasive measurement of PCP and cardiac function may be useful in monitoring twin pregnancies that develop cardiovascular side effects during tocolytic therapy.

Haeusler MC see **Lipitz S**

Hajeer AH, MacGregor AJ, Rigby AS, Ollier WE, Carthy D, Silman AJ: Influence of previous exposure to human parvovirus B19 infection in explaining susceptibility to rheumatoid arthritis: an analysis of disease discordant twin pairs. Ann Rheum Dis 1994 Feb;53(2):137–9

OBJECTIVES--To assess the association between exposure to parvovirus B19 and susceptibility to rheumatoid arthritis (RA). METHODS--One hundred and fifty five twin pairs (76 monozygotic (MZ) and 79 dizygotic (DZ)), discordant for RA, were tested for the presence of IgG antiparvovirus antibodies using ELISA. The data obtained were analysed using conditional logistic regression, from which odds ratios and 95% confidence intervals were calculated. RESULTS--Overall, there was no association between exposure to parvovirus and RA (OR = 1.2, 95% CI: 0.7–1.7). However, in two subgroups there was a suggestion of an association. These were: (1) pairs where the affected twin was rheumatoid factor (RF) seronegative (OR = 2.0, 95% CI: 0.9–12.4) and (2) in opposite-sexed twin pairs where the affected twin was female (OR = 3.0, 95% CI: 0.9–11.6). CONCLUSION--Previous exposure to parvovirus infection did not explain disease susceptibility in both MZ and DZ discordant pairs with rheumatoid arthritis. This infection, however, might be relevant in some subgroups.

Hakuno NK, Unno N, Tsutsumi O: Ritodrine increases the risk of elevated transaminase levels in multiple pregnancy [letter] Int J Gynaecol Obstet 1994 Jan; 44(1):74–5

Hamada T see **Ishimatsu J**

Hamajima A see **Satoh K**

Hammerstein W see **Kohnen S**

Hanioka K see **Itoh K**

Hansmann M: [Fetocide in multiple pregnancy] Z Arztl Fortbild (Jena) 1993 Nov 1;87(10–11):839–45 **(Ger)**

Harris EL, Falk RT, Goldstein AM, Park LP: Clustering of high density lipoprotein cholesterol levels in premenopausal and postmenopausal female twins. Genet Epidemiol 1993;10(6):563–7

Previous family and twin studies indicate that genetic variation makes an important contribution to individual variation in high density lipoprotein cholesterol (HDL) levels, even after adjustment for covariates (such as obesity and alcohol consumption) that also cluster in families. However, most studies assume that genetic mechanisms affecting variation in HDL level are the same in all subgroups of the population (e.g., men versus women, by age). Using data from the Kaiser–Permanente Women Twins Study, we found different patterns of clustering for monozygotic (MZ) and dizygotic (DZ) twins depending on menopausal status. Premenopausal MZ twins were more similar than postmenopausal MZ twins (r(i) = 0.79 and r(i) = 0.61, respectively, after adjustment for age, alcohol consumption, smoking status, degree of obesity, and leisure-time exercise); premenopausal and postmenopausal DZ twins were alike to the same extent (r(i) = 0.31 and r(i) = 0.32, respectively, adjusted as above). These data suggest that either postmenopausal MZ twins have a greater degree of shared environment than postmenopausal DZ twins (e.g., postmenopausal female hormone use) or that genetic mechanisms that affect individual variation in HDL level differ in pre- and postmenopausal women. Data were not available on postmenopausal female hormone use. If genetic mechanisms that influence variation in HDL levels differ between pre- and postmenopausal women, genetic epidemiologic methods that assume that genetic and environmental sources of variation are the same for all groups of individuals may lead to false conclusions.

Harvald B see **McGue M**

Hasbargen U see **Knitza R**

Hasbún J, Muñoz H, von Mühlenbrock R, Pommer R, Fardella P, Yuri C: [The successful prolongation of a twin preterm pregnancy complicated by a dead fetus and disseminated intravascular coagulation] Rev Chil Obstet Ginecol 1992;57(4):293–6 (Eng. Abstr.) **(Spa)**

A clinical case of twin pregnancy with one in utero death fetus, at 24 weeks of gestation is presented, accompanied by disseminated intravascular coagulation. The successful treatment with heparin its described.

Hathout GM see **Kirlew KA**

Hay DA see **Berkovic SF**

Hayashi Y see **Itoh K**

Healy MJ see **Burke PH**

Heath A see **Kendler KS**

Heath AC, Cates R, Martin NG, Meyer J, Hewitt JK, Neale MC, Eaves LJ: Genetic contribution to risk of smoking initiation: comparisons across birth cohorts and across cultures. J Subst Abuse 1993; 5(3):221–46

Self-report data on smoking initiation (whether the respondent admitted ever having smoked) were obtained from three large adult twin samples (Australia, N = 3,808 pairs; Virginia, N = 2,145 pairs; AARP, N = 3,620 pairs). Data were broken down into birth cohorts, and genetic models were fitted to test whether the decline, in more recent birth cohorts, in the percentage of individuals becoming smokers has led to a change in the relative contributions of genes and environment to risk of becoming a smoker. Despite a marked change in the proportion of male respondents who reported ever having smoked, we found no evidence for cohort differences in genetic and environmental effects (no Genotype x Cohort interaction). Significant differences in genetic and environmental parameters were found between sexes, and between the Australian and the two U.S. samples. In the U.S. samples, estimates of the genetic contribution to risk of becoming a smoker were 60% in men, 51% in women. In the Australian sample, heritability estimates were 33% in men, but 67% in women. Significant shared environmental effects on smoking initiation also were found, accounting for 23% of the variance in U.S. men, 28% of the variance in U.S. women, 39% of the variance in Australian men, and 15% of the variance in Australian women. In models that allowed for the environmental impact of cotwin smoking on a twin's risk of smoking initiation, estimates of the direct genetic contribution to risk of smoking initiation were comparable or higher (49–58% in U.S. women and 71% in Australian women; 58–61% in U.S. men, and 37% in Australian men).

Heath AC see **Kendler KS**

Hedegaard M see **Henriksen TB**

Heinonen K see **Ollikainen J**

Heller RF see **Duffy DL**

Helms MJ see **Breitner JC**

Henderson WG see **Goldberg J**

Hengst P, Aedtner O, Kokott T: Twins--results after changing the management in pregnancy and labor.

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J Perinat Med 1993;21(4):303–8
Retrospective analysis of the results of management in pregnancy and labor of 598 pregnancies during the period 1986–1990. The influence of prophylactic and therapeutic hospitalization related to the gestational age on the complication rate for premature labor, method of delivery, fetal outcome (APGAR-score, umbilical cord-pH, neonatal mortality) will be presented. There is a need for improvement in antenatal care and the management of delivery including liberal indication for prophylactic hospitalization and for delivery by caesarean section.

Hennekens CH see **Levine RS**

Hennis BC see **Boomsma DI**

Henriksen TB, Sperling L, Hedegaard M, Ulrichsen H, Ovlisen B, Secher NJ: Cesarean section in twin pregnancies in two Danish counties with different cesarean section rates.
Acta Obstet Gynecol Scand 1994 Feb;73(2):123–8
OBJECTIVE. Based on a comparison of the clinical indications for cesarean section (CS) in two Danish counties and a review of the literature regarding this issue the aim of this study was to discuss possible explanations for variations in CS rates in twin pregnancies. The comparison of indications for CS in twin pregnancies was made between two Danish counties, one with a high and one with a low overall CS rate in twin deliveries, taking into account the distribution of parity, mother's age, gestational age at birth, and birth weight. DESIGN. A population based, historic follow-up study based on antecedent data. SETTING. Two Danish counties, with a CS rate in twin pregnancies of 57% and 28%, respectively. SUBJECTS. All women with twin pregnancies who delivered in 1989 in the two counties. MAIN OUTCOME MEASURES. Comparison of the CS rates in the two counties according to indications and fetal presentation. SECONDARY MEASURES. Perinatal and maternal outcome. RESULTS. The difference in CS rates between the two counties could not be explained by different distributions of background characteristics. Different attitudes were found towards CS in cases with previous CS, with twin A in breech presentation and in cases with vertex-breech deliveries. These differences could explain less than two thirds of the overall 29% (CI: 12–46%) difference in risk of CS between the two counties, indicating more subtle reasons for the discrepancy. No difference between the two counties in perinatal morbidity and mortality was seen. CONCLUSION. In order to understand and discuss regional variations in the use of CSs in twin deliveries the subjects must be addressed in different ways: the unequivocal indications related to fetal presentations and previous CS can be subjected to randomised controlled trials or large scaled follow-up studies regarding maternal and perinatal morbidity and mortality. Other more subtle determinants of the physicians' and the pregnant women's attitude towards CS, however, seem quantitatively important, and these can only be evaluated in observational studies and through discussions.

Henríquez R see **Sepúlveda WH**

Hepp H see **Knitza R**

al Herbish AS see **al Khani AM**

Herzog A see **Jäncke L**

Hetherington EM see **Rende RD**

Hewitt JK see **Heath AC**

Hicks C see **Ghidini A**

Hiekkaniemi H see **Ollikainen J**

Hill DJ see **Hopper JL**

Hing A, Corteville J, Foglia RP, Bliss DP Jr, Donis-Keller H, Dowton SB: Fetus in fetu: molecular analysis of a fetiform mass. Am J Med Genet 1993 Sep 1;47(3):333–41 (52 ref.)
Fetus-in-fetu is a rare condition presenting as a calcified intra-abdominal mass in the newborn infant. Over 50 cases of fetus-in-fetu have been reported since 1800. Karyotype analysis in 8 cases and protein polymorphisms in 4 documented identical findings in the host and fetiform mass. We report a case of fetus-in-fetu in a newborn female including cytogenetic and molecular studies of both the host and mass. Genotypic information from 7 polymerase chain reaction (PCR) assays representing 4 chromosomes demonstrates heterozygous and identical alleles in the infant and fetus-in-fetu at all loci studied. A review of the literature is provided including a discussion regarding the impact of molecular data on present hypotheses of fetus-in-fetu pathogenesis.

Hiroki K see **Toyoshima M**

Hixon H see **Sharony R**

Ho PC see **Chan YF**

Hoedemaker M see **Steffen S**

Hofstede P see **Corey LA**

Holligan S see **Silman AJ**

Holm N see **McGue M**

Hopp L see **Iffy L**

Hopper JL: The Australian NHMRC Twin Registry: a resource for pediatric research [letter]
Pediatr Dermatol 1993 Sep;10(3):297

Hopper JL: The Australian NHMRC Twin Registry: a resource for paediatric research [letter]
Eur J Pediatr 1993 Oct;152(10):865

Hopper JL, Seeman E: The bone density of female twins discordant for tobacco use [see comments]
N Engl J Med 1994 Feb 10;330(6):387–92
BACKGROUND. Smoking is recognized as a risk factor for vertebral, forearm, and hip fractures. Since bone density is an important determinant of bone strength, we conducted a study to ascertain whether a deficit in bone density is associated with tobacco use and, if so, to identify the responsible mechanisms. METHODS. We conducted a cross-sectional study of bone density at the lumbar spine and the femoral neck and shaft in 41 pairs of female twins (21 monozygotic pairs), 27 to 73 years of age (mean, 49), who were discordant for at least 5 pack-years of smoking (mean, 23; maximum, 64). Bone density was measured by dual-photon absorptiometry. The difference in bone density between the members of a pair was expressed as a percentage of the mean value for the pair. RESULTS. For every 10 pack-years of smoking, the bone density of the twin who smoked more heavily was 2.0 percent lower at the lumbar spine ($P = 0.01$), 0.9 percent lower at the femoral neck ($P = 0.25$), and 1.4 percent lower at the femoral shaft ($P = 0.04$). These results were not confounded by measured lifestyle factors. In the 20 pairs who were discordant by 20 or more pack-years (mean, 35), the (mean +/- SE) within-pair differences in bone density at the three sites were 9.3 +/- 3.1 percent ($P = 0.008$), 5.8 +/- 2.9 percent ($P = 0.06$), and 6.5 +/- 3.2 percent ($P = 0.05$), respectively. Smoking was associated with higher serum concentrations of follicle-stimulating hormone ($P = 0.02$) and luteinizing hormone ($P = 0.03$) and lower serum concentrations of parathyroid hormone ($P = 0.05$). Differences in spinal bone density between members of a pair were associated with differences in the serum concentrations of parathyroid hormone ($P =$

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0.01) and calcium (P = 0.05) and urinary pyridinoline excretion (P = 0.06), a marker of bone resorption. CONCLUSIONS. Women who smoke one pack of cigarettes each day throughout adulthood will, by the time of menopause, have an average deficit of 5 to 10 percent in bone density, which is sufficient to increase the risk of fracture.

Hopper JL, White VM, Macaskill GT, Hill DJ, Clifford CA: Alcohol use, smoking habits and the Junior Eysenck Personality Questionnaire in adolescent Australian twins.
Acta Genet Med Gemellol (Roma) 1992; 41(4):311-24
In 1988, questionnaires were received from 1,400 twin pairs (17% MZM, 23% MZF, 17% DZM, 19% DZF, 24% DZO) aged 11 to 18, registered with the Australian NHMRC Twin Registry. Twins reported independently on themselves and on the perceived behaviour of their parents, siblings and friends. For smoking and for drinking in the previous month, the prevalence was modelled as a logistic function of age, sex, perceived smoking or drinking behaviour of family and friends, and the Junior Eysenck Personality Questionnaire (JEPQ) scales. Strengths of association were: family behaviour, odds ratio (OR) < or = 2; Extraversion and Psychoticism, interquartile OR approximately 1.6; behaviour of friend, OR approximately 3 to 6. Twin associations were represented by odds ratios. For smoking they were 16 in MZ and 7 in DZ same-sex pairs, and 3 in DZO pairs. Although the former is consistent with genetic factors determining adolescent smoking behaviour, the reduced association in DZO pairs and strong association with smoking by friends argue to the contrary. For drinking, twin odds ratios were 11 in MZM, MZF and DZF pairs, and 4 in DZM and DZO pairs, consistent with genetic factors determining alcohol use in male but not female, adolescents. Twin odds ratios were not influenced by adjustment for the JEPQ scales; this does not support the hypothesis that genetic factors which determine personality also determine smoking or drinking behaviour during adolescence.

Hopper JL: The Australian NHMRC Twin Registry: a resource for paediatric research [letter]
Arch Dis Child 1993 Oct;69(4):472

Hopper JL see **Berkovic SF**

Horovitz J see **Saura R**

Horowitz MM see **Gale RP**

Howell RA see **Berkovic SF**

Hradil R see **van Haeringen H**

Hsieh CC, Goldman M, Pavia M, Trichopoulos D, Petridou E, Ekbom A, Adami HO: Re: "The relation between multiple births and maternal risk of breast cancer" and "multiple births and maternal risk of breast cancer" [letter] Am J Epidemiol 1994 Feb 15; 139(4):445-7

Hsieh TT, Chen CJ, Hsu JJ: Birth weight by gestational age in twin pregnancies: analysis of 661 pairs. J Formos Med Assoc 1992 Feb;91(2):195-8
The mortality of twin infants is four to five times higher than that of singletons, and one-half to two-thirds of all twins weigh < 2,500 g at birth. The appropriate interpretation of fetal growth throughout pregnancy is dependent upon the availability of adequate standards. We reviewed 661 pairs of live twin infants born at Chang Gung Memorial Hospital from 1979 to 1990. The frequency of twin births was 1.17% (1:86), and the ratio of males to females was 1.03. The frequency of preterm births (< 37 weeks) was 36.9%, the frequency of low birth weight (< 2,500 g) was 47.9% and very low birth weight (< 1,500 g) was 6.7%. A fetus grows most rapidly from the 32nd to the 35th week of gestation (200 g per week). The growth was 145 g per week from the 28th to the 32nd week and from the 35th to the 38th week of gestation. After the 38th week, the mean birth weight increased by only 35 g per week. Compared with a singleton birth, the mean birth weight of twins was about 100 g lighter during the 28th to the 32nd week, then the difference increased gradually to about 500 g at term.

Hsu CC, McConnell J, Ko TM, Braude PR: Twin pregnancy consisting of a complete hydatidiform mole and a fetus: genetic origin determined by DNA typing [published erratum appears in Br J Obstet Gynaecol 1993 Oct;100(10):897]
Br J Obstet Gynaecol 1993 Sep;100(9):867-9

Hsu JJ see **Hsieh TT**

Huguet E see **López de Munain A**

Hungerford JL see **Plowman PN**

Hyde S see ***Altshuler G***

Hyland JH see **Brück I**

Hynek K see **Preiss J**

I

Ibghi W see **Bongain A**

Iffy L, Jakobovits A, Lavenhar MA, Najem R, Hopp L, Jakobovits AA: A study of early fetal growth patterns in twin pairs. Acta Anat (Basel) 1993; 148(4):176-80
The relationships of sitting heights and body weights of fetal twin pairs were analyzed in comparison with established growth rate standards of singleton fetuses. The apparent rate of growth of individual twins scattered around the average growth curve in the same manner as singletons. In contrast, members of 12 twin pairs with < 125 mm sitting heights, were closely similar in terms of bodily dimensions. Among the 7 pairs with crown-rump lengths of > 125 mm, 4 were discordant, suggesting a deceleration of growth in one of the twin fetuses, starting after the 18th week of gestation.

Imai Y see **Itoh K**

Imaizumi K see **Kurosawa K**

Imaobong Etuk HV see **Asindi AA**

Inamori N see **Takauchi Y**

Insler V see **Blickstein I**

Inward CD, Milford DV, Taylor CM: Differing outcomes of Escherichia coli 0157 colitis in identical twins [letter] Pediatr Nephrol 1993 Dec;7(6):771-2

Ishikawa F see **Kurosawa K**

Ishimatsu J, Nakanami H, Hamada T, Yakushiji M: Color and pulsed Doppler ultrasonography of reversed umbilical blood flow in an acardiac twin. Asia Oceania J Obstet Gynaecol 1993 Sep; 19(3):271-5
Prenatal diagnosis of an acardiac twin pregnancy was performed. At 30 gestational weeks, pulsed color Doppler ultrasound revealed polyhydramnios, reversed-pulsatile blood flow in the umbilical artery and vein of the acardiac twin, and artery-artery anastomosis on the placental surface. The total cardiac dimension, maximum blood flow velocity of the ascending aorta and the pulmonary artery in the alive twin were in the normal range.

Isnard V see **Bongain A**

Itoh H see **Itoh K**

Itoh K, Imai Y, Obayashi C, Hayashi Y, Hanioka K, Itoh H: Pathological findings in dicephalus dipus dibrachius: implications for mechanisms in two pairs of lateral conjoined twins. Kobe J Med Sci 1993 Jun;39(3):95-106

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The anatomical and pathological features of two pairs of dicephalic conjoined twins (case 1 and 2) are described. Both twins showed duplicitas lateralis representing diprosopus dipus dibrachius. There were two complete heads on two necks, one thorax, one abdomen and externally normal two arms and two legs. Case 1 showed dicephalus with anencephaly, two vertebral columns and two spinal cords, which converged from the thoracic region distally. The esophagus, stomachs and partial small intestines were duplicated, which fused at yolk sac (with Meckel's diverticulum). The heart was incompletely fused. The lungs and trachea were doubled. Two spinal cords were fused from the thoracic region caudally and showed myelomeningocele and Arnold-Chiari malformation in case 2. Two larynxes and two thracheas connected with the incompletely fused three lobes of lungs. The conjoined lungs were hypoplastic. The heart was single, showing ventral septal defect, transposition of great arteries, two cuspid aortic valves and preductal aortic coarctation. The duplicated esophagi were conjoined in Y-shape and single stomach, duodenum, intestine and colon were found. There were pairs of kidneys, adrenal glands and ureters and single female genitalia in both cases. These findings indicate that the craniocaudal paleoaxes were separated in the cranial region and converted or fused under the thoracic region like a Y-shape. Further development defects and deformations might be important factors to form malformations in these case.

Iwaszkiewicz E, Czubak M, Gałecki W, Woźniak W: [Keratoconus and coexisting diseases in monozygotic twins] Klin Oczna 1992 Nov-Dec;94(11-12):345-6 (Eng. Abstr.) **(Pol)**
The study presents conditions mostly described as co-existing with the keratoconus in 7 patients (from among 300 examined) born from an uni-ovular twin pregnancy. Only one pair of twins showed keratoconus of both eyes and developing identically in both eyes.

Iwata T see **Satoh K**

J

Jackson DN see **Livesley WJ**

Jaffe R see **Sherer DM**

Jaggi F see **Geroulanos S**

Jakobovits A: [Importance of abnormal fetal presentation of twins during labor and delivery] Orv Hetil 1993 Dec 26;134(52):2869-71 (Eng. Abstr.) **(Hun)**
Utilizing the 18 year material of two institutions, the author investigated the effect of fetal lie and presentation on the labor and delivery process. Out of 541 pairs of twins, in 299 instances (55.27%) at least one of the fetuses occupied a transverse lie or presented by the breech. In the remaining 242 pairs (44.73%), both fetuses presented by the vertex. In association with premature labor, out of 239 sets of twins, in 134 instances (56.07%), the presentation of at least one of the twins was abnormal. The same phenomenon occurred in 165 out of 302 pairs (54.63%) when labor set in at term. The percentual frequency of abnormal presentations appeared to be positively related to maternal age and parity. In connection with abnormal presentations, there was an increase in the rate of cesarean sections (38.13% versus 13.21%) and that of low Apgar scores (18.18% versus 9.3%), as compared to those cases where both fetuses presented by the vertex. Of all cases of perinatal mortality, 57.76% involved twin pairs with abnormal presentation versus 42.24% for cases where both fetuses presented by the vertex.

Jakobovits A see **Iffy L**

Jakobovits AA see **Iffy L**

Jäncke L, Kaiser P, Herzog A, Steinmetz H: [Auditory lateralization in monozygotic twins: a study with dichotic consonant-vowel recall] Folia Phoniatr (Basel) 1993;45(6):295-302 (Eng. Abstr.) **(Ger)**
Auditory lateralization was examined in 21 monozygotic twin pairs (n = 42) and 52 singletons (healthy volunteers). Nine of the twin pairs were discordant for handedness, and 12 consisted of concordantly right-handed persons. All subjects were studied with a German dichotic consonant-vowel recall test using the syllables /ka/, /ta/, /pa/, /ga/, /da/ and /ba/ as stimuli. There was (i) a marked right-ear advantage in right handed singletons (as expected), (ii) no significant ear advantage among monozygotic twins (neither among those concordant nor those discordant handedness), and (iii) no relation between the direction of ear advantage within twin pairs. These data suggest that auditory lateralization is largely determined nongenetically.

Jang KL see **Livesley WJ**

Janssenswillen C see **Staessen C**

Järvinen P see **Kinnunen E**

Jaszczak P see **Thomsen JK**

Jenaway A, Swinton M: Triplets where monozygotic siblings are concordant for arson. Med Sci Law 1993 Oct;33(4):351-3
Triplets are described where the two genetically identical brothers are arsonists and both have sociopathic personality disorder rated using the Personality Assessment Schedule. The third, non-identical brother has not committed arson and does not have a personality disorder.

Jensen OH: Doppler velocimetry and umbilical cord blood gas assessment of twins.
Eur J Obstet Gynecol Reprod Biol 1993 May; 49(3):155-9
In 25 pairs of twins delivered by cesarean section, the flow velocity waveform in the umbilical artery was measured and the resistance index calculated. Umbilical artery and vein blood gases were measured at delivery. Results were tabulated by taking the difference in resistance indices between each fetus and plotting these values against the pO2-differences. The data revealed that index differences of more than 10 were of little value in detecting a pO2-difference of $>$ 1 kPa, despite a sensitivity of 100%. The predictive value was only 41%, and specificity 44%. It was obvious, however, that a pO2-difference $>$ 1 kPa occurred only when the resistance index was 76% or more in one fetus and below 76% in the other. The sensitivity of this index parameter was 100%, predictive value 64%, and specificity 78%. In conclusion, the pO2-level in a fetus seems to be unaffected by the impedance in umbilical circulation as long as the resistance index is below 76%. Above this value, there is a significant risk for fetal hypoxaemia.

Jesse MJ see **Levine RS**

Johns DR, Smith KH, Miller NR, Sulewski ME, Bias WB: Identical twins who are discordant for Leber's hereditary optic neuropathy. Arch Ophthalmol 1993 Nov;111(11):1491-4
OBJECTIVE: Leber's hereditary optic neuropathy is a maternally inherited form of visual loss that is associated with several mitochondrial DNA mutations. These mitochondrial DNA mutations are

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not the sole determinants of visual loss, as epigenetic factors may play a pathogenetic role. To clarify the role of these factors, we studied two visually discordant twins and determined their zygosity and mitochondrial genotype. DESIGN: Case series. SETTING: Referral center. PATIENTS: Identical twin brothers from a family with the 11778 mitochondrial DNA mutation. MAIN OUTCOME MEASURES: Visual acuity, results of testing for visual fields (measured with static and dynamic perimetry) and color vision, and results of funduscopic examination; alcohol and tobacco use, head trauma, co-existent medical illness, and occupational exposure; and results of mitochondrial DNA analysis and determination of zygosity. RESULTS: The monozygous twin brothers have remained discordant for the development of optic neuropathy for 6 1/2 years despite harboring the identical homoplasmic 4216, 13708, and 11778 mitochondrial DNA mutations. CONCLUSIONS: The patients are visually discordant despite being genetically identical at the nuclear and mitochondrial levels. Epigenetic factors are important determinants of visual loss in Leber's hereditary optic neuropathy in these brothers. Among those factors studied in these patients, a substantial difference was noted in regard to occupational exposure to toxic substances. Epigenetic factors that may influence the clinical expression of the mitochondrial DNA mutations associated with Leber's hereditary optic neuropathy should be systematically studied. Risk-factor intervention strategies should be formulated and implemented.

Johnson K see **López de Munain A**
Johnson M see **Abbas A**
***Johnson* MP** see ***Evans* MI**
Johnson TR see **Lantz ME**
Jones DW see **Bartley AJ**
Jones MH see **Carlan SJ**
Jorquera H see **Daher V**
Julkunen H see **Kaaja R**

K

Ka K see **Toyoshima M**

Kaaja R, Julkunen H, Ammälä P, Kurki P, Koskimies S: Congenital heart block in one of the HLA identical twins.
Eur J Obstet Gynecol Reprod Biol 1993 Sep; 51(1):78–80
A case of HLA identical twins with one affected by congenital heart block is reported. Both twins, as their mother, had more than 12-fold higher anti-Ro antibody titers compared to healthy controls, but no differences were observed between the affected and the healthy baby. It is possible that there is a third factor causing the manifestation of this disease.

Kagan J see **Plomin R**

Kainer F, Rodriguez J, Maier R, Dudenhausen JW: Diastolic zero-flow in the umbilical artery in twin pregnancies. J Perinat Med 1993;21(4):273–7
Clinical arterial blood flow measurements in single pregnancies can not be precisely estimated yet. ARED (absent or reverse end diastolic) flow of the umbilical artery (UA) commonly indicates a symptom of fetal jeopardy. The interpretation of blood flow measurement in twin pregnancies is still controversial. On one hand, no differences in a single pregnancies are found, and on the other hand, increased resistance indices have been reported. In the feto-fetal transfusion syndrome mostly there are normal blood flow measurements. When pathological blood flow occurs, usually it affects the donor. By means of 4 case reports with ARED flow, the value of the investigation method in management of twin pregnancies is demonstrated. Three out of four fetuses with an ARED flow in the UA have died. Case fetus with a normal flow velocimetry survived. Even feto-fetal transfusion syndrome may cause pathological blood flow curves. In fetuses with ARED-flow in the UA fetal hypoxia and acidosis are to be expected. A careful evaluation of the cardiotocogram is indicated with a viable fetus. A possible fetal disturbance may be seen early in blood flow curves and may help provide better obstetrical management.

Kaiser P see **Jäncke L**
Kalish VB see **Sarno AP Jr**

Kao PC, Matheny AP Jr, Lang CA: Insulin-like growth factor-I comparisons in healthy twin children.
J Clin Endocrinol Metab 1994 Feb;78(2):310–2
Insulin-like growth factor-I (IGF-I) levels in plasma were measured in healthy twin children. The within-pair correlation for 43 monozygotic pairs was $r = 0.91$ ($P < \text{or} = 0.0001$), an association significantly higher than that for same sex dizygotic pairs ($r = 0.40$; $P < \text{or} = 0.06$). The high correlation for monozygotic twins indicated a marked genetic influence on IGF-I levels. After correction for age and sex, the correlation between IGF-I level and height was $r = 0.38$ ($P < \text{or} = 0.0001$). These findings provide clear evidence that IGF-I levels correlate with height, a growth characteristic known to be genetically controlled.

Karna P see **Valduss D**
Katila ML see **Ollikainen J**

Kato K, Fujiki K: *Multiple births and congenital* anomalies in Tokyo Metropolitan Hospitals, 1979–1990. Acta Genet Med Gemellol (Roma) 1992; 41(4):253–9
The rate of multiple births and the incidence of congenital anomalies in Tokyo Metropolitan Hospitals were studied during the period 1979–1990. The number of twins was 968 pairs (8.23 per 1,000 deliveries) and of triplets 18 sets (15.3 per 100,000 deliveries) among 117,672 deliveries including 1,587 stillbirths after 16 weeks gestation. Multiple birth rates increased yearly. Stillbirth rates in twins and triplets were 5.5% and 16.7% respectively, which were both significantly higher than that in singletons (1.3%). The number of congenital anomalies was 42 in 1,936 twins (2.17%), 2 in 54 triplets (3.7%) and 1721 in 116,686 singletons (1.47%). The most common defects in twins were those of the cardiovascular system (0.72% in twins vs 0.52% in singletons) and of the musculoskeletal system (0.72% in twins vs 0.50% in singletons), followed by upper respiratory tract and/or mouth conditions (0.67% in twins vs 0.35% in singletons), all of which had no significant difference in frequency between twins and singletons. Though some anomalies had a significantly higher frequency in twins than in singletons, the concordance rate in the like-sexed twins was very low.

Kellar-Wood H see **Mumford CJ**

Kendler KS: Twin studies of psychiatric illness. Current status and future directions.
Arch Gen Psychiatry 1993 Nov;50(11):905–15 (99 ref.)

Kendler KS, Neale MC, Kessler RC, Heath AC, Eaves LJ: A longitudinal twin study of personality and major depression in women.
Arch Gen Psychiatry 1993 Nov;50(11):853–62

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OBJECTIVE: To elucidate the nature of the etiologic relationship between personality and major depression in women. DESIGN: A longitudinal twin design in which twins completed a time 1 questionnaire and, 15 months later, were personally interviewed for the occurrence of major depression during the last year and completed a time 2-questionnaire. Both questionnaires contained short forms assessing neuroticism and extraversion. PARTICIPANTS: 1733 twins from female-female pairs ascertained from the population-based Virginia Twin Registry. RESULTS: Extraversion was unrelated to lifetime or 1-year prevalence of major depression. Neuroticism was strongly related to lifetime prevalence of major depression and robustly predicted the prospective 1-year prevalence of major depression in those who, at time 1, denied previous depressive episodes. However, controlling for levels of neuroticism at time 1, levels of neuroticism at time 2 were moderately elevated in those who had had an episode of major depression between times 1 and 2 ("scar" effect) and substantially elevated in those experiencing an episode of major depression at time 2 ("state" effect). In those who developed major depression, levels of neuroticism did not predict time to onset. In the best-fit longitudinal twin model, the proportion of the observed correlation between neuroticism and the liability to major depression that is due to shared genetic risk factors was estimated at around 70%, that due to shared environmental risk factors at around 20%, and that due to a direct causal effect of major depression on neuroticism (via both "scar" and "state" effects) at around 10%. Approximately 55% of the genetic liability of major depression appeared to be shared with neuroticism, while 45% was unique to major depression. CONCLUSION: In women, the relationship between neuroticism and the liability to major depression is substantial and largely the result of genetic factors that predispose to both neuroticism and major depression.

Kendler KS, Neale MC, Kessler RC, Heath AC, Eaves LJ: A longitudinal twin study of 1-year prevalence of major depression in women.
Arch Gen Psychiatry 1993 Nov;50(11):843-52
OBJECTIVES: This study seeks to clarify the etiologic importance and temporal stability of the genetic and environmental risk factors for 1-year prevalence of major depression (1YP-MD) in women. DESIGN: One-year prevalence of major depression was personally assessed, using DSM-III-R criteria, at two time points a minimum of 1 year apart. PARTICIPANTS: Both members of 938 adult female-female twin pairs ascertained from the population-based Virginia Twin Registry. RESULTS: The correlation in liability to 1YP-MD was much greater in monozygotic (MZ) than in dizygotic (DZ) twins at time 1 alone, time 2 alone, or at either time 1 or time 2. Model fitting suggested that the liability to 1YP-MD was due to additive genes and individual specific environment with a heritability of 41% to 46% and was not biased by violations of the equal environment assumption. Jointly analyzing both times of assessment using a longitudinal twin model suggested that, over a 1-year period, genetic effects on the liability to 1YP-MD were entirely stable, while environmental effects were entirely occasion specific. CONCLUSIONS: These results suggest that: (1) genetic factors play a moderate etiologic role in the 1YP-MD, (2) the temporal stability of the liability to major depression in adult women is largely or entirely genetic in origin, and (3) environmental factors play a significant role in the etiology of major depression, but their effects are generally transitory and do not result in enduring changes in the liability to illness.

Kendler KS, Neale M, Kessler R, Heath A, Eaves L: A twin study of recent life events and difficulties.
Arch Gen Psychiatry 1993 Oct;50(10):789-96
OBJECTIVES: To examine the role of genetic and familial-environmental factors in the origin of stressful life events. DESIGN: Self-report questionnaires describing stressful life events in the last year. PARTICIPANTS: Both members of 2315 twin paris ascertained from the population-based Virginia Twin Registry. RESULTS: Life events were modestly but significantly correlated in twin pairs, and correlations in monozygotic (MZ) twins consistently exceeded those in dizygotic (DZ) twins. For total life events, the best-fitting twin model indicated that familial-environmental and genetic factors each accounted for around 20% of the total variance. Individual life events could be best divided into "network events" (directly affecting individuals in the respondent's social-network) where twin resemblance was due solely to the familial environment, and "personal" events (directly affecting the response) where most twin resemblance was the result of genetic factors. CONCLUSIONS: While neither genes nor familial environment is likely to directly produce life events, personal and social factors that predispose to life events are substantially influenced by an individual's genetic and family background. These results, which suggest that stressful life events reflect more than random influences, may have important implications for our understanding of the relationship between stressful life events and psychopathology.

Kessler R see **Kendler KS**

Kessler RC see **Kendler KS**

Ketonen L see **Kinnunen E**

al Khani AM, al Herbish AS: Hallermann-Streiff syndrome in one of dizygotic twins [letter]
Am J Med Genet 1994 Jan 15;49(2):251-2

Kiely JL see **Powers WF**

Kingston JE see **Plowman PN**

Kinnunen E, Järvinen P, Ketonen L, Sepponen R: Co-twin control study on cerebral manifestations of systemic lupus erythematosus. Acta Neurol Scand 1993 Dec;88(6):422-6
All available twin pairs systemic lupus erythematosus (SLE) derived from the Finnish Twin Cohort were studied by clinical evaluation, magnetic resonance imaging (MRI), anticardiolipin (aCL), and antineurofilament (ANFA) antibodies. One of the five monozygotic and one of the eight dizygotic pairs were concordant for SLE. 10 of the 15 patients showed clinical neurological abnormalities, and 11 had abnormal MRI of the brain. Altogether, 12 patients were considered to have neuropsychiatric lupus (NPSLE). Seven of the 11 patients with long-term corticosteroid treatment had either central or cortical atrophy. High or moderate aCL level was found in eight patients and two co-twins. Of them, six patients had at least two manifestations of the antiphospholipid syndrome. ANFAs were found in five patients and four co-twins. Five co-twins fulfilled some of the SLE criteria. Of them, three MZ twins and one additional DZ co-twin with no ARA criteria had findings suggesting central nervous system (CNS) involvement. The results indicate that the majority of SLE patients has cerebral abnormalities either as a result of SLE, or concomitant risk factors. The co-twins without clinical SLE often have minor signs of SLE, and

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even they may have neurological and MRI abnormalities. However, their aCL and ANFA levels seem not to correlate with MRI abnormalities.

Kinouchi K see **Takauchi Y**

Kirlew KA, Hathout GM, Reiter SD, Gold RH: Os odontoideum in identical twins: perspectives on etiology. Skeletal Radiol 1993 Oct;22(7):525–7
Most authorities favor the hypothesis of an acquired etiology of os odontoideum. We present the cases of identical twin sisters with os odontoideum in association with a congenital partial fusion of the posterior elements of the second and third cervical vertebrae, and discuss the implications. We believe that this is the first report of familial os odontoideum in a context which suggests a genetic etiology.

Kjellmer I see **Lindberg B**

Klein H see **Walker R**

Kleskeň P see **Plank K**

Klosa W see **Prömpeler HJ**

Kluft C see **Boomsma DI**

Knitza R, Ott M, Hasbargen U, Hepp H: Duration of the multifetal gestation, birth weight and infant prognosis. J Perinat Med 1993;21(4):295–8
For the higher numbered multifetal gestation, duration of gestational age decreases in spite of different medical activities. On the other hand increasing gestational age often strongly suggests the need for delivery by caesarean section for maternal indications. After the 32nd week of gestation in general no serious respiratory problems should be expected, and there may be no essential increase in fetal weight, but the risk of intrauterine death increases due to placental insufficiency. Therefore, for logistic reasons we propose liberal indications for caesarean section after the 32nd week of the multifetal gestation.

Knox SS, Follmann D: Gender differences in the psychosocial variance of Framingham and Bortner Type A measures. J Psychosom Res 1993 Oct; 37(7):709–16
The object of the present study was to determine whether the non-genetic variance of a Type A scale composed of Framingham and Bortner items had gender specific psychosocial components. The study was performed on a group of Swedish twins so that variance explained by heritability for Type A could first be removed from the equation. The overall Type A score had been found to relate to self-reported CHD in this population. The dependent variable was the standardized score residual remaining after removing the genetic variance (i.e., that explained by co-twin score and zygosity). Multiple regression analyses revealed that there were differences in the psychosocial components of the Type A residual in men and women. These results are discussed in terms of culturally accepted gender roles and their possible implications for health endpoints.

Ko S see **Pretorius DH**

Ko TM see **Hsu CC**

Kobayashi H see **Gill Super HJ**

Kohnen S, Hammerstein W: [Refsum syndrome in a pair of monozygotic twins] Ophthalmologe 1993 Oct;90(5):519–21 (Eng. Abstr.) **(Ger)**
We report the case of a pair of twins with the ophthalmological and functional findings of Refsum syndrome. The twins were monozygotic twin brothers whose ophthalmological symptoms were noticed when they were in their forties. The diagnosis in the first brother led to a search for findings in the second. It was possible to attribute the non-specific subjective complaints to this as yet unknown syndrome. No causal therapy can be offered the patients. However, knowledge of the biochemical basis of the disease makes it possible to treat it by means of diet. In patients with retinopathia pigmentosa, an attempt should be made to identify Refsum syndrome if neurological symptoms are found in addition.

Kokott T see **Hengst P**

Koprowski C see **Richardson JL**

Koren G see **Zemlickis D**

Korppi M see **Ollikainen J**

Koskimies S see **Kaaja R**

Krabbe JK see **Pretorius DH**

Kringlen E see **Skre I**

Kringlen E see **Torgersen S**

Kruyer H, Milà M, Glover G, Carbonell P, Ballesta F, Estivill X: Fragile X syndrome and the (CGG)n mutation: two families with discordant MZ twins. Am J Hum Genet 1994 Mar;54(3):437–42
The fragile X phenotype has been found, in the majority of cases, to be due to the expansion of a CGG repeat in the 5'-UTR region of the FMR-1 gene, accompanied by methylation of the adjacent CpG island and inactivation of the FMR-1 gene. Although several important aspects of the genetics of fragile X have been resolved, it remains to be elucidated at which stage in development the transition from the premutation to the full mutation occurs. We present two families in which discordance between two sets of MZ twins illustrates two important genetic points. In one family, two affected MZ brothers differed in the number of CGG repeats, demonstrating in vivo mitotic instability of this CGG repeat and suggesting that the transition to the full mutation occurred postzygotically. In the second family, two MZ sisters had the same number of repeats, but only one was mentally retarded. When the methylation status of the FMR-1 CpG island was studied, we found that the majority of normal chromosomes had been inactivated in the affected twin, thus leading to the expression of the fragile X phenotype.

Ksiazek TG see **Barton LL**

Kupferminc M see **Grisaru D**

Kurki P see **Kaaja R**

Kuroki Y see **Kurosawa K**

Kuromaru R see **Kurosawa K**

Kurosawa K, Kuromaru R, Imaizumi K, Nakamura Y, Ishikawa F, Ueda K, Kuroki Y: Monozygotic twins with discordant sex.
Acta Genet Med Gemellol (Roma) 1992; 41(4):301–10
A nine-year-old girl with short stature was referred to the department of pediatrics at Kyushu University. The clinical diagnosis was Turner syndrome; karyotypic analysis performed on peripheral blood, using GTG techniques, demonstrated a 45,X/47,XYY (17:83) mosaicism. Her twin brother, a phenotypically normal male, had the same karyotype; 45,X/47,XYY (3:97) on peripheral blood. Their skin fibroblast karyotypes showed the same mosaicism, ie. 45,X/47,XYY (41:59 and 31:69 respectively). On eleven biochemical genetic markers the twin pair were concordant, thus the likelihood of monozygosity was 0.99527034. In addition, the analysis of variable number of tandem repeat (VNTR) markers revealed the likelihood of monozygosity to be 0.99944386. The most plausible explanation of the X/XYY mosaicism was nondisjunction of the Y in the first cleavage division of the 46,XY zygote. A disproportionate rate of cell populations with 45,X and 47,XYY in the twinning process of the X/XYY embryo, especially in the germ lines, would result in discordant sex in twin

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pairs.
Kuroume T see **Nako Y**
Kustermann A see **Zoppini C**

L

La Placa M see **Zerbini M**
Lachat M see **Geroulanos S**
Lachev V see **Shtereva K**
Lage JM see **Steller MA**
Lage JM see **Trask C**
Lander M, Oosterhof H, Aarnoudse JG: Death of one twin followed by extremely variable flow velocity waveforms in the surviving fetus.
Gynecol Obstet Invest 1993;36(2):127–8
Intrauterine death of one fetus after the second trimester in a twin pregnancy, with continuation of the pregnancy is a rare complication. The risks of morbidity and mortality for the surviving fetus are high. A 32-year-old woman was admitted to the antenatal ward at 27 weeks gestation because of intrauterine death of one twin. During the first 24 h after the death of one twin, Doppler ultrasound assessment showed a remarkable variability in flow velocity waveforms in the umbilical artery of the surviving fetus. Changes from reversed to normal end-diastolic flow velocities were recorded within 6 min. These findings are explained by twin-to-twin transfusion due to intravascular blood pressure changes, or by release of vasoactive substances by the dead fetus.
Lane HC see **Walker R**
Lang CA see **Kao PC**
Lantz ME, Johnson TR: Multiple pregnancy.
Curr Opin Obstet Gynecol 1993 Oct;5(5):657–63 (47 ref.)
The incidence of multiple gestations has increased markedly over the past decade. This review will focus on new interventions and techniques such as selective fetal reduction, optimizing maternal weight gain, bed rest, home uterine monitoring, ultrasound, and Doppler velocimetry, which have been employed to improve outcomes in these pregnancies.
Lapour K see **Valduss D**
Larson M see **Walker R**
Las Heras J see **Villablanca E**
Lauer C see **Check JH**
Launay V see **Pedailles S**
Lavenhar MA see **Iffy L**
Layman LC see **Vandermolen DT**
Lee CY see **Chou YH**
Lehman D: Twins: one with hydrocephalus and intracranial calcifications, the other with none.
Pediatr Infect Dis J 1993 Dec;12(12):1037, 1038–40
Leitman SF see **Walker R**
Leon D see **Vågerö D**
Leonard CH, Piecuch RE, Ballard RA, Cooper BA: Outcome of very low birth weight infants: multiple gestation versus singletons. Pediatrics 1994 Apr; 93(4):611–5
OBJECTIVE. Multiple gestation infants are overrepresented in intensive care nurseries, and have been reported to have greater morbidity than singletons. A cohort of very low birth weight infants was examined to determine outcome of premature infants based on gestation type (multiple or single) and hypothesized that at this low birth weight, the outcome of the groups would be similar. METHOD. The sample was composed of all infants with birth weights < or = 1250 g born in a 10-year period (September 1977 through September 1987). Ninety-two percent (n = 364) of the infants discharged were seen at 1 year of age, and 73% (n = 249) were observed to school age. Morbidity was assessed by neurodevelopmental examinations and standard developmental tests. RESULTS. At 1 year of age and at school age, there were no differences in neurologic or neurosensory outcome between multiple gestation and single gestation infants. Logistic regression analyses were performed on the school age data, using cognitive outcome as the dependent variable and gestation type, birth weight, gestational age, intracranial hemorrhage, chronic lung disease, and a social risk factor as predictor variables. Gestation type was not associated with cognitive outcome at school age. Social risk factors and chronic lung disease showed an association with cognitive outcome at school age. CONCLUSIONS. Multiple gestation was not related to increased morbidity in this very low birth weight group. The developmental outcome of all infants with birth weights < or = 1250 g in this study was related to medical and social risk factors. These findings were consistent for a large group of infants over a 10-year period.
Lessing JB see **Grisaru D**
Lessing JB see **Yaron Y**
Levesque D see **Eberle AM**
Levine MG see **Danford DA**
Levine RS, Hennekens CH, Jesse MJ: Blood pressure in prospective population based cohort of newborn and infant twins. BMJ 1994 Jan 29;308(6924):298–302
OBJECTIVE--To describe blood pressure in twins during infancy. DESIGN--Prospective study of cohort of twins. SETTING--Teaching hospital in Florida. SUBJECTS--166 viable twin pairs born between July 1976 and December 1989. MAIN OUTCOME MEASURES--Blood pressure and body weight at birth, at 14 days, and at 1, 3, 6, 9, and 12 months. RESULTS--Both systolic and diastolic pressure correlated with body weight throughout infancy (at birth $r = 0.41$, $P < 0.001$ and $r = 0.42$, $P < 0.001$ respectively; at 1 year $r = 0.23$, $P < 0.001$ and $r = 0.26$, $P < 0.001$ respectively). In infants weighing < 1500 g at birth mean blood pressure rose from about 45/25 mm Hg to 101/55 mm Hg from birth to the age of 1 year, while in infants weighing > 3000 g at birth it rose from 63/39 mm Hg to 100/61 mm Hg; corresponding mean body weights at 1 year were 7.86 kg and 9.88 kg. Differences in birth weight within pairs of monozygotic twins were negatively correlated with such differences in systolic blood pressure at 1 year ($r = -0.37$, $P < 0.01$). CONCLUSIONS--Blood pressure and body weights in twins showed strongly positive but generally declining correlations throughout infancy. Twins of lower birth weight showed a more rapid rate of rise in blood pressure during infancy. At 1 year the catch up in blood pressure exceeded that in body weight. Greater differences in birth weights between monozygotic twins were associated with smaller differences in systolic blood pressure at 1 year, suggesting that intrauterine environmental factors related to birth weight are important in determining blood pressure in infancy.
Lewin A see **Benshushan A**
Lewin A see **Shushan A**
Lichtermann D see **Maier W**
Lindberg B, Kjellmer I, Wennergren M, Rydhström H: [Multiple pregnancy. An increasing obstetric and pediatric problem] Lakartidningen 1994 Mar 2; 91(9):806, 809–11 **(Swe)**
Linkowski P see **Degaute JP**
Lipitz S, Reichman B, Uval J, Shalev J, Achiron R,

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Barkai G, Lusky A, Mashiach S: A prospective comparison of the outcome of triplet pregnancies managed expectantly or by multifetal reduction to twins. Am J Obstet Gynecol 1994 Mar;170(3):874–9
OBJECTIVE: Our aim was to compare the outcome of triplet pregnancies managed expectantly or by multifetal reduction to twins. STUDY DESIGN: From January 1984 through January 1992, 140 triplet gestations were diagnosed before the ninth gestational week. Multifetal pregnancy reduction was performed at the patient's request in 34 women. The remaining 106 triplet pregnancies were managed expectantly. All patients were prospectively followed up and delivered in a single perinatal department. RESULTS: Loss of the entire pregnancy before 25 gestational weeks occurred in 20.7% of the triplet pregnancies managed expectantly as compared with 8.7% in the group with reduction to twins. A successful pregnancy as defined by the discharge home of at least one infant occurred in 88.2% of the group with reduction to twins and 74.5% of the triplets managed expectantly. Fetal reduction to twins was associated with a significantly lower incidence of the following: prematurity ($p < 0.001$), low-birth-weight infants ($p < 0.001$), and very-low-birth-weight infants ($p < 0.001$). Pregnancy complications and neonatal morbidity and mortality were less in the group with reduction to twins. CONCLUSIONS: Multifetal pregnancy reduction of triplet pregnancies to twins resulted in improved pregnancy outcome without an excess loss of the entire pregnancy as compared with the outcome of triplet gestations managed expectantly.

Lipitz S, Seidman DS, Alcalay M, Achiron R, Mashiach S, Reichman B: The effect of fertility drugs and in vitro methods on the outcome of 106 triplet pregnancies. Fertil Steril 1993 Dec;60(6):1031–4
OBJECTIVE: To compare the effect of fertility drugs and IVF on the outcome of triplet pregnancies. DESIGN: Prospective clinical study. SETTING: A single university medical center. PATIENTS: One hundred six consecutive triplet pregnancies treated from 1984 through 1992. MAIN OUTCOME MEASURES: The frequency of pregnancy loss, livebirths, and antenatal and neonatal complications was compared in spontaneous, clomiphene citrate (CC), menotropins, and IVF triplet pregnancies. RESULTS: Eighty-one of the 106 (76.4%) triplet pregnancies progressed beyond 25 weeks, comprising 6 of 7 (85.7%) spontaneous pregnancies, 13 of 16 (81.2%) CC induced, 44 of 56 (78.6%) menotropin induced, and 18 of 27 (66.6%) IVF gestations. There were no significant differences in the stillbirth and neonatal mortality rates according to the mode of conception. The mean gestational ages and the mean birth weights were similar in the four groups. The frequency of premature contractions, premature rupture of membranes, cesarean section, and neonatal complications were similar in the ovulation induction and IVF pregnancies. CONCLUSION: Triplet pregnancies after ovulation induction and IVF have a similar outcome.

Lipitz S, Robson SC, Ryan G, Haeusler MC, Rodeck CH: Management and outcome of obstructive uropathy in twin pregnancies.
Br J Obstet Gynaecol 1993 Sep;100(9):879–80

Lipitz S, Yaron Y, Shalev J, Achiron R, Zolti M, Mashiach S: Improved results in multifetal pregnancy reduction: a report of 72 cases.
Fertil Steril 1994 Jan;61(1):59–61
OBJECTIVE: To evaluate pregnancy outcome after either transabdominal or transvaginal multifetal pregnancy reduction. DESIGN: A study of 72 consecutive multifetal pregnancy reductions. SETTING: Department of Obstetrics and Gynecology, The Chaim Sheba Medical Center Tel Hashomer, Israel. PATIENTS: Seventy-two patients with multifetal pregnancies: 2 twins, 27 triplets, 26 quadruplets, 10 quintuplets, 3 sextuplets, 1 septuplet, 2 nontuplets, and one pregnancy with 12 fetuses. INTERVENTION: Multifetal pregnancy reduction was performed at 9 to 13 weeks' gestation by either transabdominal or transvaginal potassium chloride injection. MAIN OUTCOME MEASURES: Early and late complications related to the procedure, outcome of pregnancy, and comparison of two periods. RESULTS: Procedures performed between 1984 and 1989 (36 patients) were associated with a 33.3% pregnancy loss, whereas those performed between 1990 and 1992 (36 patients) were associated with no pregnancy loss. Of the 17 patients with quintuplets or more, 10 (59%) delivered live and healthy newborns. No difference was found when comparing the transabdominal and the transvaginal approaches. CONCLUSIONS: Both transvaginal and transabdominal approaches are comparable. There is a remarkable decrease in pregnancy loss with experience.

Lishner M see **Zemlickis D**

Livesley WJ, Jang KL, Jackson DN, Vernon PA: Genetic and environmental contributions to dimensions of personality disorder.
Am J Psychiatry 1993 Dec;150(12):1826–31
OBJECTIVE: The authors estimated the heritability of the basic dimensions of personality disorder and the relative proportions of the variance attributable to genetic and environmental sources. METHOD: The subjects were 175 volunteer twin pairs (90 monozygotic and 85 dizygotic) from the general population. Each twin completed the Dimensional Assessment of Personality Pathology, a questionnaire that assesses 18 dimensions of personality disorder. The questionnaire was developed on the basis of factor analytic studies that identified a stable structure underlying personality disorders in clinical and nonclinical subjects. Structural equation model-fitting methods were used to estimate the influence of additive genetic, common environmental, and unique environmental effects. RESULTS: The estimates of broad heritability ranged from 0%, for conduct problems, to 64%, for narcissism. Behaviors associated with submissiveness and attachment problems had low heritability. For most dimensions, the best-fitting model was one that specified additive genetic and unique environmental effects. CONCLUSIONS: These results are similar to those reported for normal personality and suggest a continuity between normal and disordered personality.

Lloreta J see **Degoul F**

Lockwood CJ see **Ghidini A**

López de Munain A, Cobo AM, Huguet E, Marti Massó JF, Johnson K, Baiget M: CTG trinucleotide repeat variability in identical twins with myotonic dystrophy [letter] Ann Neurol 1994 Mar;35(3):374–5

Loutradis D see **Michalas S**

Luengo Casasola JL see **Guerrero Vázquez J**

Lurie S, Blickstein I: Age distribution of erythrocyte population in women with twin pregnancy.
Gynecol Obstet Invest 1993;36(3):163–5
An evaluation of the age distribution of erythrocytes in twin gestation was performed. Based on previous studies on age distribution of erythrocytes in late pregnancy, we have proposed that a more

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pronounced shift in age distribution of erythrocytes in twin pregnancy may be expected. We have used the density distribution of cells method for evaluation of age distribution of erythrocytes in women with twin pregnancies. Control curves for pregnant and nonpregnant women were obtained from our recently published studies. The cumulative density distribution of cells curve of erythrocytes of women with twin gestation was evidently shifted to the right as compared with the curve of erythrocytes of women with single gestation. The shift in age distribution of erythrocytes may suggest that erythrocytes in women with twin gestation have a shorter life span as compared to the life span of erythrocytes in women with singles. The age distribution shift of erythrocytes in women with twin gestation may be attributed to human placental lactogen augmentation of erythropoietin action.

Lusky A see **Lipitz S**

Luthy DA see **Reisner DP**

Lygren S see **Skre I**

Lykken DT, Bouchard TJ Jr, McGue M, Tellegen A: Heritability of interests: a twin study.
J Appl Psychol 1993 Aug;78(4):649-61
The authors administered inventories of vocational and recreational interests and talents to 924 pairs of twins who had been reared together and to 92 pairs separated in infancy and reared apart. Factor analysis of all 291 items yielded 39 identifiable factors and 11 superfactors. The data indicated that about 50% of interests variance (about two thirds of the stable variance) was associated with genetic variation. The authors show that heritability can be conservatively estimated from the within-pair correlations of adult monozygotic twins reared together. Evidence for nonadditive genetic effects on interests may explain why heritability estimates based on family studies are so much lower. The authors propose a model in which precursor traits of aptitude and personality, in part genetically determined, guide the development of interests through the mechanisms of gene-environment correlation and interaction.

Lynch L, Berkowitz RL: Maternal serum alpha-fetoprotein and coagulation profiles after multifetal pregnancy reduction.
Am J Obstet Gynecol 1993 Oct;169(4):987-90
OBJECTIVE: Our purpose was to determine the effect of first-trimester multifetal pregnancy reduction on maternal serum alpha-fetoprotein and coagulation profiles in the second trimester. METHODS: Maternal serum alpha-fetoprotein was determined in 57 patients 1.5 to 10 weeks after multifetal pregnancy reduction, and coagulation profile was determined in 17 patients 2 to 5 weeks after the procedure. All but one had living twins at the time of testing. RESULTS: All patients had elevated maternal serum alpha-fetoprotein levels (mean 11.6 +/- 7.6 multiples of the median) compared with normal twin values (< 3.5 multiples of the median). There was a positive correlation between maternal serum alpha-fetoprotein level and the number of dead fetuses and a negative correlation between maternal serum alpha-fetoprotein level and the number of weeks elapsed since multifetal pregnancy reduction. Amniotic fluid alpha-fetoprotein was measured in 10 patients and was normal. Fibrin split products were positive in 1 of 17 patients, intermediate in two of 17 and negative in 14 of 17. Prothrombin time, partial thromboplastin time, fibrinogen, and platelet counts remained normal. None of the patients had clinical evidence of disseminated intravascular coagulation, and treatment for that condition was not given. CONCLUSIONS: Maternal serum alpha-fetoprotein in the second trimester is always elevated after multifetal pregnancy reduction and is not necessarily indicative of fetal defects. This elevation is probably caused by release of tissue or serum from the dead fetus(es). Amniocentesis is not indicated in these cases, but ultrasonography to evaluate fetal anatomy should be considered because maternal serum alpha-fetoprotein cannot be used in these patients to screen for fetal defects. Some patients can have laboratory evidence of disseminated intravascular coagulation after multifetal pregnancy reduction, but it may resolve spontaneously.

Lynch L see **Evans MI**

Lynch L see **Ghidini A**

Lyons MJ see **Eisen SA**

Lyons MJ see **Goldberg J**

M

McAllister CG see **Rapaport MH**

McArdle EK see **Thomas DA**

Macaskill GT see **Hopper JL**

McClearn GE see **Coccaro EF**

McConnell J see **Hsu CC**

McDermott M see **Briant L**

McDonald WM see **Breitner JC**

McFadden D: A masculinizing effect on the auditory systems of human females having male co-twins.
Proc Natl Acad Sci U S A 1993 Dec 15; 90(24):11900-4
Spontaneous otoacoustic emissions (SOAEs) are continuous, essentially tonal sounds that are produced by many normal-hearing cochleas. In humans, females generally exhibit more SOAEs than males, a sex difference that exists from birth. However, it is shown here that females having male co-twins [opposite-sex dizygotic (OSDZ) females] exhibit about half the average number of SOAEs per ear observed in same-sex female twins or female non-twins. Indeed, the average in OSDZ females is about the same as that seen in males--twins or non-twins. The explanation offered here is that prenatal exposure to high levels of androgens has produced a masculinizing effect on the auditory systems of these OSDZ females. Prenatal masculinizing effects have long been recognized in certain litter-bearing mammals, but their existence in humans is not well-studied.

MacFadyen UM see **Thomas DA**

McFarland HF see **Martin R**

McFarlin DE see **Martin R**

McGahan JP, Mahony B: Twin pregnancies in women in an alpha-fetoprotein screening program [comment] AJR Am J Roentgenol 1993 Nov; 161(5):1015-7

MacGregor AJ, Fox H, Ollier WE, Snaith ML, Silman AJ: An identical twin pair discordant for rheumatoid arthritis and ankylosing spondylitis.
Clin Exp Rheumatol 1993 Jul-Aug;11(4):425-8
Both rheumatoid arthritis (RA) and ankylosing spondylitis (AS) have an increased familial occurrence and each disease is associated with the inheritance of specific HLA antigens. We report a pair of identical twin brothers with discordant disease phenotypes: one developed AS at the age of 26, and the other developed RA at the age of 55. The twins possessed both of the disease susceptibility antigens HLA B27 and DR4. Differences in the twins' environmental exposure are

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discussed.

MacGregor AJ see **Hajeer AH**

MacGregor AJ see **Silman AJ**

McGue M, Vaupel JW, Holm N, Harvald B: Longevity is moderately heritable in a sample of Danish twins born 1870–1880. J Gerontol 1993 Nov;48(6):B237–44
The heritability of human longevity was investigated in a sample of 218 pairs of monozygotic (MZ) and 382 pairs of like-sex dizygotic (DZ) Danish twin pairs born 1870–1880. Twin similarity for age at death was significant for MZ twins but nonsignificant for DZ twins. The heritability (h2) of life span estimated from the best-fitting biometrical model was statistically significant but moderate in magnitude (h2 = .333 +/- .058). Heritability of longevity did not vary by gender, and the pattern of twin resemblance was more consistent with nonadditive as compared to additive genetic effects. In addition, evidence for a genetic association between premature and senescent deaths was observed. Although environmental factors accounted for a majority of the variance in life span, the relevant environmental factors appeared to be those that create differences rather than similarities among reared-together relatives. Findings are discussed in terms of their relevance for understanding the inheritance and evolution of human life span.

McGue M see **Finkel D**

McGue M see **Lykken DT**

McGue M see **Resnick SM**

Machin GA: Conjoined twins: implications for blastogenesis. Birth Defects 1993;29(1):141–79 (118 ref.)
It is difficult to draw sweeping general conclusions about the blastogenesis of CT, principally because so few thoroughly studied cases are reported. It is to be hoped that methods such as painstaking gross or electronic dissection will increase the number of well-documented cases. Nevertheless, the following conclusions can be proposed: 1. Most CT can be classified into a few main anatomic types (or paradigms), and there are also rare transitional types that show gradation between the main types. 2. Most CT have two full notochordal axes (Fig. 5); the ventral organs induced along these axes may be severely disorientated, malformed, or aplastic in the process of being arranged within one body. Reported anatomic types of CT represent those notochordal arrangements that are compatible with reasonably complete embryogenesis. New ventro-lateral axes are formed in many types of CT because of space constriction in the ventral zones. The new structures represent areas of "mutual recognition and organization" rather than "fusion" (Fig. 17). 3. Orientations of the pairs of axes in the embryonic disc can be deduced from the resulting anatomy. Except for dicephalus, the axes are not side by side. Notochords are usually "end-on" or ventro-ventral in orientation (Fig. 5). 4. A single gastrulation event or only partial duplicated gastrulation event seems to occur in dicephalics, despite a full double notochord. 5. The anatomy of diprosopus requires further clarification, particularly in cases with complete crania rather than anencephaly-equivalent. Diprosopus CT offer the best opportunity to study the effects of true forking of the notochord, if this actually occurs. 6. In cephalothoracopagus, thoracopagus, and ischiopagus, remarkably complete new body forms are constructed at right angles to the notochordal axes. The extent of expression of viscera in these types depends on the degree of noncongruity of their ventro-ventral axes (Figs. 4, 11, 15b). 7. Some organs and tissues fail to develop (interaction aplasia) because of conflicting migrational pathways or abnormal concentrations of morphogens in and around the neoaxes. 8. Where the cardiovascular system is discordantly expressed in dicephalus and thoracopagus twins, the right heart is more severely malformed, depending on the degree of interaction of the two embryonic septa transversa. 9. The septum transversum provides mesenchymal components to the heawrt and liver; the epithelial components (derived fro the foregut[s]) may vary in number from the number of mesenchymal septa transversa contributing to the liver of the CT embryo.(ABSTRACT TRUNCATED AT 400 WORDS)

Machin GA, Sperber GH, Ongaro I, Dabbagh J, Murdoch CA: Cephalothoracopagus (janiceps) conjoined twins: computerized three-dimensional reconstruction. Birth Defects 1993;29(1):243–59

Machin GA see **Sharony R**

Machtens E see **Eufinger H**

Mack TM see **Richardson JL**

McManus BM see **Danford DA**

Macones GA, Schemmer G, Pritts E, Weinblatt V, Wapner RJ: Multifetal reduction of triplets to twins improves perinatal outcome.
Am J Obstet Gynecol 1993 Oct;169(4):982–6
OBJECTIVE: Our purpose was to compare the perinatal outcome of triplet pregnancies reduced to twins with the outcomes of continuing triplet pregnancies and twin pregnancies. STUDY DESIGN: Pregnancy outcomes of triplet pregnancies reduced to twins delivered between July 1988 and July 1992 were compared with pregnancy outcomes of continuing triplet and twin pregnancies delivered over the same time period. RESULTS: The mean gestational age at delivery for the reduced triplets was 35.6 weeks, compared with 31.2 weeks in the nonreduced triplets ($p = 0.002$). The perinatal mortality rate was 30 per 1000 births in the reduction group and 210 per 1000 births in the nonreduced triplets ($p < 0.0001$). There were no statistically significant differences between the reduced and nonreduced twins. CONCLUSION: Multifetal pregnancy reduction of triplets to twins yields an improved perinatal outcome compared with nonreduced triplets and a similar outcome compared with nonreduced twins.

Madjar H see **Prömpeler HJ**

Magnanti G see **Marziani R**

Mahony B see **McGahan JP**

Mahony BS see **Reisner DP**

Maier R see **Kainer F**

Maier W, Lichtermann D: The genetic epidemiology of unipolar depression and panic disorder.
Int Clin Psychopharmacol 1993 Sep;8 Suppl 1:27–33 (41 ref.)

Mainardi G see **Pezzati M**

Majkowska L see **Syrenicz A**

Maly Z, Deutinger J: [Decrease in cerclage incidence in multiple pregnancies by vaginal ultrasound monitoring] Z Geburtshilfe Perinatol 1993 Jul–Aug; 197(4):162–4 (Eng. Abstr.) **(Ger)**
Cervical insufficiency is a frequent complication particularly in case of multiple pregnancy and is often considered to be an indication for cerclage operation. We performed a vaginosonographic monitoring prospectively in 35 cases with multiple pregnancy in order to diagnose cervical insufficiency early and to perform cerclage operation when indicated. The results were compared with a group of 41 patients with multiple pregnancy who received prophylactic cerclage in other hospitals. No

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significant difference occurred concerning the duration of the pregnancy. In patients without prophylactic cerclage the frequency of preterm contractions was significantly lower, the frequency of premature rupture of membranes, however, was higher. Our results confirm the hypothesis that the application of a prophylactic cerclage does not improve fetal outcome in case of multiple pregnancy. Vaginosonographic as a single monitoring procedure seems to sufficient for the early diagnosis of cervical insufficiency.

Mancini J see **Millet V**

Mandell J see **Cilento BG Jr**

Manson IW see **Beattie RB**

Maraganore DM see **Uitti RJ**

Marazita ML see **Weissbecker KA**

Marenberg ME, Risch N, Berkman LF, Floderus B, de Faire U: Genetic susceptibility to death from coronary heart disease in a study of twins.
N Engl J Med 1994 Apr 14;330(15):1041-6
BACKGROUND. A family history of premature coronary heart disease has long been thought to be a risk factor for coronary heart disease. Using data from 26 years of follow-up of 21,004 Swedish twins born between 1886 and 1925, we investigated this issue further by assessing the risk of death from coronary heart disease in pairs of monozygotic and dizygotic twins. METHODS. The study population consisted of 3298 monozygotic and 5964 dizygotic male twins and 4012 monozygotic and 7730 dizygotic female twins. The age at which one twin died of coronary heart disease was used as the primary independent variable to predict the risk of death from coronary heart disease in the other twin. Information about other risk factors was obtained from questionnaires administered in 1961 and 1963. Actuarial life-table analysis was used to estimate the cumulative probability of death from coronary heart disease. Relative-hazard estimates were obtained from a multivariate survival analysis. RESULTS. Among the men, the relative hazard of death from coronary heart disease when one's twin died of coronary heart disease before the age of 55 years, as compared with the hazard when one's twin did not die before 55, was 8.1 (95 percent confidence interval, 2.7 to 24.5) for monozygotic twins and 3.8 (1.4 to 10.5) for dizygotic twins. Among the women, when one's twin died of coronary heart disease before the age of 65 years, the relative hazard was 15.0 (95 percent confidence interval, 7.1 to 31.9) for monozygotic twins and 2.6 (1.0 to 7.1) for dizygotic twins. Among both the men and the women, whether monozygotic or dizygotic twins, the magnitude of the relative hazard decreased as the age at which one's twin died of coronary heart disease increased. The ratio of the relative-hazard estimate for the monozygotic twins to the estimate for the dizygotic twins approached 1 with increasing age. These relative hazards were little influenced by other risk factors for coronary heart disease. CONCLUSIONS. Our findings suggest that at younger ages, death from coronary heart disease is influenced by genetic factors in both women and men. The results also imply that the genetic effect decreases at older ages.

Marsac C see **Degoul F**

Marti Massó JF see **López de Munain A**

Martin JE see **Zuckerman MA**

Martin N see **Pedailles S**

Martin NG see **Duffy DL**

Martin NG see **Heath AC**

Martin R, Voskuhl R, Flerlage M, McFarlin DE, McFarland HF: Myelin basic protein-specific T-cell responses in identical twins discordant or concordant for multiple sclerosis. Ann Neurol 1993 Oct; 34(4):524-35
Although multiple sclerosis (MS) is thought to be an autoimmune disease, the target antigen of the immune response is unknown. Both myelin basic protein (MBP) and proteolipid protein (PLP) have been considered candidate autoantigens. Because the immune response to either foreign or self antigens is influenced by the genetic background of the host, the importance of these candidate antigens has been difficult to establish in humans because of genetic diversity. To eliminate genetic differences in MS patients and healthy controls, we have studied the MBP-specific T-cell response in 6 sets of identical twins, 3 of which were concordant and 3 discordant for MS. A total of 638 short-term T-cell lines were established and characterized for MBP-specific proliferative and cytotoxic activity, fine specificity, and human leukocyte antigen (HLA) restriction. Similar frequencies of MBP-specific T cells were observed in affected and unaffected individuals. A slightly higher percentage of cytotoxic T-cell lines was found in affected individuals. For most of the cell lines, the restriction elements were the HLA class II antigens that have been reported previously to be associated with MS; no important differences with respect to HLA restriction were found between the patients and healthy individuals. The peptide epitopes of MBP that were recognized most frequently by the T-cell lines were those previously shown to be immunodominant. Differences in specificity were seen in some discordant twins indicating that, despite genetic identity, the MBP-specific T-cell repertoire may be shaped differently. These findings indicate that differences in frequency, peptide specificity, or HLA restriction are not sufficient to implicate MBP-specific T cells in the pathogenesis of MS. However, the T-cell response to MBP may still represent one necessary component with disease occurring when this response is combined with other host characteristics such as regulation of cytokine-, adhesion molecule-, or HLA-antigen expression in the nervous system or immunoregulatory mechanisms.

Marziani R, Mossa B, Galeano C, Magnanti G, Domenici R: [Guidance for the obstetrician encountering a multiple pregnancy]
Minerva Ginecol 1993 Sep;45(9):403-8 (Eng. Abstr.) **(Ita)**
A retrospective review of multiple birth of higher order delivered at the Obstetric Clinic of University of Rome "La Sapienza" from 1982-1991 was performed. Comparison was made between this group (study group) and other published data. Since 1982 there has been more liberal use of abdominal delivery. Of the 25 multiple pregnancies, 17 were delivered by cesarean section (CS) and 8 by vaginal delivery. The corrected mortality rate in the study group was 19.2% (5/26) for vaginal delivery and 17.5% (10/57) for CS. Indication for CS was: elective (35%), fetal (18%) and maternal (47%). The main neonatal complications resulted from prematurity, and maternal noted complication were post-partum hemorrhage necessitating hysterectomy in one patient. The preferable mode of delivery cannot be stated dogmatically.

Mascarenhas L, Eliot B: Severe ovarian hyperstimulation syndrome, selective embryo reduction and heterotopic pregnancy.
Hum Reprod 1993 Aug;8(8):1329-31
Ovarian hyperstimulation syndrome is common (21.4%) in patients with polycystic ovarian disease,

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treated by gonadotrophins. It is much frequent (50%) in conceptual cycles. We report a case associated with a quadruplet pregnancy that underwent selective embryo reduction at 8 weeks' gestation to a twin pregnancy and was subsequently found to have an unruptured ectopic pregnancy at 11 weeks' gestation. After laparotomy and partial salpingectomy a successful twin pregnancy ensued.

Mashiach S see **Lipitz S**

Matheny AP Jr see **Kao PC**

Matthews TG: Expensive triplets [letter; comment] Ir Med J 1993 Sep-Oct;86(5):171

Maugey B see **Saura R**

Mayer EJ, Newman B, Quesenberry CP Jr, Selby JV: Usual dietary fat intake and insulin concentrations in healthy women twins. Diabetes Care 1993 Nov; 16(11):1459-69

OBJECTIVE--To evaluate the associations between the usual intake of dietary fats and insulin concentrations. Insulin concentrations and insulin resistance have been positively related to risk for NIDDM, obesity, hypertension, dyslipidemia, and coronary heart disease, yet little is known of the environmental risk factors for relative hyperinsulinemia. Insulin resistance can be induced by high-fat feeding in laboratory animals; therefore, high-fat diets may increase risks for developing NIDDM. RESEARCH DESIGN AND METHODS--Subjects included 544 nondiabetic women who participated in the second examination of the Kaiser Permanente Women Twins Study (1989-1990). Fasting and 2-h post 75-g glucose load insulin levels were determined. Dietary fat intake was assessed by a food frequency questionnaire. Generalized least-squares regression analyses for unpaired twin data were used to determine the relationship between dietary fat intake and insulin levels after adjustment for total calories, age, several behavioral variables, and in some models, percentage of body fat and waist-to-hip ratio. Associations of dietary fat intake with insulin levels were also evaluated within the subset of monozygotic twin pairs (n = 164 pairs) after removal of genetic influences by regression analysis of intrapair differences. RESULTS--Among the 544 individual women, a 20 g/day increase in total dietary fat was associated with a higher fasting insulin level (9% [$P < 0.001$] before and 6% [$P < 0.01$] after adjustment for the obesity variables). Higher intakes of saturated fat, oleic acid, and linoleic acid were each positively related to higher fasting insulin values. The relation of dietary fat with fasting insulin was significantly attenuated among physically active women compared with those who were sedentary ($P = 0.04$), even after adjustment for obesity. Only saturated fat intake was significantly associated with 2-h postglucose load insulin level before ($P = 0.004$) but not after adjustment for obesity. Within identical twin pairs, total dietary fat was positively related to fasting insulin before ($P = 0.03$) but not after adjustment for obesity ($P = 0.11$). CONCLUSIONS--High intake of total dietary fat is positively related to relative fasting hyperinsulinemia in nondiabetic women, particularly those who are sedentary. This effect appears to be partly mediated by the relation of dietary fat with obesity.

Medalie JH see **Williams RL**

Medica I see **Dumic M**

Mendell NR see **Schwartz JE**

Merril CR see **Polymeropoulos MH**

Meshkova TA: Laterality effects in twins. Acta Genet Med Gemellol (Roma) 1992; 41(4):325-33

The laterality effects in 10 symmetrical EEG derivations in twins (20 MZ and 20 DZ pairs with a mean age of 20.5 years) were examined. The quantitative and qualitative analyses gave the following results: (1) cotwins in the MZ and DZ pairs differed particularly in the intensity of asymmetry for EEG parameters--one was more asymmetrical than the other; (2) among the MZ twins there were no "mirror" pairs (opposite asymmetry of the EEG), even where opposite-handedness existed. For example, a right-handed twin had an asymmetrical EEG, while the other, a left-hander, had a symmetrical one; (3) the most asymmetrical EEG was in the temporal derivations showing a more active left hemisphere; and, (4) there was no evidence of genetic influence in the intensity of EEG asymmetry.

Messer LB see **Conry JP**

Messogitis S see **Michalas S**

Meyer J see **Heath AC**

Meyer MM see **Davey MP**

Michalas S, Messogitis S, Loutradis D: Fetal reduction of quintuplet pregnancy [letter] Int J Gynaecol Obstet 1994 Jan;44(1):77-8

Mikulaj V see **Plank K**

Milà M see **Kruyer H**

Milanaccio C see **Ruffa G**

Milford DV see **Inward CD**

Miller DH see **Mumford CJ**

Miller NR see **Johns DR**

Millet V, Samperiz S, Mancini J, Charrel M, Unal D: [Neonatal hyperchloremia related to bromide poisoning] Pediatrie 1992;47(11):785-7 (Eng. Abstr.) **(Fre)**

Hyperchloremia may reveal bromism during the neonatal period. The authors report on two cases of neonatal bromism. The first case concerns triplets without clinical signs although the children and their mother displayed hyperchloremia. In the other case a 6 week old infant displayed neurological abnormalities associated with hyperchloremia and elevated plasma bromide levels.

Mimouni F see **Frisch LS**

Miorelli M see **Buja G**

Mitra AG, Chescheir NC, Cefalo RC, Tatum BS: Spontaneous resolution of hypofibrinogenemia in a triplet gestation associated with second trimester in utero death of two fetuses. Am J Perinatol 1993 Nov; 10(6):448-9

Multiple gestations are increasing in frequency secondary to assisted reproductive technologies; therefore, it will become increasingly important to know how to manage a multiple pregnancy in which an in utero fetal death has occurred. This case report describes the spontaneous resolution of maternal hypofibrinogenemia associated with the deaths of two fetuses in a triplet gestation. A 29-year-old woman with a triplet gestation had in utero death of two monoamniotic fetuses between 15 and 17 weeks' gestation. Maternal plasma fibrinogen levels were obtained weekly and were initially in the normal range for pregnancy. At 31 weeks' gestation, the fibrinogen level decreased to 239 mg/dl and reached a nadir of 150 mg/dl 11 days later. Although the patient received no treatment, her fibrinogen level increased to 307 mg/dl over the next 4 days and then remained above 260 mg/dl for the rest of her pregnancy. At 35 weeks' gestation, a healthy 2090 gm female was delivered. The infant is alive and well and developing normally. When there is an in utero death of one fetus of a multiple gestation in the second or early third trimester, some authors

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advocate heparinization to reverse maternal coagulopathy; others describe spontaneous resolution of hypofibrinogenemia. The role of heparin in treating hypofibrinogenemia remains unclear. Hypofibrinogenemia may resolve spontaneously without exposing the patient to the potentially serious risks associated with heparin therapy.

Mittendorf R: "Vaginal delivery of the nonvertex second twin": does this study have a type II error? [letter] Am J Obstet Gynecol 1993 Dec; 169(6):1656-7

Miura T see **Nonaka K**

Moen MH: Endometriosis in monozygotic twins. Acta Obstet Gynecol Scand 1994 Jan;73(1):59-62
OBJECTIVE. To study the reproductive and medical history of monozygotic twin sisters and mothers of patients with endometriosis. MATERIAL AND METHODS. Among 515 patients with endometriosis, eight had a monozygotic twin sister all of whom had had a gynecological laparoscopy or laparotomy. In addition, five of their mothers had had a laparotomy. Details about these 13 relatives were obtained either from medical records (ten cases) or by unmistakable reports from the proband (three cases). RESULT. Six of the monozygotic twin sisters (75%) also had symptomatic endometriosis compared with 3.8% among other types of sisters ($p < 0.0005$). Three of the mothers (38%) had either endometriosis or adenomyosis. CONCLUSION. This study gives support to the assumption that endometriosis has a genetic trait.

Mondrus GT see **Richardson JL**

Monnier JC see **Switala I**

Monteagudo A, Timor-Tritsch IE, Sharma S: Early and simple determination of chorionic and amniotic type in multifetal gestations in the first fourteen weeks by high-frequency transvaginal ultrasonography. Am J Obstet Gynecol 1994 Mar;170(3):824-9
OBJECTIVE: Our aim was to determine the chorionic and amniotic types in multifetal pregnancies with transvaginal ultrasonography at > or = 14 weeks' gestation. STUDY DESIGN: Two hundred twelve multifetal pregnancies were scanned transvaginally at or before 14 weeks' gestation. The number of fetuses and the chorionic and amniotic type were determined ultrasonographically. Of the 212 patients, 54 were delivered at our institution, and 43 of these 54 had pathologic evaluation of the placenta. Ultrasonographic and pathologic correlation of the chorionic and amniotic type was assessed in this group. RESULTS: Ultrasonographic evaluation of the 212 pregnancies demonstrated 64 twin, 87 triplet, 41 quadruplet, 18 quintuplet, 1 sextuplet, and 1 septuplet gestation. Nine of the twin pregnancies were monochorionic-diamniotic; two of the triplets were dichorionic-triamniotic, and four of the quadruplets were trichorionic-quadraamniotic. In the 43 patients with both ultrasonographic and pathologic assessment, there were 40 twins, five of which were monochoronic diamniotic type. All three triplets were trichorionic-triamniotic type. In all 43 transvaginal ultrasonography correctly predicted the chorionic and amniotic type as determined by the pathologic findings. CONCLUSIONS: Transvaginal ultrasonography at < or = 14 weeks can easily and accurately determine the chorionic and amniotic type in multifetal pregnancies.

Morandi R see **Zerbini M**

Mordel N, Ezra Y, Benshushan A, Dorembus D, Schenker JG, Sadovsky E: Transverse versus longitudinal uterine incision in cesarean delivery of triplets. J Reprod Med 1993 Sep;38(9):695-6
It is commonly accepted that cesarean section is the preferred mode of delivery of triplets. The present study was performed to evaluate maternal complications and neonatal outcome in 21 women operated on by a transverse lower segment incision as compared to 8 parturients who underwent surgery by a longitudinal uterine incision. There was no significant difference in mean gestational age at delivery, mean weight of the newborns, Apgar scores, perinatal mortality rates, or intraoperative or postpartum hemorrhage incidence between the two groups. Thus, a transverse lower segment uterine incision should be used in triplet deliveries to increase the chances of a normal vaginal delivery in the future.

Mordel N see **Shushan A**

Morfitt WS see **Barton LL**

Mossa B see **Marziani R**

Mosteller M: A genetic analysis of cardiovascular disease risk factor clustering in adult female twins. Genet Epidemiol 1993;10(6):569-74
Risk factors for cardiovascular disease have been shown to cluster in adult populations of men and women [Criqui et al., 1980]. In a population of adult female twin pairs (ages 18-85), body mass index, systolic and diastolic blood pressure, and high and low density lipoprotein levels were found to exhibit significant clustering. Path analysis was used to resolve the risk factor correlations into genetic, environmental, and age-related components.

Mullen CA** see **Walker R

Mumford CJ, Wood NW, Kellar-Wood H, Thorpe JW, Miller DH, Compston DA: The British Isles survey of multiple sclerosis in twins. Neurology 1994 Jan; 44(1):11-5
During a 27-month recruitment period, we identified 146 individuals with multiple sclerosis (MS) who have a twin. A single clinician interviewed and examined 105 pairs of twins, and we confirmed zygosity using minisatellite probes. Including two suspected cases, 11 of 44 (25%) monozygotic twin pairs were concordant compared with two of 61 (3%) dizygotic twin pairs--two of 33 (6%) like-sexed and zero of 28 (0%) opposite-sexed. MRI was performed in 64 of 105 co-twins, and showed abnormalities consistent with demyelination in 13% of monozygotic and 9% of dizygotic co-twins who were clinically unaffected. These findings are similar to the results of most previous studies of MS in twins in which zygosity was not unequivocally established and where the majority of clinically unaffected co-twins were not studied by MRI; the difference in concordance rates in monozygotic and dizygotic twins indicates a significant genetic component in the etiology of MS.

Muñoz H see **Hasbún J**

Murdoch CA see **Machin GA**

Murray DL see **Valduss D**

Musiani M see **Zerbini M**

Myers JL see **Gleason MM**

Myhre CM see **Pretorius DH**

N

Nagashima K see **Nako Y**

Najem R see **Iffy L**

Nakamura Y see **Kurosawa K**

Nakanami H see **Ishimatsu J**

Nako Y, Fukushima N, Tomomasa T, Nagashima K, Kuroume T: Hypervitaminosis D after prolonged

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feeding with a premature formula. Pediatrics 1993 Dec;92(6):862–4

Namatame R see **Toyoshima M**
Nance WE see **Corey LA**
Nance WE see **Weissbecker KA**
Nava A see **Buja G**
Nazer J see **Daher V**
Neale M see **Kendler KS**
Neale MC see **Heath AC**
Neale MC see **Kendler KS**
Needelman HW see **Danford DA**
Neeleman D see **Orlebeke JF**
Nelson DL see **Rapaport MH**
Nelson KB see **Grether JK**
Nelson KB see **Petterson B**
Neumann A see **Popek EJ**
Newman B see **Mayer EJ**
Nicolaides K see **Abbas A**
Nicolaides KH see **Evans MI**
Nicolini U see **Zoppini C**
Nielsen SM see **Danford DA**
Niv J see **Grisaru D**

Nonaka K, Miura T, Peter K: Low twinning rate and seasonal effects on twinning in a fertile population, the Hutterites. Int J Biometeorol 1993 Sep; 37(3):145–50

This paper analyzes from the mid 18th century to 1987 the birth records of the "Dariusleut," one of the three subgroups of the Hutterite population. The aim of this study is to describe several aspects of the twinning rate in a fertile population. The overall rate of twinning was 0.90%: 103 twins among all 11,492 maternities. The rate peaked at the 7th birth order and at the maternal age of 40 years and over. Until the mid 19th century when the Hutterites lived in Russia, the twinning rate was higher (1.5%), and it decreased during the migration period in the second half of the 19th century (0.7%). After the group had settled in the USA and Canada, the population maintained a twinning rate of 1.0% until 1965. After 1965 the rate decreased to 0.7%, partly due to a decline in fertility among women aged 30 years and over. There was a significant seasonal variation: the twinning rate decreased to 0.5% in May–July compared to 1.2% for the other three seasons during the years up to 1965 ($P < 0.01$), while more recent mothers did not show such a seasonal variation. The incidence of twin births in this population seems to have been influenced by environmental factors, which would change their effect seasonally and secularly.

Novak A see **Becker R**
Nowroozi K see **Check JH**
Nyberg DA see **Reisner DP**

O

Obayashi C see **Itoh K**
O'Connell DL see **Duffy DL**
Ohashi Y see **Takauchi Y**
Olar TT see **Dickey RP**

Oleinik EM, Della-Latta P, Rinaldi MG, Saiman L: Candida lusitaniae osteomyelitis in a premature infant. Am J Perinatol 1993 Jul;10(4):313–5 (12 ref.)

Candida lusitaniae is emerging as an opportunistic pathogen in premature infants. Treatment of C. lusitaniae is challenging due to frequent resistance of this organism to antifungal agents and lack of standardized susceptibility testing for fungi. We report the case of a premature infant with C. lusitaniae osteomyelitis in whom treatment was successful with 5-fluorocytosine and fluconazole.

Ollier WE see **Hajeer AH**
Ollier WE see **MacGregor AJ**
Ollier WE see **Silman AJ**

Ollikainen J, Hiekkaniemi H, Korppi M, Katila ML, Heinonen K: Ureaplasma urealyticum cultured from brain tissue of preterm twins who died of intraventricular hemorrhage. Scand J Infect Dis 1993;25(4):529–31

We present a case of premature twins, born at 24 weeks of gestation. Both infants died of intraventricular hemorrhage, aged 1 and 3 days, respectively. Ureaplasma urealyticum was isolated from brain tissue obtained at the autopsy of both infants. Our observations lend additional evidence of the role of U. urealyticum as a central nervous system pathogen in premature infants.

Olmedo Sanlaureano S see **Guerrero Vázquez J**
Omeñaca Teres F see **Guerrero Vázquez J**
Ongaro I see **Machin GA**
Onstad S see **Skre I**
Onstad S see **Torgersen S**
Ooe K see **Toyoshima M**
Oosterhof H see **Lander M**

Orlebeke JF, van Baal GC, Boomsma DI, Neeleman D: Birth weight in opposite sex twins as compared to same sex dizygotic twins.
Eur J Obstet Gynecol Reprod Biol 1993 Jul; 50(2):95–8

The question addressed in the present report is whether the large birth weight differences in dizygotic twin pairs of opposite sex (DZos), especially in 'male first' couples--observed by Blickstein and Weissman (Blickstein I, Weissman A. Birth weight discordancy in male-first and female-first pairs of unlike-sexed twins. Am J Obstet Gynecol 1990;162:661–663) and replicated in the present study--can be explained by two general influences on birth weight, viz. sex and birth order, or whether some specific effect on fetal growth has to be assumed that is present only in twin pairs of differing sex. The associated enhanced health risk would hit the female twin (from a male first-female second couple) in the first place. If the hypothesis is correct, then one may expect that birth weight of twins is somehow dependent on the sex of the co-twin. This was studied in 3069 twin pairs born in The Netherlands since the end of 1986. Results show that among DZ twins, birth weight is not affected by the sex of the co-twin. Therefore, birth weight differences in DZos pairs have to be ascribed to the general effects of sex and birth order. There is no effect that is specific to DZos pairs only.

Orlebeke JF, Boomsma DI, Eriksson AW: Epidemiological and birth weight characteristics of triplets: a study from the Dutch twin register.
Eur J Obstet Gynecol Reprod Biol 1993 Jul; 50(2):87–93

From 112 triplet sets, born in The Netherlands from the end of 1986 to the beginning of 1991 and registered in the Dutch Twin Register, several details such as birth weight, gestational age, zygosity, and etiology were assessed by questionnaire, which was filled out by the mother. For 33 triplet sets, zygosity was also assessed by blood typing. Maternal smoking during pregnancy was also noted. Results show a very strong increase in number of triplets caused by artificial fertility enhancing techniques and consequently a shift in the relative contribution of zygosity types to the total number of triplets. Birth weight is predominantly influenced by gestational age. Other effects on birth weight are controlled for possible confounding with gestational age. First born triplets weigh more than

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later born triplets; boys weigh more than girls; nearly 25% of all individual triplets weigh less than 1500 g, i.e. belong to the category very low birth weight (VLBW); regular maternal smoking produces a 14% birth weight reduction; ovulation induction seems to decrease the sex ratio, i.e. hormonal treatment with ovulation inducing substances increases the probability of female offspring.

Ott M see **Knitza R**

Ovlisen B see **Henriksen TB**

P

Pankau R, Gosch A, Simeoni E, Wessel A: Williams-Beuren syndrome in monozygotic twins with variable expression. Am J Med Genet 1993 Sep 15;47(4):475-7

Five sets of monozygotic (MZ) twins with Williams-Beuren syndrome (WBS) have been reported so far. We report on an additional pair of mz twins concordant for WBS but variable expression for the syndrome. Although both faces look different monozygosity of the twins was proven by DNA fingerprint analysis, HLA, and blood group pattern. Both girls had the typical facial appearance with strabismus. Both had developmental delay, mild supravalvular aortic stenosis (SVAS), hypoplasia of both pulmonary arteries and multiple peripheral pulmonary stenoses, and inguinal hernia. Unilateral renal agenesis was seen in one of the twins. In addition the pedigree pointed to a second disorder with probably autosomal dominant inheritance. Both twins had a cleft palate, but their father had cleft lip and the grandfather as well as the greatgrandfather had cleft lip/palate. Findings of linkage analysis in pedigrees with nonsyndromic oral facial cleft were taken to suggest that a major locus for nonsyndromal oral facial cleft is located on the distal portion of chromosome 6. Linkage studies could serve as a starting point to examine a locus associated with WBS. Our observation and reports on the literature support the hypothesis that WBS is a genetic disorder.

Paris JJ: Ethical issues in separation of the Lakeberg Siamese twins [editorial] J Perinatol 1993 Nov-Dec; 13(6):423-4

Park LP see **Harris EL**

Parker JV see **Carlan SJ**

Paul SM see **Rapaport MH**

Pavia M see **Hsieh CC**

Pedailles S, Martin N, Launay V, Sentias C, Barre M, Saintive JP, Bessis JL: [Sturge-Weber-Krabbe syndrome. A severe form in a monozygote female twin] Ann Dermatol Venereol 1993;120(5):379-82 (22 ref.) (Eng. Abstr.) **(Fre)**

We report a severe case of Sturge-Weber syndrome in one of two monozygotic twins. This syndrome included a facial portwine stain over the trigeminal ophthalmic V1 area, and ipsilateral vascular anomalies of the eye and of the pia mater. CT scans and MRI were very informative. The cerebral regional blood flow, studied with SPECT, showed a paradoxically high rate.

Pena AJ see **Carlan SJ**

Pennington BF see **Stevenson J**

Pepkowitz SH see **Sharony R**

Pequegnot C see **Gourdiole P**

Peter K see **Nonaka K**

Peters CJ see **Barton LL**

Petridou E see **Hsieh CC**

Petrikovsky BM see **Egan JF**

Petrill SA, Thompson LA: The phenotypic and genetic relationships among measures of cognitive ability, temperament, and scholastic achievement. Behav Genet 1993 Nov;23(6):511-8

The covariance among measures of cognitive ability, temperament, and scholastic achievement was examined in a subsample of 326 (89 Monozygotic, 74 Dizygotic) twins drawn from the Western Reserve Twin Project. Both phenotypic and behavioral genetic models were fit to the data. Univariate analyses indicate significant genetic influences on cognitive, achievement, and temperament variables. Common environmental influences also affected cognition and achievement but not temperament. Multivariate analyses indicate that both genetic and common environmental influences contribute to the covariance among all three variables. Cognition and achievement are highly genetically correlated. In contrast, achievement and temperament are highly correlated for common environmentality, while cognition and temperament are not.

Petterson B, Nelson KB, Watson L, Stanley F: Twins, triplets, and cerebral palsy in births in Western Australia in the 1980s. BMJ 1993 Nov 13; 307(6914):1239-43

OBJECTIVES--To examine the rate of cerebral palsy in twins and triplets in births from 1980 to 1989 in Western Australia and to identify factors associated with increase in risk.

DESIGN--Pluralities for all births in Western Australia were identified through the standardised midwives' notification system, and cases of cerebral palsy were identified from the Western Australian cerebral palsy register. MAIN OUTCOME MEASURES--Multiple births, cerebral palsy, excluding postneonatal cause. RESULTS--The prevalence of cerebral palsy in triplets, of 28 per 1000 survivors to 1 year (95% confidence interval 11 to 63) exceeded that in twins (7.3; 5.2 to 10) and singletons (1.6; 1.4 to 1.8). Although twins and triples were more likely than singletons to be low in birth weight, their risks of cerebral palsy if low in birth weight were similar. In contrast, in normal birthweight categories twins had a higher rate of cerebral palsy (4.2; 2.2 to 7.7) than singletons (1.1; 1.0 to 1.3). The prevalence of cerebral palsy was similar in twins of unlike sex pairs, all of whom are dizygotic, and in like sex pairs. A twin pair in which one member died in utero was at higher risk of cerebral palsy: 96 per 1000 twin pairs (36 to 218) compared with 12 (8.2 to 17) for twin pregnancies in which both survived. There was a similar but non-significant trend for death of one triplet to be associated with increased risk of cerebral palsy in the survivors of the set. CONCLUSION--Triplet pregnancies produced a child with cerebral palsy 47 times more often than singleton pregnancies did and twin pregnancies eight times more often. Eighty six per cent of cerebral palsy in multiple births was in twins. As multiple births are increasing mainly because of personal and medical decisions the increased risk of cerebral palsy in multiple births is of concern.

Petty CN see **Reisner DP**

Peyser MR see **Grisaru D**

Peyser MR see **Yaron Y**

Pezzati M, Cianciulli D, Carbone C, Mainardi G, Biadaioli R, Cosenza E, Ruspantini S: [Acute fetofetal transfusion in dichorionic twins: a clinical case report] Pediatr Med Chir 1993 May-Jun; 15(3):305-6 (Eng. Abstr.) **(Ita)**

Fetofetal transfusion is due to the twin to twin blood shunt caused by vascular anastomoses. It has been

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suggested that two types of FFT exist: a chronic form existing during pregnancy, and an acute form occurring only during parturition. Cross-circulation may be demonstrated in monochorionic as well as dichorionic placentas. However, such communications were found in 85–100% of monochorionic placentas, compared with one of 68 dichorionic fused placentas. Authors describe one case of acute feto-fetal transfusion in dichorionic twins.

Phaosavasdi S see **Tannirandorn Y**

Piattelli E see **Angi MR**

Pickar D see **Rapaport MH**

Piecuch RE see **Leonard CH**

Pinder JC see **Reardon DM**

Plank K, Mikulaj V, Stencl J, Drobná H, Kleskeň P: Prevention and treatment of prematurity in twin gestation. J Perinat Med 1993;21(4):309–13

Early prenatal diagnosis, intensive prenatal care, bed rest, cerclage, and preventive in-patient management are discussed. The authors present the management and outcome of 83 twin pregnancies in a 5-year retrospective study. The frequency of twin pregnancy wa 1.08%, the mean gestational age at the time of delivery was 37.5 weeks. Mean birth weight of the first fetus was 2453 grams, second 2406 grams. The incidence of preterm deliveries was 31.3% and perinatal mortality of twins came up to 54.2%. The early prenatal diagnosis of a twin pregnancy is the most important step in prenatal management. The centralization of prenatal care in the out-patient department designated for "high risk pregnancies" is recommended. Ultrasound scanning is recommended as a screening examination. Bed rest before the 25th gestational week is recommended on an individual basis though it is recommended in all cases after the 25th gestational week. Cerclage was indicated in 28.9% cases with unfavourable cervical findings. The mean gestational age of 38 weeks and the birth weight of 2659 grams found in the group who had in-patient management should be compared with 35.8 weeks and 2120.0 grams in the group managed on an out-patient basis. Perinatal mortality before 32nd week--300/1000, between 33–37th week--62.5/1000, and after 37th week--8.7/1000. The authors recommend in-patient management before the 32nd week of pregnancy in twins.

Plantier I see **Switala I**

Plassman BL see **Breitner JC**

Plomin R, Emde RN, Braungart JM, Campos J, Corley R, Fulker DW, Kagan J, Reznick JS, Robinson J, Zahn-Waxler C, et al: Genetic change and continuity from fourteen to twenty months: the MacArthur Longitudinal Twin Study. Child Dev 1993 Oct; 64(5):1354–76

Genetic change as well as continuity was investigated within the domains of temperament, emotion, and cognition/language for 200 pairs of twins assessed at 14 and 20 months of age in the laboratory and home. The second year of life is marked by change rather than continuity: correlations from 14 to 20 months averaged about .30 for observational measures of temperament and emotion, about .40 for language measures, and about .50 for mental development. 2 types of genetic change were examined: changes in the magnitude of genetic influence (heritability) and genetic contributions to change from 14 to 20 months. In general, heritability estimates were similar at 14 and 20 months. Evidence for genetic influence on change from 14 to 20 months emerged for several measures, implying that heritability cannot be equated with stability. Analyses of continuity indicated that genetic factors are largely responsible for continuity from 14 to 20 months.

Plomin R see **Rende RD**

Plomin R see **Thompson LA**

Plowman PN, Kingston JE, Hungerford JL: Prophylactic retinal radiotherapy has an exceptional place in the management of familial retinoblastoma [see comments] Br J Cancer 1993 Oct;68(4):743–5

Polymeropoulos MH, Xiao H, Torrey EF, DeLisi LE, Crow T, Merril CR: Search for a genetic event in monozygotic twins discordant for schizophrenia. Psychiatry Res 1993 Jul;48(1):27–36

When monozygotic twins are discordant for the diagnosis of schizophrenia, this discordance has been traditionally attributed to environmental factors acting upon a genome susceptible for the schizophrenia phenotype. The study presented here was designed to examine the occurrence of a genetic event, such as a postzygotic mitotic crossover, that could account for the discordance. Such a postzygotic event could affect cis-acting sequences and result in a phenotype of variable severity. We used molecular genetic methods to evaluate such an event with 94 microsatellite repeat polymorphic markers distributed on all autosomes and the X chromosome in five pairs of monozygotic twins discordant for schizophrenia. In this search, no genetic marker discordances were identified between the co-twins. The lack of a genetic difference may implicate nongenetic factors that are responsible in eliciting or suppressing the phenotype. However, the experiments performed in this study cannot eliminate the possibility that a tissue-specific mitotic crossover might have occurred in one of the discordant twins, which could not have been detected in our current study.

Polzin WJ see **Sarno AP Jr**

Pommer R see **Hasbún J**

Popek EJ, Strain JD, Neumann A, Wilson H: In utero development of pulmonary artery calcification in monochorionic twins: a report of three cases and discussion of the possible etiology. Pediatr Pathol 1993 Sep-Oct;13(5):597–611

Pulmonary artery (PA) calcification is unusual in children, reportedly occurring only in conjunction with severe underlying valvular disease. Three newborns were found by chest X-ray study to have thin calcified rings of the PA. Two were pump twins in twin reversed arterial perfusion (TRAP) sequences, each with an acardiac cotwin, and the third was the recipient in a twin transfusion syndrome (TTS). Both twin pairs with TRAP sequence were premature, each pump twin presenting with cardiac decompensation. One remained well at 5 months of age, the other died at 5 1/2 months of age. The third, the premature recipient of twins with TTS, died at 24 h of age, and the donor cotwin died at 2 h of age. The two hearts were structurally normal at autopsy. Subtle intimal wrinkling was seen above the pulmonary valve leaflets, and the media was yellow and granular on cut section. Hyperplasia of the intima and media with disruption and calcification of the elastic fibers of the media was seen microscopically. These three cases of PA calcification occurring in utero were not related to structural valvular abnormalities but were presumably due to increased cardiac output in utero as each occurred in the volume-overloaded twin of the twin pair. Comparison of the weight differences between these three twin pairs with PA calcification suggests a relationship between the presence of PA calcification

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and the severity of the cardiac volume overload. In utero cardiac damage may contribute to the high morbidity and mortality rate seen in infants with TRAP sequence and TTS.

Porter TF see **Reisner DP**

Pou-Serradell A see **Degoul F**

Powers WF, Kiely JL: The risks confronting twins: a national perspective. Am J Obstet Gynecol 1994 Feb;170(2):456-61

OBJECTIVES: Our objectives were twofold: (1) to report the relative risks and population-attributable risks of twins compared with singletons for several adverse pregnancy outcomes and (2) to describe the association between having been of low or very low birth weight and death in the neonatal, postneonatal, and infant periods for twins compared with singletons. STUDY DESIGN: We performed population-based analysis of all live births and infant deaths from 1985 to 1986 birth cohorts, as reported in the U.S. Linked Birth/Infant Death Data Sets. RESULTS: With singletons as the referent group, twins of all races had relative risk for very low birth weight, low birth weight, and neonatal, postneonatal, and infant death of 9.97, 8.61, 7.06, 2.75, and 5.43, respectively. Although twins make up only 2.09% of live births, the population-attributable risks of twins (the proportion of the population's adverse outcome associated with being a twin) for very low birth weight, low birth weight, and neonatal, postneonatal, and infant death was 15.8%, 13.7%, 11.2%, 3.4%, and 8.4%, respectively. CONCLUSIONS: These population-based data show that although twins are relatively infrequent they account for a disproportionately large share of adverse pregnancy outcomes. Given the relative ease with which twins can be identified early in the course of pregnancy, development and testing of interventions to postpone preterm delivery in twin pregnancy should become a national public health priority.

Preiss J, Hynek K, Dvořáková M, Zvárová J: [Neuropsychological tests and smooth pursuit eye movements in schizophrenic twins]

Cesk Psychiatr 1993 Oct;89(5):276-86 (Eng. Abstr.) **(Cze)**

The authors compares results of neuropsychological tests/Halstead-Reitan Neuropsychological Battery, Stroop test, Wechsler Memory Scale, Seashore Tonal Memory Test/with results of smooth pursuit eye movements in nine pairs of twins/5 monozygotic and 4 dizygotic pairs/. In all instances at least one twin suffered from schizophrenia. The majority of neuropsychological tests differentiated clearly schizophrenic and healthy twins. Of seven parameters of smooth pursuit eye movements big saccades differentiated significantly. The authors found also correlations between neuropsychological tests and smooth pursuit eye movements. Significant correlations pertained to motor velocity (correlation of the Oscillation test with big saccades and with small saccades), complex psychomotor abilities (correlation of the Tactual Performance Test-Localization with big saccades), general indicators of cerebral activity or neuropsychological performance (correlation of the Tonal Memory test with big saccades and correlation of the Rhythm test with the amplitude of the curve), memory (correlation of the memory quotient MQ and the Logical Memory sub-test with small saccades) and work performance during a perception or psychic load (correlation of Stroop sub-test with big saccades). The method of smooth pursuit eye movements is not time consuming and does not involve major demands on the patient's cooperation. On the other hand, neuropsychological tests have the advantage that they reveal the impact of possible pathological conditions of the brain on behaviour. On the whole the results support the hypothesis that in schizophrenic patients a disease with structural or functional abnormalities of the brain is involved.

Pretorius DH, Budorick NE, Scioscia AL, Krabbe JK, Ko S, Myhre CM: Twin pregnancies in the second trimester in women in an alpha-fetoprotein screening program: sonographic evaluation and outcome [see comments] AJR Am J Roentgenol 1993 Nov; 161(5):1007-13

OBJECTIVE. We correlated sonographic findings with fetal outcomes in women with unsuspected twin pregnancies who had sonography in the second trimester as part of a screening program for maternal serum alpha-fetoprotein (MSAFP) level and history of neural tube defect. MATERIALS AND METHODS. The study group consisted of 97 women with twin pregnancies who participated in a screening program for MSAFP level and history of neural tube defect. Seventy-three had normal MSAFP levels, 21 had elevated MSAFP levels, and two had low MSAFP levels. One patient had a family history of anencephaly. All 97 patients had sonography during their second trimester of pregnancy. Sonographic findings were reviewed retrospectively for information on gestational age, fetal anomalies, sex of the fetus, location of the placenta, presence and thickness of a dividing membrane, and interpretation of amnionicity and chorionicity. Information on fetal outcome included gestational age at delivery, survival, birth weight, sex, congenital anomalies, obstetric complications, amnionicity, chorionicity, and placental abnormalities. RESULTS. Amnionicity and chorionicity were correctly detected on sonograms in 44 (90%) of 49 diamniotic-dichorionic gestations, 23 (72%) of 32 diamniotic-monochorionic gestations, and two (50%) of four monoamniotic-monochorionic gestations. Fetal anomalies were present at delivery in five neonates and had been correctly detected at sonography in one (hemivertebra); one fetus with duodenal atresia had abnormal sonographic findings in the third trimester. Missed anomalies included absent forearm, cleft lip and palate, and imperforate anus. Sex of the fetuses was correctly predicted on the basis of sonographic findings in 40 of 43 pairs. Nine twin pairs had possible twin-twin transfusion syndrome suspected sonographically on the basis of abnormal fluid volumes, discrepant growth measurements, and abnormal findings on Doppler studies. Outcomes included two confirmed cases of the syndrome (two survivors, two deaths) and three probable cases (six deaths); four pregnancies resulted in eight survivors who were delivered after 34.4 weeks' gestation and had birth weights in the 25th percentile or higher. Survival rates for diamniotic-dichorionic, diamniotic-monochorionic, and monoamniotic-monochorionic gestations were 90%, 91%, and 50%, respectively. Fetuses in women with MSAFP levels greater than 4.5 multiples of the median and with monochorionic placentation had lower survival rates than fetuses in women with normal MSAFP levels and monochorionic placentation (67% vs 96%). Half the fetuses delivered after 20 weeks' gestation had birth-weight discordance of less than 10%. Premature deliveries occurred in 56% of pregnancies. CONCLUSION. The results suggest that (1) sonography is useful in predicting placentation, (2) placentation may be

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helpful in predicting fetal outcome, (3) increased MSAFP levels correlate with increased perinatal mortality in diamniotic-monochorionic pregnancies, and (4) caution should be taken in diagnosing and determining prognosis for suspected twin-twin transfusion syndrome in the second trimester.

Pritts E see **Macones GA**

Prömpeler HJ, Madjar H, Klosa W, du Bois A, Zahradnik HP, Schillinger H, Breckwoldt M: Twin pregnancies with single fetal death.
Acta Obstet Gynecol Scand 1994 Mar;73(3):205-8
OBJECTIVE. Analysis of the fetal outcome of the surviving twin and the cause of fetal death. PATIENTS. Between January 1979 and December 1992, 43 twin pregnancies with single fetal death were observed: in 11 cases (group I) before 16 weeks of gestation, in 11 cases (group II) between 17 and 24 weeks, and in 21 cases (group III) after 24 weeks of gestation. RESULTS. The pregnancies in group I continued without complication. In groups II and III the incidence of preterm delivery was 50%, of cesarean section 59%, of growth retardation of the surviving twin 22% and perinatal mortality was 13%. Twenty-five (78%) of the surviving twins had a normal postnatal development and one (3%) was handicapped. CONCLUSION. Loss of one of the twins in the first trimester does not impair the development of the surviving fetus. In the second trimester however this even is associated with increased risk for the survivor as reflected by a high incidence of growth retardation, premature labor and perinatal mortality.

Propert J see **Cook NJ**

Puder KS see **Quintero RA**

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Queck M, Berle P: [Effect of birth interval on the rate of cesarean section for the second twin after vaginal delivery of the first twin]
Zentralbl Gynakol 1993;115(8):366-9 (Eng. Abstr.) **(Ger)**
Cesarean section for delivery of the second twin after successful vaginal delivery of the first twin is an infrequent and unusual occurrence. But this management of twin delivery has increased during the last years. A series of 371 pairs of twins born between 1978 and 1991 were reviewed. 12 second twins (3.2%) were delivered by cesarean section after vaginal delivery of the first twin. The initial 20 minutes the main indications were fetal distress and prolapsed umbilical cord. Beyond the first 20 minutes malpresentations were more frequent. In this group we have seen a better fetal outcome. An influence of the interdelivery time on the cesarean section rate of the second twin was not noted. No significant differences were seen for neonatal morbidity for all 197 vaginal delivered second twins with increasing interval.

Quesenberry CP Jr see **Mayer EJ**

Quiaoit F see **Grove JS**

Quintero RA, Reich H, Puder KS, Bardicef M, Evans MI, Cotton DB, Romero R: Brief report: umbilical-cord ligation of an acardiac twin by fetoscopy at 19 weeks of gestation.
N Engl J Med 1994 Feb 17;330(7):469-71

Quiroz VH see **Sepúlveda WH**

R

Ramakrishnan V see **Goldberg J**

Rand S see **Eufinger H**

Rankin A see **Check JH**

Rao RM, Reddy GP, Grim CE: Relative role of genes and environment on BP: twin studies in Madras, India. J Hum Hypertens 1993 Oct;7(5):451-5
This study was conducted to test the feasibility of the twin research model in a developing country with diverse cultures and to understand the relative influence of genetic and environmental factors on BP variation among South Indians. This was a cross-sectional twin study of volunteers using a two-by-two factorial design for the analysis of quantitative traits. The factors were twin type (monozygotic and dizygotic) and sex (male and female). The study was conducted in Madras. Twenty-four pairs of twins were contacted for participation in the project. Of the 24 pairs we contacted, 91% (20) actually participated in our study. Among 20 sets we studied, 10 (50%) are males and 10 (50%) are females with an average age of 23 years. The mean SBP of this volunteer twin population was 115.18 +/- 1.27 mmHg and DBP was 68.53 +/- 1.41 mmHg. Analysis of dietary habits (vegetarian/nonvegetarian) showed that BP was greater (118.26 +/- 2.29/71.88 +/- 2.34 mmHg) in vegetarian twins than nonvegetarians (112.28 +/- 1.42/66.2 +/- 1.90 mmHg). Also a positive correlation between urinary excretion of calcium and BP was observed. The present study demonstrates that epidemiological research in a developing country like India is feasible and economical, using the twin research methodology. As observed in other populations, the major source of BP variation in the population appears to be predominantly under genetic control.

Rapaport MH, Torrey EF, McAllister CG, Nelson DL, Pickar D, Paul SM: Increased serum soluble interleukin-2 receptors in schizophrenic monozygotic twins.
Eur Arch Psychiatry Clin Neurosci 1993;243(1):7-10
There is a confusing history of immune findings associated with schizophrenia. At least some of these discrepant results may be artifacts caused by heterogeneity. In an attempt to decrease heterogeneity, we studied three groups of monozygotic twins who were either discordant for schizophrenia, concordant and ill, or concordant and well. This comparison minimizes environmental and genetic variance, and heightens differences that are actually due to the disorder. Overall, schizophrenic subjects had higher levels of serum soluble interleukin-2 receptors (SIL-2Rs) than unaffected individuals (480.8, SD 238.6 U/ml vs 380.9, SD 170.6 U/ml; F = 5.256, df = 1.61, P = 0.02). When data from discordant and concordant twin groups were analysed separately, both the discordant ill twins (P = 0.06) and concordant ill twin pairs (P = 0.08) showed trends towards higher serum SIL-2R levels than their respective control groups. These data contribute to the growing body of evidence that immune activation is associated with some forms of schizophrenia.

Rasmussen SA: Genetic studies of obsessive-compulsive disorder.
Ann Clin Psychiatry 1993 Dec;5(4):241-7 (30 ref.)

Reardon DM, Seymour CA, Cox TM, Pinder JC, Schofield AE, Tanner MJ: Hereditary ovalocytosis with compensated haemolysis. Br J Haematol 1993 Sep;85(1):197-9
The clinical and laboratory phenotype of compensated haemolysis in a patient with hereditary ovalocytosis is reported. Clinical presentation was intermittent jaundice and abdominal pain due to pigment gall stones. Haematological analysis

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revealed an absolute reticulocytosis with an otherwise normal full blood count and biochemical evidence of haemolysis. Variable results were observed with blood grouping reagents. The patient's red cells were stomatocytic ovalocytic, rigid, resistant to malarial parasite invasion, defective in anion transport, and had the characteristic two linked mutations in the red cell band 3 gene.

Reddy GP see **Rao RM**

Reed T, Carmelli D, Christian JC, Selby JV, Fabsitz RR: The NHLBI male veteran twin study data. Genet Epidemiol 1993;10(6):513-7
The National Heart, Lung and Blood Institute (NHLBI) twin study is a collaborative, longitudinal study of the role of genetic risk factors on subsequent cardiovascular disease processes in 514 pairs of white, male World War II and Korean veteran twins born between 1917 and 1927. This paper describes the sampling procedures and zygosity determination at the initial examination, participation by the cohort members at later examinations, and a summary of the variables provided for Genetic Analysis Workshop 8 (GAW8).

Reich H see **Quintero RA**

Reichman B see **Lipitz S**

Reisner DP, Mahony BS, Petty CN, Nyberg DA, Porter TF, Zingheim RW, Williams MA, Luthy DA: Stuck twin syndrome: outcome in thirty-seven consecutive cases. Am J Obstet Gynecol 1993 Oct;169(4):991-5
OBJECTIVE: Our purpose was to further evaluate the role of serial amniocentesis in pregnancies complicated by the "stuck twin" syndrome. STUDY DESIGN: A cohort of 37 consecutive cases of stuck twin syndrome was followed up from 1986 through 1992. Evaluations included gestational age at diagnosis and at delivery, mean number of amniocenteses, volume of amniotic fluid withdrawn, placentation, perinatal complications, fetal survival, and neonatal follow-up. RESULTS: Five pregnancies were terminated, five had no intervention, and 27 underwent serial amniocenteses. The mean number of amniocenteses was 3.4 (range 1 to 6), and mean total amniotic fluid volume withdrawn was 5.8 L (range 0.75 to 4.0). In the serial amniocentesis group mean gestational age was 23.1 weeks (range 16 to 30) at diagnosis and 31.5 weeks (range 20 to 38) at delivery. Eighty-two percent had monochorionic placentas, and 36% had marginal or velamentous cord insertions. Infant survival was 39 of 54 (74%) in the serial amniocentesis group compared with four of 10 (40%) in the nonintervention group (relative risk 0.46, 95% confidence interval 0.24 to 0.90). CONCLUSION: Serial amniocentesis was associated with a 54% reduction in fetal and neonatal death in cases of stuck twin syndrome.

Reiss D see **Rende RD**

Reiter SD see **Kirlew KA**

Rende RD, Plomin R, Reiss D, Hetherington EM: Genetic and environmental influences on depressive symptomatology in adolescence: individual differences and extreme scores.
J Child Psychol Psychiatry 1993 Nov;34(8):1387-98
The purpose of the current investigation was to compare the genetic and environmental influences on individual differences in depressive symptomatology (as assessed using the Children's Depression Inventory) to such influences on extreme scores in an unselected sample of adolescents. The sample included 707 pairs of siblings (average ages 14.5 and 12.9 years, respectively) participating in a combined twin- and step-family study. Moderate genetic influence was found for the full range of individual differences in depression; in contrast, there was nonsignificant genetic influence, and significant shared environmental influence, on extreme scores. The results were interpreted using a risk model in which familial influences specific to the high end of the distribution contribute to depressive symptomatology in adolescence.

Resnick SM, Gottesman II, McGue M: Sensation seeking in opposite-sex twins: an effect of prenatal hormones? Behav Genet 1993 Jul;23(4):323-9
Intrauterine hormones and position with respect to male and female littermates influence sexually dimorphic adult behavior in litter-bearing animals. Opposite-sex dizygotic twins offer the opportunity to examine analogous effects on sex-related human behaviors. To illustrate this approach, Sensation Seeking Scale (SSS) scores from 422 British twin pairs, including 51 opposite-sex pairs (Zuckerman, M., et al., J. Consult. Clin. Psychol. 46:139-149, 1978), were reanalyzed. Zuckerman et al. (1978) have shown that some aspects of sensation seeking are consistently increased in males relative to females. In comparing age-adjusted data for opposite and same-sex twins, our reanalysis demonstrated the predicted increase in sensation seeking in female members of opposite-sex pairs. Results were significant for measures of disinhibition, experience seeking, and overall sensation seeking. In contrast, male opposite-sex twins were not significantly different from male same-sex twins. Although psychosocial explanations of the increased sensation seeking in opposite-sex female twins cannot be excluded, these finding are consistent with hypothesized in utero hormonal influences on later behavioral development.

Reznick JS see **Plomin R**

Richardson JL, Koprowski C, Mondrus GT, Dietsch B, Deapen D, Mack TM: Perceived change in food frequency among women at elevated risk of breast cancer. Nutr Cancer 1993;20(1):71-8
Survey reports indicate that women perceive that their diets have changed in ways consistent with dietary guidelines recommended by national agencies. We have attempted to determine whether perceived change in food intake is a useful tool for estimation of either past intake or pattern of change in food consumption. Twin sisters of breast cancer patients, at obvious high risk of breast cancer, were aware of dietary guidelines concerning cancer, as indicated by beliefs about specific foods that should be increased or decreased to prevent cancer. Perception of change, as reported by them, was not found to be a reliable indicator of actual change in food frequency, as measured by the difference between sequential food frequency questionnaires. Consumption of high-fat foods was observed to have decreased over the interval, regardless of perceived change in consumption. Moreover, prediction of past food frequency on the basis of perceived change and current intake combined resulted in a less accurate appraisal of past diet than did the use of current intake alone. Perceived change in food frequency appears to be biased in different ways for different foods and seems to be influenced by beliefs about the role of diet in cancer. Studies of etiology should probably not rely on such methods.

Richieri-Costa A, Guion-Almeida ML, Frederigue Júnior U: Conjoined twins: report of a Brazilian twin belonging to the category duplicatas incompleta, an atypical parasite twinning type. Birth Defects 1993; 29(1):273-7

Richieri-Costa A, Guion-Almeida ML: Heteropagus epignathus: report on a Brazilian twin.

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Fetal Diagn Ther 1993 Jul-Aug;8(4):241-6
In this prospective study conducted from 1984 through 1987, the ability to correctly predict growth discordancy in twin gestations by ultrasonic estimated fetal weights is examined. Discordancy was defined as an intertwin birth weight difference of 25% or greater. This method resulted in a sensitivity rate of 77% and a specificity rate of 92%. The positive predictive value of an abnormal test (i.e. discordant growth) was 67% and the negative predictive value of a normal test (i.e. concordant growth) was 95%. The perinatal mortality rate of 217/1,000 in discordant twin fetuses was significantly higher than 29/1,000 in the concordant twins in this study population ($p < 0.01$) and even more of a contrast to the rate of 10/1,000 in our singleton population. Accurate prediction of discordant twin pregnancies which are at high risk for poor outcome opens the opportunity for potential in utero treatment modalities.

Sbolgi P see **Ruffa G**
Schemmer G see **Macones GA**
Schenkein HA see **Corey LA**
Schenker JG see **Benshushan A**
Schenker JG see **Mordel N**
Schenker JG see **Shushan A**
Schillinger H see **Prömpeler HJ**
Schindler RF see **Barton LL**
Schofield AE see **Reardon DM**
Scholz W see **Eufinger H**
Schubert B see **Check JH**

Schwartz JE, Yuan H, Mendell NR, Finch SJ: LISREL modeling of high density lipoprotein cholesterol (HDL) levels in male twins. Genet Epidemiol 1993; 10(6):545-9
Based on the LISREL modeling approach for data from monozygotic (MZ) and dizygotic (DZ) twins [Heath et al., 1989; Neale and Cardon, 1992], the hypothesized variance of the logarithm of high density lipoprotein cholesterol due to additive genetic factors was estimated to equal 19% for males. Unobserved common environment accounted for 32% of the variance of log HDL. Both estimates controlled for body mass, alcohol consumption, and smoking. The model had very strong goodness-of-fit indices.

Scioscia AL see **Pretorius DH**
Scognamiglio R see **Buja G**
Secher NJ see **Henriksen TB**
Seeman E see **Hopper JL**

Segal NL: Twin, sibling, and adoption methods. Tests of evolutionary hypotheses. Am Psychol 1993 Sep; 48(9):943-56 (125 ref.)
Twin, sibling, and adoption studies have long been used by behavioral geneticists to identify genetic and environmental influences underlying human behavioral and physical variation. The full potential of these methodologies for unraveling the blend of biological, cultural, and experiential factors affecting human development has been insufficiently appreciated. The application of twin, sibling, and adoption designs for examining hypotheses generated by evolutionary theory is described. Potential contributions from a closer association between these disciplines are underlined.

Seidman DS see **Lipitz S**
Selby JV see **Mayer EJ**
Selby JV see **Reed T**
Selicorni A see **Zoppini C**
Sentias C see **Pedailles S**
Sepponen R see **Kinnunen E**

Sepúlveda WH, Quiroz VH, Giuliano A, Henríquez R: Prenatal ultrasonographic diagnosis of acardiac twin. J Perinat Med 1993;21(3):241-6
Acardiac twinning is a rare complication of monozygotic twin gestation occurring in 1/35,000 pregnancies or in 1% of all monozygotic twins. This condition is characterized by partial or complete lack of development of the heart in one of the twins, and requires that the normal twin (pump twin) provides circulation for itself as well as the acardiac sibling (perfused twin) by means of reverse circulation through large artery-to-artery and vein-to-vein anastomoses. The acardiac anomaly is uniformly fatal for the perfused twin, and the perinatal mortality for the normal twin is about 50%, usually as the result of congestive heart failure, polyhydramnios, and preterm delivery. In this report we present two cases of acardiac twin prenatally diagnosed by ultrasound. The principal sonographic features for prenatal diagnosis and the clinical management are briefly discussed.

Seymour CA see **Reardon DM**
Shalev J see **Lipitz S**

Sharma RR, Cast IP: Cerebral berry aneurysms in identical twins [letter] Surg Neurol 1993 Oct; 40(4):349-50

Sharma S see **Monteagudo A**

Sharony R, Pepkowitz SH, Hixon H, Machin GA, Graham JM Jr: Diprosopus: a pregastrulation defect involving the head, neural tube, heart, and diaphragm. Birth Defects 1993;29(1):201-9

Sheaff M see **Zuckerman MA**
Shen YZ see **Chou YH**

Sherer DM, Abramowicz JS, Jaffe R, Woods JR Jr: Cleft palate: confirmation of prenatal diagnosis by colour Doppler ultrasound. Prenat Diagn 1993 Oct; 13(10):953-6
We present a case of a twin with trisomy 47,XX+i(9p) in whom the diagnosis of cleft palate was confirmed by colour Doppler imaging demonstrating abnormal fluid flow across the fetal pharyngeal bone defect. Application of this technique in cases predisposed for this congenital lesion may prove beneficial in the diagnosis of the more subtle types of isolated cleft palate.

Shtereva K, Dukovski A, Dimitrov I, Lachev V: [A triple pregnancy following heterologous insemination and ovarian stimulation with a favorable outcome] Akush Ginekol (Sofiia) 1992; 31(1):35-6 (7 ref.) (Eng. Abstr.) **(Bul)**
The larger usage of inducing ovulation drugs in the last decade brought to more frequent multiple pregnancies. The authors describe triplet pregnancy after hetero-insemination and ovaries stimulation which ended the birth (by Cesarean section) of three alive and healthy babies. The triplet pregnancy is high-risky. More often hypertension anaemia and postpartum haemorrhage are met. The most important complication anyway is the preterm delivery which shows as a result unfavourable perinatal outcome. The question about the effectiveness of the prophylactic cerclage and the prophylactic tocolysis is discussed. The general opinion is that there is a higher rate perinatal death for the second and the third fetus.

Shtereva K see **Dukovski A**
Shulman A see **Ben-Nun I**

Shushan A, Mordel N, Zajicek G, Lewin A, Schenker JG, Sadovsky E: A comparison of sonographic growth curves of triplet and twin fetuses. Am J Perinatol 1993 Sep;10(5):388-91
Sonographic growth curves of 47 normal triplet pregnancies were compared with those of 71 uncomplicated twin gestations. Starting from the 25th week, the biparietal diameter in triplets was

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found to lag progressively compared with that of twins, reaching a mean difference of 2 weeks at 36 weeks gestation. Similarly, a significant difference was found between the femur length and head to abdomen circumference ratio growth curves of triplets and twins. It is concluded that as pregnancy continues from the 25th to the 36th gestational week, there is a significant delay in the growth patterns of normal triplet pregnancies compared with twin gestations.

Silman AJ, MacGregor AJ, Thomson W, Holligan S, Carthy D, Farhan A, Ollier WE: Twin concordance rates for rheumatoid arthritis: results from a nationwide study. Br J Rheumatol 1993 Oct; 32(10):903–7

We report the concordance rate for RA in a nationwide study of 91 monozygotic (MZ) and 112 dizygotic (DZ) pairs. Twin pairs were recruited from both a national media campaign and a 2-month prospective inquiry of *all* UK rheumatologists. Disease status was established following a structured clinical and serological appraisal, together with radiological assessment where necessary. Zygosity was confirmed using DNA fingerprinting. In all, 14 (15.4%) of the MZ and four (3.6%) of the DZ pairs were disease concordant (risk ratio: 4.3 95% CI 1.5 to 12.6). There was no difference in the concordance between the media and clinical derived twins. Further the excess MZ concordance persisted after adjusting for age, age at disease onset, sex and rheumatoid factor status. Analysing the data in relation to the timing of disease onset in the first affected twin showed that subsequent disease risk in the initially unaffected co-twins of the MZ affected probands increased with increasing duration of follow-up. We conclude that the overall MZ concordance at 15% is lower than the 30% figure normally quoted from a study some 30 years ago and sets a ceiling at the potential genetic contribution to disease susceptibility.

Silman AJ see **Cook NJ**

Silman AJ see **Hajeer AH**

Silman AJ see **MacGregor AJ**

Simeoni E see **Pankau R**

Simpson H see **Thomas DA**

Skre I, Onstad S, Torgersen S, Lygren S, Kringlen E: A twin study of DSM-III-R anxiety disorders. Acta Psychiatr Scand 1993 Aug;88(2):85–92

The prevalence of anxiety disorders was studied in a sample of 20 monozygotic (MZ) and 29 dizygotic (DZ) co-twins of anxiety disorder probands. A comparison group of co-twins of 12 MZ and 20 DZ twin probands with other non-psychotic mental disorders was also studied. All subjects were personally interviewed with the Structured Clinical Interview for DSM-III-R Axis I (SCID-I). Panic disorder was significantly more prevalent in co-twins of panic probands. Generalized anxiety disorder (GAD) was more prevalent in co-twins of GAD probands with a history of mood disorder (NS). Post-traumatic stress disorder was significantly more prevalent in co-twins of anxiety probands and was more prevalent in MZ than in DZ co-twins. The prevalences of social and simple phobia were equal in co-twins of anxiety and comparison probands. For both panic disorder and generalized anxiety disorder the MZ:DZ concordance ratio was more than 2:1. The results support the hypothesis of a genetic contribution in the etiology of panic disorder, generalized anxiety disorder and post-traumatic stress disorder. The hypothesis that simple and social phobia are mainly caused by environmental experiences was also supported.

Skre I see **Torgersen S**

Slemenda CW: Cigarettes and the skeleton [editorial; comment] N Engl J Med 1994 Feb 10;330(6):430–1

Smith JF see **Wax JR**

Smith KH see **Johns DR**

Snaith ML see **MacGregor AJ**

Sperber GH see **Machin GA**

Sperling L see **Henriksen TB**

Spillman JR: A study of maternity provision in the UK in response to the needs of families who have a multiple birth.
Acta Genet Med Gemellol (Roma) 1992; 41(4):353–64

Staessen C, Janssenswillen C, Van den Abbeel E, Devroey P, Van Steirteghem AC: Avoidance of triplet pregnancies by elective transfer of two good quality embryos. Hum Reprod 1993 Oct;8(10):1650–3

Attempts to increase the probability of a successful pregnancy in in-vitro fertilization (IVF) treatment by increasing the number of embryos transferred automatically also increase the probability of multiple pregnancies and their attendant risks. Even where the number of transferred embryos is limited to a maximum of three as in this and other centres, there is a high incidence of twins and triplets. The question therefore arises whether the number of transferred embryos should be further limited to a maximum of two in cases where the prognosis is otherwise good. The only objection to this idea is a possible lowering of pregnancy rate. The present study set out to investigate this question. No significant lowering of pregnancy rate was found, so that limiting the number of transferred embryos to two where the prognosis is otherwise good has now become standard practice in our centre. A good IVF prognosis was defined by the following criteria: first attempt for IVF, less than 37 years old, and good embryo development. From 183 patients fulfilling these criteria, 80 agreed to the transfer of two embryos (group 1) and 103 opted for a triple transfer (group 2). Patient characteristics and embryology results were similar in the two groups. In group 1, 34 patients (42.5%) became pregnant and in group 2, 50 (48.5%). This difference is not significant. Similarly, twin pregnancy rates in both groups were high; eight twin pregnancies (23.5%) in group 1 and 12 (24%) in group 2.(ABSTRACT TRUNCATED AT 250 WORDS)

Stanley F see **Petterson B**

Steffen S, Hoedemaker M, Grunert E: [Non-recognition of a second fetus in a recumbent cow during veterinary obstetrical assistance (expert opinion)] DTW Dtsch Tierarztl Wochenschr 1994 Jan;101(1):8–10 (Eng. Abstr.) **(Ger)**

The objective of the expert opinion presented in this paper is the missing of a second fetus after veterinary obstetrical assistance in a downer cow. The necessity of a thorough examination after obstetrical manipulation is stressed with special reference to problems occurring in recumbent cows. In addition, possible complications after inappropriate removal of retained placental fetal membranes are discussed.

Steinmetz H see **Jäncke L**

Steller MA, Genest DR, Bernstein MR, Lage JM, Goldstein DP, Berkowitz RS: Natural history of twin pregnancy with complete hydatidiform mole and coexisting fetus. Obstet Gynecol 1994 Jan; 83(1):35–42 (21 ref.)

OBJECTIVE: To investigate the clinical features and natural history of twin conceptions consisting of complete hydatidiform mole and a coexisting fetus. METHODS: Since 1973, eight

AUTHOR SECTION

well-documented cases of twin pregnancy with complete hydatidiform mole and coexisting fetus have been treated at the New England Trophoblastic Disease Center (NETDC). The clinical features of these eight patients were compared to 71 patients with singleton complete hydatidiform mole treated at the NETDC and with the published experience of other investigators. Flow cytometric analysis of DNA content was performed in addition to histologic inspection to assist in confirming the diagnosis of twin pregnancy with complete hydatidiform mole and coexisting fetus. RESULTS: Five of the eight patients in this series developed persistent gestational trophoblastic tumor requiring chemotherapy. Three of these five patients developed metastases requiring multi-agent chemotherapy to achieve remission. The presenting symptoms of twin pregnancy with complete hydatidiform mole and coexisting fetus were similar to those in patients with a singleton complete mole. However, compared to singleton complete molar gestation, a twin pregnancy with complete mole and coexisting fetus was diagnosed at a later gestational age, had higher preevacuation beta-hCG levels, and had a greater propensity to develop persistent gestational trophoblastic tumor. CONCLUSION: Our findings indicate that patients with complete hydatidiform mole and coexisting fetus are at high risk for developing persistent gestational trophoblastic tumor.

Stencl J see **Plank K**

Stevenson J, Pennington BF, Gilger JW, DeFries JC, Gillis JJ: Hyperactivity and spelling disability: testing for shared genetic aetiology.
J Child Psychol Psychiatry 1993 Oct;34(7):1137–52
The influence of genetic factors in the comorbidity of spelling disability and hyperactivity was investigated in two samples of 190 and 260 same sex twin pairs. The method of bivariate group heritability was used to estimate the genetic correlation for spelling disability and hyperactivity. A similar though not statistically significant value for the genetic correlation was obtained for the two samples (0.29 and 0.42). It was estimated that approximately 75% of the co-occurrence of these two conditions was due to shared genetic influences.

Stone JA see **Gale RP**

Stone NN see **Weiss RE**

Storvick D see **Tawil R**

Strain JD see **Popek EJ**

Streissguth AP, Dehaene P: Fetal alcohol syndrome in twins of alcoholic mothers: concordance of diagnosis and IQ. Am J Med Genet 1993 Nov 1; 47(6):857–61
The effects of teratogens can be modified by genetic differences in fetal susceptibility and resistance. Twins of alcoholic mothers provide a unique opportunity to study this phenomenon with respect to alcohol teratogenesis. Sixteen pairs of twins, 5 MZ and 11 DZ, all heavily exposed to alcohol prenatally, were evaluated. They represented all available twins of alcohol-abusing mothers who were on the patient rolls of the authors. The rate of concordance for diagnosis was 5/5 for MZ and 7/11 for DZ twins. In two DZ pairs, one twin had fetal alcohol syndrome (FAS), while the other had fetal alcohol effects (FAE). In 2 other DZ pairs, one twin had no diagnosis while one had FAE. IQ scores were most similar within pairs of MZ twins and least similar within pairs of DZ twins discordant for diagnosis. Despite equivalent alcohol exposure within twin pairs, alcohol teratogenesis appears to be more uniformly expressed in MZ than in DZ twins. These data are interpreted as reflecting the modulating influence of genes in the expression of the teratogenic effects of alcohol.

Sulewski ME see **Johns DR**

Swaminathan S see **Thomas DA**

Swinton M see **Jenaway A**

Switala I, Dufour P, Ducloy AS, Vinatier D, Bernardi C, Monnier JC, Plantier I, Fortier B: [Medullary aplasia during treatment for congenital toxoplasmosis in a twin pregnancy]
J Gynecol Obstet Biol Reprod (Paris) 1993; 22(5):513–6 (Eng. Abstr.) **(Fre)**
The authors report a case of a patient who in the 24th week of a twin pregnancy became sero-positive for toxoplasmosis. This was diagnosed by cordocentesis as being infected, and the treatment was therefore started with pyrimethamine and sulfadiazine and folic acid at the 28th week of pregnancy. At 35 weeks, the patient had an acute medullary aplasia due to the absence of the folates. The mother's state was improved rapidly by giving her folinic acid and the twins were normal haematologically. In this case, the authors point out how important the folates are in a pregnancy, especially in twin pregnancies, and point out the precautions that have to be taken when treatment with pyrimethamine and sulfadiazine is started for congenital toxoplasmosis.

Syrbe G see **Wollina K**

Syrenicz A, Czekalski S, Majkowska L: [Alport's syndrome in twins] Pol Tyg Lek 1991 Oct 28–Nov 4;46(43–44):844–6 (Eng. Abstr.) **(Pol)**
Alport's syndrome consists of hereditary nephritis, often progressing to renal failure, and variable neural hearing loss. It was diagnosed in dizygotic twins, aged 32 years, suffering from nephropathy manifested by microscopic hematuria, proteinuria and chronic renal failure, accompanied by hearing loss and ocular disorders (observed in both retina and lenses). Gothic palate has been noted in both patients. Glomerulitis was diagnosed for the first time at the age of 11 and 12 years, respectively. Hearing loss began in one brother 10 years later, and in another 11 years later. Renal failure developed much later. Diagnostic problems were due to the fact, that streptomycin was used in childhood (another cause of hearing loss?) and to the lack of any symptoms of Alport's syndrome in other members of the family.

Szatmari A, van den Anker JN, Gaillard JL: An acardiac infant: the extreme form of the twin-twin transfusion syndrome. Int J Cardiol 1993 Oct 1; 41(3):237–40
A description of the pathologic and clinical findings in a twin with twin-to-twin transfusion syndrome is given. One of them died immediately after birth, with the autopsy revealing the histologic absence of the myocardium. The surviving infant presented with short term heart failure and with persistent left ventricular hypertrophy over 6 months. The circulatory changes in the twin-to-twin transfusion syndrome can result in complete myocardial involution in one and an unexpectedly long compensatory left ventricular hypertrophy in the other infant. Caution is advised in order to avoid misdiagnosing hypertrophic cardiomyopathy. In such a case a longer follow-up period is recommended.

T

Taine L see **Saura R**

AUTHOR SECTION

Takauchi Y, Inamori N, Ohashi Y, Taniguchi H, Fukumitsu K, Kinouchi K, Tashiro C: [Anesthetic management for cesarean section in two parturients with quintuplet gestation] Masui 1993 Dec; 42(12):1844–8 (Eng. Abstr.) **(Jpn)**
Two parturients with quintuplet pregnancy underwent urgent or elective cesarean section under general anesthesia at 30 and 29 week gestational ages respectively. Since multiple gestation pregnancy requires enough medical staffs and instruments for preterm newborn resuscitation, emergency cesarean delivery was avoided. For cesarean delivery, the operation was started immediately after crash induction and intubation, and less than 1% isoflurane balanced with 60% nitrous oxide was used before birth in attempt to maintain uterine relaxation and sufficient utero-placental perfusion. After the delivery, aggressive maneuvers with PGE1 infusion, intravenous ergometrine and oxytocin, and interruption of volatile anesthetic inhalation (replaced by buprenorphine) were employed for decreasing the blood loss. The anesthesia and postoperative course of two patients and their babies were uneventful. Thus, anesthetic considerations may include; 1) high risk pregnancy related with huge pregnant uterus, 2) preterm labor, 3) preparation of sufficient man-power and instruments, 4) to avoid uterine contraction before delivery for fetal oxygenation, and 5) the puerperal promotion of uterine contraction to decrease blood loss.

Taniguchi H see **Takauchi Y**

Tanner MJ see **Reardon DM**

Tannirandorn Y, Phaosavasdi S: Accuracy of ultrasonographic criteria for the prenatal diagnosis of placental amnionicity and chorionicity in twin gestations. J Med Assoc Thai 1993 Apr;76(4):190–5
A total of 31 twin pregnancies were studied antenatally with ultrasound, followed up clinically, and the placentas examined to determine if, solely on the basis of prenatal sonography, an accurate assessment of amnionicity and chorionicity could be made. Sonographic features noted included number of placental sites, fetal gender, qualitative and quantitative evaluation of the dividing membrane. Documentation of two placental sites or different fetal gender confirms the presence of a dichorionic-diamniotic pregnancy. When only one placental site or similar fetal gender is demonstrated, examination of the membrane is helpful for distinguishing between dichorionic and monochorionic diamniotic gestations. A thick membrane separating the fetuses was seen in all dichorionic diamniotic pregnancies. A thin membrane was visible in 94.4 per cent of monochorionic-diamniotic pregnancies. The predictive value of a thick membrane with regard to a dichorionic-diamniotic pregnancy was 92.3 per cent and the predictive value of a thin membrane with regard to a monochorionic-diamniotic pregnancy was 100 per cent. The thickness of the membrane was measured in 13 cases. With a thickness of 2 mm used as a cutoff point, the accuracy in predicting monochorionic or dichorionic twinning was 100 per cent for both. Lack of visualization of a separating membrane suggests a monochorionic-monoamniotic pregnancy.

Tashiro C see **Takauchi Y**

Tatum BS see **Mitra AG**

Tawil R, Storvick D, Weiffenbach B, Altherr MR, Feasby TE, Griggs RC: Chromosome 4q DNA rearrangement in monozygotic twins discordant for facioscapulohumeral muscular dystrophy.
Hum Mutat 1993;2(6):492–4

Taylor CM see **Inward CD**

Tellegen A see **Lykken DT**

Templeton JM: Conjoined twins [letter; comment] J R Soc Med 1993 Nov;86(11):681

Thiene G see **Buja G**

Thomas DA, Swaminathan S, Beardsmore CS, McArdle EK, MacFadyen UM, Goodenough PC, Carpenter R, Simpson H: Comparison of peripheral chemoreceptor responses in monozygotic and dizygotic twin infants. Am Rev Respir Dis 1993 Dec; 148(6 Pt 1):1605–9
The peripheral chemoresponses of infant twin pairs were determined using a single-breath hyperoxic stimulus. A total of 43 twin pairs of comparable gestation and birth weight were studied during sleep at a mean (SD) age of 8 wk (1.4) while alternately breathing either air or 16% oxygen in nitrogen. Infants responded to a single breath of 100% oxygen by a reduction in ventilation; the mean (SEM) reduction in air was 273 ml/min (10.6) and in 16% oxygen 560 ml/min (18.4). Within-pair variances were compared in 14 monozygotic and 28 dizygotic pairs utilizing combined responses (air + 16% oxygen) computed for measurements made in behavioral quiet sleep and in 9 monozygotic and 20 dizygotic pairs for whom data were complete in polygraphically confirmed quiet sleep. The variance of responses within dizygotic twin pairs was greater than in monozygotic pairs when expressed in ml/min: F ratio 4.11 ($p = 0.005$) for all data and F ratio 7.67 ($p = 0.003$) in quiet sleep. Expressed in ml/min/kg the difference was less significant: F ratio 1.83 ($p = 0.126$) for all data and F ratio 3.46 ($p = 0.039$) in quiet sleep. Gender, birth weight, and birth order had no effect on these findings. This closer similarity of response in monozygotic twin pairs is explained by proposing a high degree of heritability for the response.

Thompson LA, Detterman DK, Plomin R: Differences in heritability across groups differing in ability, revisited. Behav Genet 1993 Jul;23(4):331–6
Three recent studies have used twin data to explore the possibility of differential contributions of heritability and environmentality to individual differences in cognitive ability as a function of ability level (Detterman, D. K., et al., Behav. Genet. 20:369–384; 1990; Bailey, M. J. and Revelle, W., Behav. Genet. 21:397–404, 1991; Cherny, S. S., et al., Behav. Genet. 22:153–162, 1992). All arrived at different conclusions: higher heritability at the low end, higher heritability at the high end, and no differential influence, respectively. The current report involves a sample of 148 identical and 135 fraternal twin pairs from the Western Twin Project who were tested on a battery of intelligence and achievement tests to further explore the issue. The results suggest no significant differences in heritability at either the high or the low end, although a trend toward higher heritability for children of higher ability is evident. Individual differences for a composite ability/achievement score showed significantly greater influence of shared family environment at the low end than the rest of the distribution. In general, results for cognitive ability and academic achievement were highly similar.

Thompson LA see **Petrill SA**

Thomsen JK, Fogh-Andersen N, Jaszczak P: Atrial natriuretic peptide, blood volume, aldosterone, and sodium excretion during twin pregnancy.
Acta Obstet Gynecol Scand 1994 Jan;73(1):14–20
BACKGROUND. The reports on plasma

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concentrations and physiological function of atrial natriuretic peptide (ANP) during pregnancy are conflicting. In a recent prospective study, including 40 healthy primigravidae, we found a highly significant decrease in the plasma concentration of ANP (p-ANP) during the third trimester and the results indicated that ANP takes part in regulation of blood volume and renal function during pregnancy as in the nonpregnant state. In order to test these results, a study was performed in primigravidae with twin pregnancy to test if the accentuated physiological changes here were followed by a corresponding greater decrease in p-ANP. METHODS. Ten healthy primigravidae with twin pregnancy were examined four times during pregnancy plus 12 weeks after delivery. Each time the following were measured: p-ANP, aldosterone, renin, blood volume (carbon monoxide), cardiac output (Doppler), blood pressure and sodium excretion. Interdependence of the changes in ANP and in the other parameters was tested using Spearman's rank correlation test on the delta (delta)-values (the differences in measurements between investigations). The results were compared to the results obtained during singleton pregnancy using the Mann-Whitney rank sum test. RESULTS. All pregnant values of p-ANP during twin pregnancy were lower than 12 weeks after delivery, $p < 0.01$. In the 20th, 28th, and 32nd week p-ANP was lower in twin pregnancy than in singleton pregnancy, $p < 0.05$. There was a negative correlation between changes in p-ANP and changes in: a) blood volume, $R = -0.8$, $p < 0.0001$, b) aldosterone, $R = -0.66$, $p < 0.0001$, c) renin, $R = -0.52$, $p < 0.01$, d) cardiac output, $R = -0.68$, $p < 0.0001$. There was a positive correlation between changes in p-ANP and changes in: a) fractional excretion of sodium, $R = 0.73$, $p < 0.0001$, and b) total peripheral resistance, $R = 0.61$, $p < 0.0001$. CONCLUSION. The results suggest that the competitive relationship between ANP and the renin-aldosterone system in regulating sodium balance and fluid volume is preserved during pregnancy. The vasodilation during pregnancy is not mediated by ANP.

Thomson W see **Silman AJ**

Thorpe JW see **Mumford CJ**

Timor-Tritsch I see **Evans MI**

Timor-Tritsch IE see **Monteagudo A**

Tobella L see **Daher V**

Tomomasa T see **Nako Y**

Torgersen S, Onstad S, Skre I, Edvardsen J, Kringlen E: "True" schizotypal personality disorder: a study of co-twins and relatives of schizophrenic probands. Am J Psychiatry 1993 Nov;150(11):1661-7
OBJECTIVE: The aim of the study was to investigate the type and nature of personality disorders among biological relatives of schizophrenic probands. METHOD: A total of 176 nonschizophrenic co-twins and other first-degree relatives of schizophrenic probands were compared to 101 co-twins and first-degree relatives of probands with major depression. RESULTS: Schizotypal personality disorders were more common and histrionic personality disorders less common among the biological relatives of schizophrenic probands than among relatives of probands with major depression. A further exploration of the schizotypal criteria revealed that the so-called "negative" criteria such as odd speech, inappropriate affect, and odd behavior, as well as excessive social anxiety, were significantly more common among the relatives of schizophrenic probands. The latter criterion seems particularly important. The so-called "positive" schizotypal criteria were partly, although not statistically significantly, more common among the relatives of probands with major depression. There were only minor differences in frequencies of the negative criteria between monozygotic co-twins, dizygotic co-twins, and other first-degree relatives of schizophrenic probands. CONCLUSIONS: The present study suggests that DSM-III-R schizotypal disorder is defined by a set of criteria that partly describe a "true" schizophrenia-related personality disorder and partly features that are not specific for relatives of schizophrenic probands. Furthermore, the genetic relationship between schizophrenia and "true" schizotypal personality disorder seems weak. Excessive social anxiety may be a marker of a possible genetic link between the disorders.

Torgersen S see **Skre I**

Torrey EF see **Bartley AJ**

Torrey EF see **Polymeropoulos MH**

Torrey EF see **Rapaport MH**

Toyoshima M, Fujihara T, Hiroki K, Namatame R, Ka K, Ooe K: [Evaluation of cross circulation in conjoined twins] Masui 1993 Sep;42(9):1347-50 (Eng. Abstr.) **(Jpn)**
This report describes the evaluation of cross circulation in conjoined twins. Female thoracoomphalopagus conjoined twins were delivered by cesarean section after 37 week's gestation. CT, MRI and echography were performed. A partial communication of pericardium and sternum, and a union of the liver were found. For the preoperative evaluation of cross circulation, a bolus of indigo carmine was injected, and the pigment appeared in the urine of the other twin. RI angiography showed that radionuclides in one twin were similar to those in the other after 5-10 minutes. During the operation, an injected bolus of SCC to one twin was not effective for the other twin. Inhaled isoflurane in one twin did not appear in the expired gas of the other twin. After the intentional hemorrhage for 3 minutes from one twin, the hemoglobin concentration of one of the twin was the same as that of the other. This demonstrates that acute hemorrhage from one twin seems to result in a significant and rapid decrease of hemoglobin in both babies equally. However, intravenous infusion of drugs to one of the twins requires a relatively long time to take effect in the other baby. We must be careful in anesthetic management of the surgical separation of conjoined twins.

Tran DA: Successful separation of ischiopagus tripus conjoined twins with one twin suffering from brain damage. J Pediatr Surg 1993 Jul;28(7):965-8
To our knowledge, until 1988, the year we performed our operation, only six other cases of ischiopagus tripus conjoined twins had been separated in the world. In our case, operated on in October 1988, one twin remained in a vegetative state after an episode of acute and dramatic encephalitis. However, the separation was successfully performed and now, 3 years after the operation, the two continue to live. The particularities of this case and the factors that made the separation successful are reported.

Trask C, Lage JM, Roberts DJ: A second case of "chorangiocarcinoma" presenting in a term asymptomatic twin pregnancy: choriocarcinoma in situ with associated villous vascular proliferation. Int J Gynecol Pathol 1994 Jan;13(1):87-91 (18 ref.)
We report a case of "chorangiocarcinoma" (choriocarcinoma in situ in association with a villous

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vascular proliferation) presenting in one of dichorionic diamniotic twin placentae at term in an asymptomatic pregnancy. This case is the second reported of chorangiocarcinoma in the literature and the first case of choriocarcinoma (in situ or otherwise) in a twin pregnancy. The lesion had the gross appearance of an infarct in the presenting twin placenta. Histologic sections revealed malignant villous trophoblast in eight microscopic fields within the placental infarct. The remainder of the placenta and that of the cotwin were normal. The mother and infants had no evidence of metastatic disease 3 months postpartum. This placenta is the fourth example in the English literature of isolated choriocarcinoma in situ.

Trichopoulos D see **Hsieh CC**
True W see **Goldberg J**
True WR see **Eisen SA**
Tsapanos V see **Eberle AM**
Tsou Yau KI see **Chou YH**
Tsuang MT see **Goldberg J**
Tsutsumi O see **Hakuno NK**

Turner WJ: Comments on discordant monozygotic twinning in homosexuality. Arch Sex Behav 1994 Feb;23(1):115–9

U

Uchino K: Prediction of dystocia by entanglement (impaction) in vertex–vertex type twin delivery. Asia Oceania J Obstet Gynaecol 1993 Dec; 19(4):417–25

We studied the fetal position in vertex–vertex type twins in 6 impaction cases and in 23 cases of vaginal deliveries without impaction. The results obtained were as follows: (1) In 6 impaction cases, the presenting head of the first fetus was shown to be at the maternal pubic side and the head of the second fetus at the maternal sacral side. (2) In 23 cases without impaction, the presenting head of the first fetus was shown to be at the maternal sacral side and the head of the second fetus at the maternal pubic side. (3) There was a statistical significant difference between the 6 impaction cases and the 23 non impaction cases as determined by the Chi-square test ($p < 0.001$). Our study suggests that it is possible to predict the occurrence of impaction in vertex–vertex type twin deliveries by examining the positional relationship of the presenting heads of the first and second fetuses. There was a higher possibility of impaction when the head and body of twin 1 was located in the maternal–pubic position, while the head of twin 2 was in the sacral position. In contrast, impaction never occurred when the head and body of twin 1 was in the maternal–sacral position and the head of twin 2 was in the pubic position.

Udo JJ see **Asindi AA**
Ueda K see **Kurosawa K**
Uemura T see **Satoh K**

Uitti RJ, Maraganore DM: Adult onset familial cervical dystonia: report of a family including monozygotic twins. Mov Disord 1993 Oct; 8(4):489–94

We report the first family with adult onset cervical dystonia in which monozygotic twins and multiple family members are affected. In this family, the disease exhibits an autosomal dominant inheritance pattern, and all affected members have only cervical dystonia. Five members have definite cervical dystonia, and five others have possible cervical dystonia. Although identical genotypically, the twins demonstrate some phenotypic variation. Despite long follow-up, no family members have shown progression from focal to generalized dystonia. This family may prove valuable in identifying a gene locus for cervical dystonia and hence determine whether a single gene locus exists for hereditable focal dystonia and generalized dystonia.

Ulrichsen H see **Henriksen TB**
Unal D see **Millet V**
Unno N see **Hakuno NK**
Uval J see **Lipitz S**

V

Vågerö D, Leon D: Ischaemic heart disease and low birth weight: a test of the fetal-origins hypothesis from the Swedish Twin Registry [see comments] Lancet 1994 Jan 29;343(8892):260–3

Twins constitute a population with lower than average birth weight for reasons that are not a consequence of social disadvantage. The hypothesis that ischaemic heart disease (IHD) is linked to low birth weight was tested by analysing whether or not 8174 female and 6612 male Swedish twins had a higher mortality compared to the general Swedish population. The association between adult body height and IHD mortality was also analysed in a nested case–control study among monozygotic and dizygotic twins. Ischaemic heart disease mortality was not higher among twins (women: relative risk [RR] 0.99; 95% confidence limits [CL] 0.89–1.10; men: RR 0.85; CL 0.79–0.92). However, the shorter twin in a twin pair was more likely to die of heart disease than the taller (odds ratio [OR] 1.15, CL 1.03–1.25). We suggest that postnatal influences may well be as important as prenatal influences in producing any effect on ischaemic heart disease mortality and that the type of growth retardation in utero experienced by twins may not constitute a risk for ischaemic heart disease in adulthood.

Valduss D, Murray DL, Karna P, Lapour K, Dyke J: Use of intravenous immunoglobulin in twin neonates with disseminated coxsackie B1 infection. Clin Pediatr (Phila) 1993 Sep;32(9):561–3

van Baal GC see **Orlebeke JF**
Van Cauter E see **Degaute JP**
van de Borne P see **Degaute JP**
Van den Abbeel E see **Staessen C**
van den Anker JN see **Szatmari A**

Vandermolen DT, Layman LC, Devoe LD: Dicavitary uteri with twin gestation: a case following clomiphene citrate therapy and review of obstetric outcomes. Am J Perinatol 1993 Nov;10(6):444–7 (25 ref.)

We report the first case of dicavitary twin pregnancy, following clomiphene citrate therapy, in a patient with uterus bicornis bicollis and anovulation. A review of the literature is presented, and obstetric outcomes and management of these rare pregnancies are discussed.

van Haeringen H, Hradil R: [Twins in cattle. Freemartin or not? Current aspects] Tijdschr Diergeneeskd 1993 Oct 15;118(20):648–9 (Eng. Abstr.) **(Dut)**

Methods are described for the detection of freemartins. The first step is to measure the length of the vagina, followed, if necessary, by laboratory investigations--blood group, chromosome, or DNA typing.

Van Steirteghem AC see **Staessen C**
van Wees AG see **Boomsma DI**
Vanzulli A see **Zoppini C**

AUTHOR SECTION

Vaupel JW see **McGue M**
Vdo JJ see **Asindi AA**
Venturoli S see **Zerbini M**
Verdier G see **Saura R**
Vergnaud A see **Saura R**
Vernon PA see **Livesley WJ**
Vetter B see **Check JH**
Vetter K: Considerations on growth discordant twins. J Perinat Med 1993;21(4):267-72 (17 ref.)
Some considerations as to the pathophysiology of growth discordancy in twins are presented. Based on findings of Doppler flow measurements in growth discordant twins an alternative mechanism to that of twin-twin transfusion is presented which leads to a small stuck twin with an oligohydramnios and an oversized twin surrounded by a polyhydramnios. Based on feto-fetal interrelations the smaller fetus with an insufficient placental supply sends out growth-stimuli that finally result in increased growth of the other fetus with a normal placental function. Only in multiple pregnancies can such a signal have the effect of growth promotion on the fetus with normal supply. The result is being called Growth Factor Sequence, and in contrast to feto-fetal transfusion there is no difficulty to understand why the smaller fetus may have an enddiastolic block in the fetoplacental circulation. Thus, as long as feto-fetal transfusion is not proven, different pathomechanisms--like that of the Growth Factor Sequence--have to be taken into account in cases of discordant twins.
Vigliarolo MA see **Ruffa G**
Viljoen D see **Wainwright H**
Villablanca E, Ruiz M, Las Heras J, Willandt JI, Rubio R: [A molar pregnancy coexistent with a viable fetus in a twin pregnancy] Rev Chil Obstet Ginecol 1992; 57(2):99-105; discussion 105-6 (Eng. Abstr.) **(Spa)**
A case of molar gestation associated with an only fetus, both product of an twin gestation is presenting. We analyzed the clinical picture, the diagnostic method, the after birth resolution and evolution of this gestation. The result of a live newborn of 1,300 g and verify coexisting of complete hydatidiform mole.
Vinatier D see **Switala I**
Vintzileos AM see **Eberle AM**
Vintzileos AM see **Egan JF**
vom Saal FS see **Even MD**
von Eyck J see **Arabin B**
von Mühlenbrock R see **Hasbún J**
Voskuhl R see **Martin R**
Vukovic J see **Dumic M**

W

Wacker D see **Dungy CI**
Wainwright H, Viljoen D: Developmental anomalies in monozygous twins resembling the human homologue of the mouse mutant disorganization. Clin Dysmorphol 1993 Apr;2(2):135-9
Human monozygous (Mz) twins are described with a pattern of abnormalities similar to those reported in heterozygous expression of the mouse mutant disorganisation gene (Ds). These include anomalies of the skeletal, gastrointestinal, genito-urinary and central nervous system. Concordance in Mz twins is suggestive of a genetic aetiology and lends further credence to the putative existence of a human homologue for Ds.
Walker R, Blaese RM, Carter CS, Chang L, Klein H, Lane HC, Leitman SF, Mullen CA, Larson M: A study of the safety and survival of the adoptive transfer of genetically marked syngeneic lymphocytes in HIV-infected identical twins. Hum Gene Ther 1993 Oct;4(5):659-80
This phase I/II pilot project will evaluate the survival, tolerance, safety, and efficacy of infusions of activated, gene marked, syngeneic T lymphocytes obtained from HIV seronegative identical twins on the functional immune status of HIV infected twin recipients. T cells from each seronegative twin will be obtained by periodic apheresis, separated into CD4 and CD8 enriched populations by monoclonal antibody affinity binding techniques, induced to polyclonal proliferation with anti-CD3 and rIL-2 stimulation, transduced with distinctive neoR retroviral vectors, and expanded 10-1,000 fold in numbers during approximately 2 weeks of culture. These marked T cell fractions will then be infused into the seropositive twins and the survival of the uniquely marked T cell populations will be monitored by vector-specific PCR, while the recipients' functional immune status is monitored by standard in vitro and in vivo testing protocols. A total of 3 cycles of treatment will be given at intervals of 6 weeks between infusions.
Wang PJ see **Chou YH**
Wapner RJ see **Evans MI**
Wapner RJ see **Macones GA**
Warsof SL see **Sayegh SK**
Watson L see **Petterson B**
Wax JR, Smith JF, Floyd RC: Monoamniotic twins discordant for anencephaly: diagnosis by CT amniography. J Comput Assist Tomogr 1994 Jan-Feb;18(1):152-4
Prenatal diagnosis of monoamnionicity is necessary for optimal care of a twin gestation. When the fetuses are discordant for a lethal anomaly, unequivocal confirmation is imperative. Ultrasound evaluation of our patient revealed a twin gestation discordant for anencephaly and with possible monoamnionicity. When sonography was inconclusive, CT amniography confirmed a single amniotic cavity, permitting appropriate parental counseling and pregnancy management. CT amniography is a useful adjunct to ultrasound in evaluating twins discordant for a lethal anomaly when monoamnionicity is suspected.
Weber HS see **Gleason MM**
Weiffenbach B see **Tawil R**
Weinberger DR see **Bartley AJ**
Weinblatt V see **Macones GA**
Weiss RE, Garden RJ, Stone NN: Isograft bladder mucosal transplantation for hypospadias repair in identical twins. J Urol 1993 Dec;150(6):1884-5
Urethral reconstruction with a bladder mucosal free graft offers several advantages for patients with complex hypospadias. We report a case in which identical twins circumcised at birth presented with mid-shaft hypospadias and chordee. A bladder mucosa graft was harvested from 1 twin, divided and used to form 2 neourethras. The donor twin underwent hypospadias repair, followed immediately by repair in the second twin with the isograft neourethra. To our knowledge this is the first reported case of bladder mucosal transplantation for hypospadias repair.
Weissbecker KA, Wolf B, Eaves LJ, Marazita ML, Nance WE: Combined pedigree and twin family study to determine the sources of variation in serum biotinidase activity: the usefulness of multiple study designs. Am J Med Genet 1993 Aug 15;47(2):231-40
Biotinidase, the enzyme responsible for recycling the vitamin biotin, is deficient in most individuals with late-onset multiple carboxylase deficiency. Based on

AUTHOR SECTION

clinical criteria, biotinidase deficiency appears to be inherited as an autosomal recessive trait; however, the inheritance of biotinidase serum activity as a quantitative trait has not been studied previously. In this study, both segregation analysis of proband families and the analysis of twin family data were used to determine the relative contributions of a major gene, polygenes and environment to the variation in serum biotinidase activity. Segregation analysis of 24 families of biotinidase-deficient individuals indicated that serum biotinidase activity is determined by the segregation of a single codominant major gene with the variability about the mean of each major genotype attributable to environmental effects. Significant polygenic effects could not be detected by this analysis. Variance component analysis of 128 twin families, which included the twins, their spouses, and their offspring, indicated that 70% of total variance in biotinidase activity is attributable to additive genetic effects, 22% to individual environmental effects, and 8% to shared environmental effects. The model also included an age effect for females. A portion (27%) of the estimated additive variance may be attributed to the segregation of the major gene. This study emphasizes the usefulness of studying multiple data sets representing different types of family relationships.

Weissman A see **Blickstein I**

Welsh KA see **Breitner JC**

Wen ZQ see **Saura R**

Wennergren M see **Lindberg B**

Wessel A see **Pankau R**

Wessel J: [Cesarean section of the second twin. Is this unusual mode of delivery justifiable?]
Geburtshilfe Frauenheilkd 1993 Sep;53(9):609-12 (Eng. Abstr.) **(Ger)**
Within a ten-year period 1983-1992 eleven Caesarean sections were performed on the second twin after the first twin had been born vaginally. The reasons leading to this rather unusual mode of delivery are described here. Predominantly, multiple risk factors were present. One first twin and one second twin died in the early post natal period. In a comparative study of the literature, it is shown, that this, disputed mode of delivery has increased during the last twenty years and that, under special circumstances, it is a justifiable method of management of gemini deliveries.

White VM see **Hopper JL**

Whittle MJ see **Beattie RB**

Wijesiri UW see **Williams CJ**

Willandt JI see **Villablanca E**

Williams CJ, Wijesiri UW: Lipid data from NHLBI veteran twins: interpreting genetic analyses when model assumptions fail. Genet Epidemiol 1993; 10(6):551-6
Analyses were performed on lipid data from the NHLBI Veteran Twin Study. The analyses focused on longitudinal multivariate models, describing how the genetic effects on lipids vary over time. Our pedigree-based model selection approach allows simultaneous estimation of both covariance structure parameters and regression parameters. The analyses reveal strong correlations between additive genetic effects over time, implying that genetic effects on lipids are somewhat constant throughout the life span represented within this sample. Both univariate preliminary analyses and robust fitting applied to the longitudinal models indicate that several assumptions underlying the twin analyses are violated. Although variance component and correlation parameter estimates are not much changed by robust fitting analyses, questions remain about the behavior of parameter estimates in multivariate genetic models under departures from model assumptions.

Williams MA see **Reisner DP**

Williams RL, Medalie JH: Twins: double pleasure or double trouble? Am Fam Physician 1994 Mar; 49(4):869-76 (25 ref.)
The birth of twins can be an exciting and challenging experience for a family. However, circumstances unique to the relationship between the twin and the family and the relationship between the twins themselves may exacerbate existing problems or create new ones. Parents are often overwhelmed by the amount of time and work involved in caring for the twins, and other siblings may feel excluded from the family. Twins themselves may have difficulties with processes such as individuation and bonding with other family members. With supportive anticipatory guidance, physicians can help parents and siblings of newborn twins adjust to the special circumstances that the birth of twins can bring.

Wilson H see **Popek EJ**

Wolf B see **Weissbecker KA**

Wollina K, Bowen DJ, Syrbe G, Zintl F: Female twins with severe Christmas disease (hemophilia B). Thromb Haemost 1993 Nov 15;70(5):774-6
Hemophilia B is an X-linked bleeding disorder. We report on female twins, who were conspicious in prolonged bleeding after venipuncture as well as hematomas after intramuscular injections even in the first months of their life. Their father suffering from a severe hemophilia B deceased in 1992. Their mother, half-brother and grandmother from their father's side had no signs of bleeding disorders. Clotting analysis performed in both twins revealed a markedly prolonged partial thromboplastin time ($>$ 100 s). The factor IX levels were below 2%. In order to detect mutations, a general screen using the polymerase chain reaction (PCR) followed by single strand conformation polymorphism (SSCP) analysis of the PCR products have been performed. PCR products have been cut into smaller fragments using restriction endonucleases (RE) for an in-depth SSCP screen. A general screen for gross abnormalities in the factor IX gene including deletions, insertions and rearrangements was performed by Southern blot analysis of RE-digests of genomic DNA using the factor IX cDNA as a hybridization probe. Furthermore, we screened for mutations in the CG dinucleotides comprising part of RE-recognition sequences (exon 1, 2, 3, 4, 5, and 8). By all methods applied herein, no mutations have been detected in these twins. On the basis of our results the hemophilia B of these twins might be explained by extreme non-random lyonization.

Wood NW see **Mumford CJ**

Woodman CL: The genetics of panic disorder and generalized anxiety disorder. Ann Clin Psychiatry 1993 Dec;5(4):231-9 (53 ref.)

Woods JR Jr see **Sherer DM**

Woodward CS see **Acton CM**

Woźniak W see **Iwaszkiewicz E**

Wydler J see **Geroulanos S**

X

Xiao H see **Polymeropoulos MH**

Y

Yakushiji M see **Ishimatsu J**

Yaron Y, Botchan A, Lessing JB, Peyser MR:

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Embryonal reduction using transvaginal saline injection in a sextuplet pregnancy after ovulation induction with human menopausal gonadotropin.
Acta Obstet Gynecol Scand 1993 Oct;72(7):578–80
A sextuplet pregnancy occurred in a first treatment cycle of ovulation induction with human menopausal gonadotropins. The serum 17-beta-estradiol concentration was 1245 pg/ml on the day of human chorionic gonadotropin administration. Embryonal reduction of four fetuses was carried out at nine weeks gestation using a transvaginal ultrasound-guided approach. Under general anesthesia, a 16-gauge in vitro fertilization needle was introduced through the posterior fornix and uterine wall, into the nearest gestational sac. The embryo was penetrated and 0.9% saline solution was injected until disintegration was noted, and confirmed by a lack of pulse for more than two minutes. The same procedure was applied to the three embryos in closest proximity to the needle. The patient delivered healthy twins in the 34th week of gestation after having had pre-term contractions for two weeks.

Yaron Y see **Lipitz S**
Yoshino MT see **Barton LL**
Youlton R see **Daher V**
Young M see **Asindi AA**
Yuan H see **Schwartz JE**
Yuri C see **Hasbún J**

Z

Zador IE see **Evans MI**
Zahn-Waxler C see **Plomin R**
Zahradnik HP see **Prömpeler HJ**
Zajicek G see **Shushan A**
Zemlickis D, Lishner M, Erlich R, Koren G: Teratogenicity and carcinogenicity in a twin exposed in utero to cyclophosphamide.
Teratogenesis Carcinog Mutagen 1993;13(3):139–43
A 29-year-old pregnant woman diagnosed with acute lymphocytic leukemia maintained remission with daily cyclophosphamide and intermittent prednisone treatment. She delivered a male twin with multiple congenital abnormalities who was diagnosed with papillary thyroid cancer at 11 years of age and stage III neuroblastoma at 14 years of age. The female twin was unaffected and has exhibited normal development to date. First trimester exposure to cyclophosphamide has been associated with major malformations. Metabolites of cyclophosphamide have been demonstrated to be teratogens and carcinogens in animals. Differences in placental or fetal hepatic cytochrome P-450 may account for the variability in response between the twins. In addition, disparity between the twins may be the result of differences in metabolite inactivating enzymes present either in fetal liver or placenta. The risk of second malignancies caused by alkylating agents such as cyclophosphamide has been well documented in adults and children but to the best of our knowledge this is the first description of transplacental second cancer.

Zerbini M, Musiani M, Gentilomi G, Venturoli S, Gallinella G, Gibellini D, Morandi R, Guerra B, Bovicelli L, La Placa M: Symptomatic parvovirus B19 infection of one fetus in a twin pregnancy.
Clin Infect Dis 1993 Aug;17(2):262–3
Twin pregnancies complicated by infection due to parvovirus B19 are uncommon. We report a case in which only one fetus developed a symptomatic infection, which presented at first as ascites and pleural effusion; later, meconium peritonitis developed. Hydrops spontaneously resolved, and at birth meconium peritonitis was successfully treated with surgery. However, even with the positive outcome of this pregnancy, a long-term follow-up is needed to exclude damage other than injury to the erythropoietic system.

Zhao LP see **Grove JS**
Zigun JR see **Bartley AJ**
Zingheim RW see **Reisner DP**
Zintl F see **Wollina K**
Zolti M see **Lipitz S**
Zoppini C, Vanzulli A, Kustermann A, Rizzuti T, Selicorni A, Nicolini U: Prenatal diagnosis of anatomical connections in conjoined twins by use of contrast magnetic resonance imaging.
Prenat Diagn 1993 Oct;13(10):995–9
Omphalopagus conjoined twins were diagnosed by ultrasonography in a pregnant woman at 21 weeks' gestation. In order to clarify the anatomical connections, magnetic resonance imaging (MRI) was performed, having achieved fetal paralysis by intravascular injection of 100 mg of pancuronium into each twin. Prior to MRI, 2 ml of a 0.0001 mmol/ml solution of gadolinium DTPA was also injected into the stomach of one twin. The contrast agent opacified the bowel loops of both twins, indicating bowel to bowel anastomosis. Following pregnancy termination, autopsy confirmed the prenatal diagnosis.

Zuckerman MA, Sheaff M, Martin JE, Gabriel CM: Fatal case of echovirus type 9 encephalitis.
J Clin Pathol 1993 Sep;46(9):865–6
Enteroviruses are rare causes of acute focal encephalitis. A fatal case of echovirus type 9 infection is reported in a 9 month old boy who presented with a fever and a macular rash followed by two focal seizures. Echovirus type 9 was isolated from lung tissue after seven days.

Zvárová J see **Preiss J**

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† [Congenital malaria. A case observed in twins born to an asymptomatic mother] Romand S, et al. **Presse Med** 1994 Apr 30–May 7;23(17):797–800 (Eng. Abstr.) **(Fre)**

[Echocardiography, CT-angiography and angiocardiography in the evaluation of feasibility of separating thoracopagus Siamese twins] Gugliantini P, et al. **Radiol Med (Torino)** 1994 Jul–Aug;88(1–2):130–6 **(Ita)**

These twins survived separation. Cambio D. **RN** 1994 Aug;57(8):54–9

Selective feticide--ethical and legal considerations [editorial] Ball JH, et al. **S Afr Med J** 1994 Feb; 84(2):57–8

† Hypodontia in twins discordant or concordant for cleft lip and/or palate. Laatikainen T, et al. **Scand J Dent Res** 1994 Apr;102(2):88–91

† Neonatal meningitis due to non-encapsulated Haemophilus influenzae in a set of twins--a case report. Lim CT, et al. **Singapore Med J** 1994 Feb;35(1):104–5

[High number of multiple births in Switzerland 1985–1988] Arlettaz R, et al. **Soz Praventivmed** 1994;39(1):32–3 **(Ger)**

† L4–5 degenerative spondylolisthesis in monozygous twins. Ryan MD. **Spine** 1994 Apr 15;19(8):985–6

† Similar radiologic lesions of localized Scheuermann's disease of the lumbar spine in twin sisters. van Linthoudt D, et al. **Spine** 1994 Apr 15;19(8):987–9

† Monozygotic twins not identical with respect to the existence of intracranial aneurysms: a case report. Puchner MJ, et al. **Surg Neurol** 1994 Apr; 41(4):284–9 (51 ref.)

[A case of common variable immunodeficiency in monozygotic twins] Ivashkin VT, et al. **Ter Arkh** 1994;66(2):56–8 (12 ref.) **(Rus)**

† Tuberculin reactivity after newborn BCG immunization in mono- and dizygotic twins. Sepulveda RL, et al. **Tuber Lung Dis** 1994 Apr; 75(2):138–43

† The frequency of multiple births in central Anatolia. Duyar I, et al. **Turk J Pediatr** 1993 Oct–Dec;35(4):257–65 (17 ref.)

Peripheral neuropathy in twin calves. Furuoka H, et al. **Vet Pathol** 1994 Mar;31(2):265–8

Bovine multiple births [letter; comment] Mee JF. **Vet Rec** 1994 Feb 12;134(7):176

† indicates that an abstract appears with the citation in the author section.

AUTHOR SECTION

A

Abadi RV, Pascal E: Ocular motor behaviour of monozygotic twins with tyrosinase negative oculocutaneous albinism. Br J Ophthalmol 1994 May;78(5):349–52
The involuntary nystagmus movements of 16-year-old monozygotic twins with tyrosinase negative oculocutaneous albinism were examined. On primary gaze both girls exhibited bilateral conjugate horizontal nystagmus, a jerk with extended foveation waveform, and similar frequencies (2.0 Hz:1.9 Hz), although the fast phases were in opposite directions. The mean amplitudes differed markedly (6.8 degrees:3.7 degrees), as did the position of the null zones (+20 degrees to +30 degrees:–25 degrees to –35 degrees) and the widths of the neutral zones (–25 degrees to +20 degrees:–25 degrees to –35 degrees). Since the twins have identical genotypes these differences must have arisen from other sources.

Abbadi N see **Tremblay JP**

Abossolo T, Dancoisne P, Tuaillon J, Orvain E, Sommer JC, Rivière JP: [Early prenatal diagnosis of asymmetric cephalothoracopagus twins] J Gynecol Obstet Biol Reprod (Paris) 1994; 23(1):79–84 (19 ref.) (Eng. Abstr.) **(Fre)**
The authors report on one case of cephalothoracopagus Janiceps conjoined twins discovered by echography at 18 weeks' gestation. Conjoined twins have been said to occur with a frequency of 1/50,000 to 1/100,000 deliveries. The incidence of the cephalothoracopagus variety is one in three million births or one in 58 conjoined twins. Three different mechanisms that may have played a role in the abnormal development of these twins are discussed. The risk that the condition recurs in a subsequent pregnancy are to be considered negligible.

Abramowicz JS see **Chung PH**

Achiron R see **Weissman A**

Adler A see **Eppel W**

Agrup M, Ekberg L, Albertsson M, Seidegård J: Simultaneous pulmonary carcinoma in twins--a case report and review of the literature. Acta Oncol 1994; 33(1):82–3

Ahiron R, Blickstein I: Persistent discordant twin growth following IVF-ET.
Acta Genet Med Gemellol (Roma) 1993;42(1):41–4
We observed persistent first trimester growth disparity in a twin pregnancy following IVF–ET. The crown-rump length of the two fetuses was substantially different at 7 and 11 weeks and from the 20th week discordant growth was observed by intertwin differences in abdominal circumferences and estimated fetal weights. Birth weight discordance was 26.6% (1600/2180). This is apparently the first documentation of first trimester growth discordance persisting throughout pregnancy.

Aitken K see **Sury MR**

Aiuti A see **Nisini R**

Akhras F see **Dubrey S**

Aknin J see **Dommergues M**

Aladjem S see **Lavery JP**

Albertsson M see **Agrup M**

Allison DB, Heshka S, Neale MC, Heymsfield SB: Race effects in the genetics of adolescents' body mass index. Int J Obes Relat Metab Disord 1994 Jun;18(6):363–8
Although the genetics of relative weight have been investigated in several studies, most of these have been done primarily, if not exclusively, with whites. This study examined the heritability of body mass index (BMI) in 238 pairs of adolescent black and white male and female twins. BMIs were residualized for age and transformed to approximate normality. Hierarchically nested structural equation models were tested. An AE model (A = additive gene effects, E = unique environmental influences) in which the degree to which genetic and environmental factors influence BMI varies by race provided the best fit. Both the genotype and the environment exerted a greater influence on the BMI of black than white adolescents. Thus, although the variances in BMI are greater for blacks, the heritabilities were the same for blacks and whites. Implications for future research are discussed.

Alvarez S see **Salat-Baroux J**

Alviggi L see **Peakman M**

Alviggi L see **Tun RY**

Amann FW see **Solenthaler M**

Ambach E see **Antretter H**

Amit S see **Avrech O**

Amoric JC see **Vabres P**

Ando H see **Ohno Y**

Annett M see **Davis A**

Antoine JM see **Salat-Baroux J**

Antretter H, Dapunt OE, Rabl W, Ambach E, Zehethofer K, Mair P, Wiedermann CJ: Third-degree atrioventricular block in adult identical twins [letter] Lancet 1994 Jun 18; 343(8912):1576–7

Appelman Z, Manor M, Magal N, Caspi B, Shohat M, Blickstein I: Prenatal diagnosis of twin zygosity by DNA 'fingerprint' analysis. Prenat Diagn 1994 Apr; 14(4):307–9
A twin pregnancy with one hydrocephalic fetus with oligohydramnios is presented. Sonographic evaluation could not exclude monochorionicity. Before considering selective feticide, blood samples from both fetuses were examined for DNA 'fingerprint' analysis. The different banding patterns of the blood samples established dizygosity. This procedure is suggested in cases where sonography fails to determine chorionicity.

Ardila J, Le Guennec JC, Papageorgiou A: Influence of antenatal betamethasone and gender cohabitation on outcome of twin pregnancies 24 to 34 weeks of gestation. Semin Perinatol 1994 Feb;18(1):15–8

Arduini D see **Rizzo G**

Arias F: Delayed delivery of multifetal pregnancies with premature rupture of membranes in the second trimester. Am J Obstet Gynecol 1994 May;170(5 Pt 1):1233–7
OBJECTIVE: Premature rupture of membranes in multifetal gestations during the second trimester has an ominous prognosis and the majority of the fetuses die after preterm delivery. STUDY DESIGN: We used cervical cerclage, tocolysis, and antibiotic therapy after vaginal delivery of the fetus with ruptured membranes in eight patients with multifetal pregnancies to extend the intrauterine life and improve the outcome of the remaining fetuses. RESULTS: Survival of six fetuses was achieved in five of the eight pregnancies (four originally twins and one originally triplets). The mean +/- SD gestational age of the fetuses first delivered was 19.6 +/- 2.6 weeks, and it was 26.7 +/- 6.8 weeks in the fetuses with delayed delivery (exact two-tailed p = 0.01). The mean +/- SD birth weight of the fetuses delivered first was 306 +/- 149 gm and it was 1029 +/- 947 gm for the fetuses who had delayed delivery (exact two-tailed p = 0.05). The mean +/- SD prolongation of pregnancy was 48.8

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+/- 42.06 days (range 8 to 114 days).
CONCLUSIONS: Intervention with tocolysis, antibiotics, and cervical cerclage after delivery of the first fetus is a reasonable option for some patients with multifetal pregnancies and premature rupture membranes in the second trimester.

Arieli S see **Caspi E**

Arlettaz R, Mieth DG: [High number of multiple births in Switzerland 1985-1988] Soz Praventivmed 1994; 39(1):32-3 **(Ger)**

Armes JE, Billson VR: Umbilical cord hemangioma associated with polyhydramnios, congenital abnormalities and perinatal death in a twin pregnancy. Pathology 1994 Apr;26(2):218-20
A twin pregnancy is described in which an umbilical cord hemangioma, polyhydramnios, developmental abnormalities and perinatal death were restricted to one twin, while the other twin was unaffected. Cord hemangiomas are rare and their association with fetal abnormalities is controversial. This case study supports a direct association between the cord hemangioma and the adverse pregnancy outcome, since congenital abnormalities and a cord hemangioma were present in only one of the twins.

Armstrong O, Karayuba R, Ngendahayo L, Habonimana E: [Osteogenesis imperfecta in monozygotic twins in Burundi] Med Trop (Mars) 1994;54(1):59-62 (20 ref.) (Eng. Abstr.) **(Fre)**
Little data is available about osteogenesis imperfecta in Black African children. This defect was diagnosed in monozygotic twins from Rwanda who presented multiple fractures, in particular of the femur, when they began to walk. Osteogenesis imperfecta was confirmed by lower limb deformity, presence of wormian bones in the skull, blue sclera, and tooth defects. In addition to the fact that it is uncommon to encounter this condition in monozygotic twins, this case is interesting for several reasons. Was osteogenesis imperfecta in these patients type I, frequent, or type III, exceptional? More importantly, this case stresses the high prevalence of type III in Black Africa which could constitute a hot-bed in the world.

Arnold J see **Roach VJ**

Asaka A see **Ooki S**

Ashkenazi J see **Peleg D**

Ashley D, Samms-Vaughan M, Greenwood R, Golding J: The contribution of twins to perinatal mortality in Jamaica. Paediatr Perinat Epidemiol 1994 Apr;8 Suppl 1:158-65
The Jamaican Perinatal Mortality Survey collected data that have been used in this paper to estimate: (1) the rate of multiple deliveries on the island; (2) the way in which this varies with demographic features; and (3) the causes of perinatal mortality among twins on the island. The survey consisted of two phases: a study of all births in the months of September and October 1986 (the cohort months) and a study of all perinatal deaths in the 12 months from 1 September 1986 to 31 August 1987. Among the 10,408 pregnancies in the cohort months, 99(1.0%) were multiple pregnancies. The twinning rate showed statistically significant trends with maternal age and parity but no association with social factors. Among the 2020 perinatal deaths occurring in the 12-month period, 173 (8.6%) were twins, with particularly high contribution to the Wiggles-worth group 'deaths from immaturity'. Mortality rate of twins was significantly lower if mothers resided in areas where there were good obstetric and paediatric facilities.

Asseryanis E see **Eppel W**

Assies J see **Braat DD**

Austin MA see **Selby JV**

Austin RJ see *Lavery JP*

Avrech O, Schoenfeld A, Amit S, Ovadia J, Fisch B: Dizygotic triplet pregnancy following in-vitro fertilization. Hum Reprod 1993 Dec;8(12):2240-2
We present a case of dizygotic triplet pregnancy (mono-amniotic twins and a singleton) that, as far as we know, is the first reported one induced by artificial reproductive technology. It ended in the delivery of three healthy normal babies: two monozygotic twin boys and a girl. It appears that zygote splitting is significantly more common in patients treated with ovulation-inducing agents than in the general population. Also, in-vitro conditions of embryonic growth might influence the chances of multifetal gestation and the incidence of identical twinning. This may be due to changes in the physical properties of the zona pellucida and subsequent partial hatching of the pre-embryo. Evaluation of similar cases in the future may shed more light on the mechanism underlying their occurrence following in-vitro fertilization.

Avril MF see **Parmentier L**

Azuma C see **Hoshi K**

Azuma T see **Hoshi K**

B

Baber R see **Roach VJ**

Bader-Meunier B see **Romand S**

Baird CE see **Gendall PW**

Bakker E see **Christiaens GC**

Balasch J, Tur R, Creus M, Buxaderas R, Fábregues F, Ballescá JL, Barri PN, Vanrell JA: Triggering of ovulation by a gonadotropin releasing hormone agonist in gonadotropin-stimulated cycles for prevention of ovarian hyperstimulation syndrome and multiple pregnancy. Gynecol Endocrinol 1994 Mar;8(1):7-12
Ovarian hyperstimulation syndrome (OHSS) and multiple pregnancies are the two main complications of ovulation induction using gonadotropins. Withholding an ovulatory dose of human chorionic gonadotropin (hCG) remains the safest option for prevention of both complications. However, this policy frustrates both patient and physician, wastes time and money due to cancelled treatment, and results in cancellation of a high proportion of cycles that would not have progressed to clinical OHSS. As gonadotropin releasing hormone analogs (GnRH-a) may elicit surges of endogenous luteinizing hormone and follicle stimulating hormone, we investigated the usefullness of a single s.c. injection of leuprolide acetate (0.5 mg) to trigger ovulation, without inducing OHSS or multiple pregnancy, in 23 consecutive gonadotropin-stimulated cycles which would otherwise have been cancelled. All patients had at least 4 mature follicles (> or = 14 mm in diameter) and plasma estradiol levels > 1000 pg/ml on the day of GnRH-a injection. No luteal support was given. Seventeen of the 23 (74%) cycles were ovulatory and four singleton pregnancies resulted, giving a pregnancy rate of 17.4% per cycle. The remaining six patients (26%) clearly had defective or short luteal phases. No patient developed OHSS. It is concluded that GnRH-a may be an acceptable substitute for hCG to salvage treatment cycles in patients thought to be at risk for OHSS or multiple pregnancy. However, further studies are necessary for optimization of this approach in order to improve ovulatory and conceptional results.

AUTHOR SECTION

Ball DM, Murray RM: Genetics of alcohol misuse. Br Med Bull 1994 Jan;50(1):18–35 (59 ref.)
Family, twin, and adoption studies demonstrate the genetic contribution to alcoholism but also confirm an important environmental component. The current rapid developments in genetics are providing candidate genes that can be assessed for a role in alcoholism, and a reported association with the DRD2 receptor gene is still being examined. Alcoholism is a complex behaviour which may be more amenable to genetic studies when dissected into its constituent parts. It is probable that multiple genes contribute to the genetic vulnerability to alcoholism and, hopefully, the effect of some will be of sufficient size so that they can be identified. Identification of these vulnerability factors will allow targeting of preventative efforts but before genetic tests are used clinically the full ethical implications will need to be considered carefully.

Ball JH, Guidozzi F: Selective feticide--ethical and legal considerations [editorial] S Afr Med J 1994 Feb;84(2):57–8

Ballescá JL see **Balasch J**

Bamforth FJ see **Sperber GH**

Bang J see **Jørgensen FS**

Bar-Hava I see **Peleg D**

Baralt A see **Moreno E**

Barnes MA see **Dennis M**

Barri PN see **Balasch J**

Basu S see **Das Chaudhuri AB**

Bech F, Loesberg A, Rosenblum J, Glagov S, Gewertz BL: Median arcuate ligament compression syndrome in monozygotic twins. J Vasc Surg 1994 May; 19(5):934–8 (10 ref.)
Twin 27-year-old women had symptomatic mesenteric ischemia caused by median arcuate ligament compression. Arteriography demonstrated severe celiac artery stenosis in one twin, celiac artery occlusion in the other, and proximal superior mesenteric artery narrowing with retrograde filling from a meandering mesenteric artery in both. Division of the ligament and direct celiac artery revascularization completely relieved symptoms in both patients. Median arcuate ligament compression of the celiac and superior mesenteric arteries can result in mesenteric ischemia. Documentation of this unusual syndrome in monozygotic twins suggests that the responsible anatomic relationships are congenital.

Becroft DM see **Gendall PW**

Ben-Rafael Z see **Peleg D**

Bendefy IM, Elliman A, Prior S, Bryan EM: Is there a role for a twins clinic? An evaluation of parents' responses. Acta Paediatr 1994 Jan;83(1):40–5
To evaluate parental responses to the Twins Clinic, postal questionnaires were sent to the parents of 141 pairs of twins, born outside the maternity hospital who were referred to the clinic in the first three years. The main outcome measures were: the sources of, and reasons for, referral; previous attempts to find help; experiences at the clinic and outcome of the visit. One hundred and thirteen families (80%) replied, of whom 101 (89%) were self-referred. The most common problems for which twins were referred related to behaviour (34) and development (28). In 99 (88%) cases, parents had already sought assistance from other sources (39 from health professionals) but only 29 had found this helpful. In 95 (84%) cases, parents felt there had been a positive outcome from attending the clinic, in the form of reassurance (87), change of management (39), successful support for applications (19) or information (11). Parents' responses indicate that the Twins Clinic meets the needs of families with multiples who are inadequately served by existing sources of help. These will only be improved through education of health professionals (and of the community as a whole) so as to obviate the need for Twins Clinics.

Benson CB, Doubilet PM, David V: Prognosis of first-trimester twin pregnancies: polychotomous logistic regression analysis. Radiology 1994 Sep; 192(3):765–8
PURPOSE: To determine which clinical and sonographic characteristics independently affect the prognosis of first-trimester twin pregnancies and to develop formulas for calculating the probabilities of the pregnancy resulting in two, one, or no liveborn infants. MATERIALS AND METHODS: The authors prospectively identified 137 twin pregnancies with two heartbeats at first-trimester sonography and with known pregnancy outcome. Stepwise polychotomous logistic regression analysis was used to identify characteristics that have an independent statistically significant relationship with pregnancy outcome and to develop outcome-prediction formulas. RESULTS: Of 137 patients, 110 (80.3%) had viable twins, 12 (8.8%) had one infant, and 15 (10.9%) had none. Gestational age, chorionicity, and sonographic findings were independent, statistically significant ($P < .05$) prognostic factors, while maternal age, method of conception, and indication for sonography were not. CONCLUSION: The logistic regression formulas involving the three independent prognostic factors can be used in the first trimester to predict pregnancy outcome.

Berge LN see **Jørgensen FS**

Bergman P see **Hauspie RC**

Berkowitz RS see **Steller MA**

Berman KF see **Goldberg TE**

Bernstein MR see **Steller MA**

Bhatt-Mehta V see **Klarr JM**

Bielicki T see **Hauspie RC**

Billson VR see **Armes JE**

Birmole B, Kulkarni B, Shah R, Karapurkar S, Vaidya A, Vaidya M, Borwankar S: Xipho-omphalopagous twins--separation in the newborn.
J Postgrad Med 1993 Apr-Jun;39(2):99–101
Male conjoined twins (thoraco-omphalopagous) were delivered by emergency Caesarean section performed in a full term, 3rd gravida who had presented in labour. On examination one of the twins had gross monstrosity and was threatening the survival of the better twin (twin A). The cannulation and dye studies through single umbilical vein demonstrated significant cross circulation across the connecting bridge. The vein was connected to liver of twin A. An emergency separation was performed to salvage the better twin.

Bisaro F see **Romand S**

Biselli R see **Nisini R**

Biskup I, Malinowski W: Ultrasound in abruptio placentae praecox of the second twin. 'Boomerang phenomenon'. Acta Obstet Gynecol Scand 1994 Jul; 73(6):515–6
The diagnosis of abruptio placentae praecox of the second twin is usually difficult. The clinical symptoms may not be evident. The appearance of the new (third) hypoechogenic space, on ultrasound scan, was in our case the only diagnostic clue. It proved to be blood from the abrupted edge of twin B's placenta penetrating the dividing septum. Its characteristic ultrasound image brought forward the idea and namegiving 'boomerang phenomenon' and indeed, it could return like a boomerang as the

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intrauterine fetal demise, if ignored. This picture could mislead to the conclusion of being the leakage of amniotic fluid or the amniotic sack of the 'vanishing fetus' in primarily triplet pregnancy. The potentially ominous prognosis of abruptio placentae praecox warrants strict supervision of pregnancies with this phenomenon.

Blanchet-Bardon C see **Bouloc A**

Blickstein I: Should the reduced embryos be considered in outcome calculations of multifetal pregnancy reduction? [letter; comment]
Am J Obstet Gynecol 1994 Sep;171(3):866-7

Blickstein I see **Ahiron R**

Blickstein I see **Appelman Z**

Blickstein I see **Weissman A**

Blondel B see **Garel M**

Bogle AC, Reed T, Norton JA Jr: Within-pair differences in a-b ridge count asymmetry in monozygotic twins: evidence for a placental proximity effect. Hum Hered 1994 May-Jun; 44(3):162-8
Asymmetry of a-b ridge count, a dermatoglyphic trait in the second interdigital (ID II) palmar area was studied in 314 identical (MZ) twin-pairs of known placental type. Statistically significant differences were observed for the variability of a-b ridge count with respect to placentation. Monochorionic MZ pairs displayed more within-pair variability than dichorionic MZ twins. Within dichorionic pairs, greater variability was observed in MZ twins when pairs with fused placentas were compared with those with separate placentas. A similar pattern of greater variability in dichorionic fused versus dichorionic separate placentas was also found in 121 same sex dizygotic twin-pairs. The pattern of within-pair differences was consistent with a placental proximity effect like that known for the variability in birth weight in twins.

Bogle AC, Reed T, Rose RJ: Replication of asymmetry of a-b ridge count and behavioral discordance in monozygotic twins. Behav Genet 1994 Jan; 24(1):65-72
We have replicated an earlier study (Rose et al., Behav. Genet. 17, 125-140, 1987) relating dermatoglyphic asymmetry to intrapair discordance in a completely new sample of monozygotic (MZ) twins. Consistent results were observed for at least 31 of 37 Minnesota Multiphasic Personality Inventory (MMPI) scales tested in the two samples. Intrapair differences were confirmed to be greater in 28 MZ pairs with asymmetric palmar a-b ridge counts than in 29 MZ pairs with little or no a-b asymmetry for at least 15 scales. We also examined longitudinal stability over a 4 to 5-year period for six MMPI scales and found suggestive evidence in three scales for greater test-retest instability in twin pairs asymmetric for a-b ridge count. The results offer new evidence for our hypothesis that an asymmetric a-b ridge count may identify individuals who are poorly buffered from developmental noise, but analyses of symmetric and asymmetric a-b ridge counts in nontwin subjects are required to extend and test the hypothesis further.

Bonello F see **Savona-Ventura C**

Bönner J see **Holthoff VA**

Boomsma DI, Koopmans JR, Van Doornen LJ, Orlebeke JF: Genetic and social influences on starting to smoke: a study of Dutch adolescent twins and their parents. Addiction 1994 Feb;89(2):219-26
In a study of 1600 Dutch adolescent twin pairs we found that 59% of the inter-individual variation in smoking behaviour could be attributed to shared environmental influences and 31% to genetic factors. The magnitude of the genetic and environmental effects did not differ between boys and girls. However, environmental effects shared by male twins and environmental effects shared by female twins were imperfectly correlated in twins from opposite-sex pairs, indicating that different environmental factors influence smoking in adolescent boys and girls. In the parents of these twins, the correlation between husband and wife for 'currently smoking' ($r = 0.43$) was larger than for 'ever smoked' ($r = 0.18$). There was no evidence that smoking of parents (at present or in the past) encouraged smoking in their offspring. Resemblance between parents and offspring was significant but rather low and could be accounted for completely by their genetic relatedness. Moreover, the association between 'currently smoking' in the parents and smoking behaviour in their children was not larger than the association between 'ever smoking' in parents and smoking in their children.

Borrello P see **Pustorino S**

Borwankar S see **Birmole B**

Bossi G see **Offidani A**

Bottazzo GF see **Tun RY**

Bouchard C see **Oppert JM**

Bouchard C see **Song TM**

Bouchard JP see **Tremblay JP**

Bouloc A, Lemerrer M, Blanchet-Bardon C: [The neurofibromatosis-Noonan syndrome: 4 cases]
Ann Dermatol Venereol 1993;120(11):763-5 **(Fre)**

Boulot P see **Dommergues M**

Bourée P see **Romand S**

Bowler A see **Cantor-Graae E**

Bowler A see **McNeil TF**

Boyles D see **Hill LM**

Braat DD, Veersema S, Assies J, Schoemaker J: Triplet pregnancy after pulsatile gonadotrophin-releasing hormone treatment in an acromegalic woman.
Eur J Obstet Gynecol Reprod Biol 1994 Apr; 54(2):148-9
A triplet pregnancy is reported in an acromegalic woman with hypothalamic amenorrhoea treated with pulsatile gonadotrophin-releasing hormone (GnRH). The patient was on bromocriptine medication and had slightly elevated growth hormone (GH) and somatomedin-C (Sm-C) levels. This probably accounted for the conception of triplets in the first stimulation cycle.

Brambati B, Formigli L, Mori M, Tului L: Multiple pregnancy induction and selective fetal reduction in high genetic risk couples. Hum Reprod 1994 Apr; 9(4):746-9
Couples at risk for an inherited disorder often have several pregnancy interruptions because of affected fetuses and difficulty in achieving their desired family. We evaluated the efficiency and acceptability of selective fetal reduction after chorionic villus sampling (CVS) of multiple pregnancy induced by ovarian stimulation and gamete intra-Fallopian transfer (GIFT). This approach has been offered to nine patients at risk of Mendelian diseases and one patient carrier of reciprocal translocation. The acceptance has been very high (90%). One patient at risk of an autosomic recessive disease opted for artificial donor insemination, one conceived spontaneously, and one was a poor responder to ovarian stimulation. Seven patients actually underwent a single GIFT procedure with six achieving pregnancy (86%), all but two being a multiple pregnancy (67%). All pregnancies concluded uneventfully at term and newborns were alive and healthy. Prenatal diagnosis, including fetal

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karyotyping in all cases, was performed at 8.5–11.5 weeks of gestation and confirmed either on amniotic fluid aspirated at reduction or at birth. The number of fetuses was reduced to one or two because the genetic disease was present and/or to reduce the risk of premature delivery and improve the likelihood of successful pregnancy. The new approach seems to be highly effective and might be considered a practical and useful alternative to preimplantation genetic diagnosis.

Brandenburg H, van der Meulen JH, Jahoda MG, Wladimiroff JW, Niermeijer M, Habbema JD: A quantitative estimation of the effect of prenatal diagnosis in dizygotic twin pregnancies in women of advanced maternal age. Prenat Diagn 1994 Apr; 14(4):243–56

Genetic counselling in a dizygotic twin pregnancy is complicated by the large number of possible pregnancy outcomes and by the conceivable differences in the parental valuation of these outcomes. We present the probability distributions of the pregnancy outcomes in dizygotic twin pregnancies for women from 35 to 45 years old without prenatal diagnosis and with transabdominal chorionic villus sampling (TA-CVS) or amniocentesis (AC), using data from the literature. TA-CVS always gives a higher probability of a favourable pregnancy outcome (the birth of one or two infants with a normal karyotype) than AC. For a 35-year-old woman, a 0.7 per cent risk of an unfavourable pregnancy outcome without prenatal diagnosis has to be weighed against the 2.1 per cent excess risk of loss of the entire pregnancy after TA-CVS. For a 45-year-old woman, a 10.2 per cent risk of an unfavourable pregnancy outcome without TA-CVS has to be balanced against a 4.4 per cent excess risk of pregnancy loss after TA-CVS. This study provides a quantitative tool for the support of individual parents with respect to the decision to undergo prenatal diagnosis in a dizygotic twin pregnancy.

Brandt J see **Breitner JC**

Braun MM, Caporaso NE, Brinton L: Re: "Twin membership and breast cancer risk" [letter; comment] Am J Epidemiol 1994 Sep 15;140(6):575–6

Braun MM, Caporaso NE, Page WF, Hoover RN: Genetic component of lung cancer: cohort study of twins. Lancet 1994 Aug 13;344(8920):440–3

Epidemiological and molecular epidemiological findings suggest that inherited predisposition may be a component of lung cancer risk and an important modulator of the carcinogenic effects of cigarette smoke. We have carried out a genetic analysis of lung cancer mortality on the National Academy of Sciences/National Research Council Twin Registry. The registry is composed of 15,924 male twin pairs who were born in the USA between 1917 and 1927 and who served in the armed forces during World War II. As evidence for a genetic effect on lung cancer, we required concordance for lung cancer death to be greater among monozygotic than among dizygotic twin pairs. No genetic effect on lung cancer mortality was observed. The ratio of observed to expected concordance among monozygotic twins did not exceed that among dizygotic twins (overall rate ratio 0.75 [95% CI 0.35–1.6]), even though monozygotic twin pairs are more likely to be concordant for smoking than dizygotic twin pairs in this population. A cohort analysis (accounting for age, sex, race, and smoking intensity) of lung cancer mortality found no lung cancer deaths during 300 person-years of follow-up (observed to expected ratio 0 [0–4.09]) among 47 monozygotic twin smokers whose smoking twins had died of lung cancer, even though smoking histories were very similar within twin pairs. In our study, there is little if any effect of inherited predisposition on development of lung cancer. Genetic factors are not likely to be strongly predictive of lung cancer risk in most male smokers older than 50, the age group in which the vast majority of cases occur.

Breitner JC, Welsh KA, Robinette CD, Gau BA, Folstein MF, Brandt J: Alzheimer's disease in the NAS-NRC registry of aging twin veterans. II. Longitudinal findings in a pilot series. National Academy of Sciences. National Research Council Registry. Dementia 1994 Mar-Apr;5(2):99–105

Over 3 years we followed 8 pairs of male twins one or both of whom had suspected Alzheimer's disease (AD) including 'mild/ambiguous' changes suggestive of incident AD. These pairs were screened in 1988 and 1989 from 339 pairs in the (US) National Academy of Sciences-National Research Council Registry (NASR) of aging veteran twins, then 61–72 years of age. Most of the suspected cases (10 of 12) had mild/ambiguous changes. Including these subjects, we had estimated the prevalence of AD in the NASR as about 2%. We now describe briefly the longitudinal evaluation of these 8 pairs. Only 1 of the 10 individuals with mild/ambiguous changes has progressed to show well-defined clinical symptoms of AD. Two others remain in their original research category, while 7 clearly do not have AD. Thus, we now estimate the 1988–1989 prevalence of AD in the NASR as 0.5%. These results contrast with other follow-up studies of mild cases from a university-based Alzheimer's clinic. We suggest that the contrasting findings reflect the nature of the samples studied, and we show that the present results are predicted by Bayesian reasoning.

Brennan P, Silman AJ: An investigation of gene–environment interaction in the etiology of rheumatoid arthritis. Am J Epidemiol 1994 Sep 1; 140(5):453–60

The etiology of rheumatoid arthritis is explained by both genetic and hormonal environment factors. Using a survey of twins conducted in the British Isles in 1989, the authors have investigated the extent of a possible genetic–hormonal environment interaction in conferring susceptibility for rheumatoid arthritis. This was done by comparing the hormonal history of three groups of cases and controls: 1) disease-discordant monozygotic twins, thus matching cases and controls for genetic susceptibility; 2) disease-discordant dizygotic twins; and 3) a group of twins with rheumatoid arthritis who were age matched to population controls. When the medical histories of twins with rheumatoid arthritis were compared with those of population controls, both breast feeding and infertility problems appeared to be risk factors for the disease (odds ratios = 2.01 and 4.09, respectively). Also, oral contraceptive use appeared to have a protective effect (odds ratio = 0.43). However, when both monozygotic and dizygotic twins were compared, these effects were either less apparent or nonexistent. Our results therefore suggest that there does not exist any evidence of strong interaction between genetic and hormonal environment factors. More notably, in the absence of such an interaction, the comparison of both monozygotic and dizygotic discordant twins was overmatched and therefore of low power. The extent of any overmatching was measured using the kappa statistic.

Briese V, Falkert U, Plesse R, Müller H: [Analysis

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of 122 twin deliveries with special reference to morbidity and mortality of the second twin] Zentralbl Gynakol 1994;116(1):38-43 (Eng. Abstr.) (Ger)
122 consecutive twin deliveries between 1986-1992 were analysed retrospectively under special consideration of morbidity and mortality of the second twin. 13.9% of the twin deliveries occurred before the 33rd week of gestation. The cesarean section rate amounted to 49.2%, the first twin was delivered in 5.7%, the second twin in 27%, by vaginal operative methods. Perinatal mortality of the first twin was 3.3%, of the second twin 6.6% ($p < 0.01$); thus resulting in an overall twin mortality rate of 4.9%. The acidosis-rate of 16.4% in the second twin was significantly above the 9.0% in the first twin. The vaginal operative mode delivery especially contributed to the impaired outcome of the second twin. There was no correlation between the morbidity of the second twin and the time interval between the two deliveries.

Brinton L see **Braun MM**
Brison O see **Parmentier L**
Brockerhoff P see **Casper FW**
Broekhuizen FF see **el-Tabbakh GH**
Brown DP: Speech recognition in recurrent otitis media: results in a set of identical twins. J Am Acad Audiol 1994 Jan;5(1):1-6
Performance-intensity functions for Pediatric Speech Intelligibility Test (PSI) word and sentence materials presented in competition were obtained for a set of identical female twins, aged 4 years, 2 months. Twin B had a medical history significant for recurrent otitis media, while Twin A had only one reported occurrence of the disease. Twin A yielded normal functions for both word and sentence materials. Twin B, however, yielded an essentially normal function for sentences, but the function for monosyllabic words was grossly depressed. These findings support the hypothesis that transient conductive hearing loss and auditory deprivation resulting from recurrent otitis media can affect the processing of phonetic information essential to the development of word recognition skills.
Brown JL see **Sury MR**
Brühwiler H, Häfliger M, Lüscher KP: [Severe accidental magnesium poisoning in a twins pregnancy in the 32nd week of pregnancy] Geburtshilfe Frauenheilkd 1994 Mar;54(3):184-6 (Eng. Abstr.) (Ger)
Faculty administration of a magnesium infusion in the 32nd week of a twin-pregnancy caused a life-threatening situation. Oxygen mask ventilation, calcium i.v. and forced diuresis rapidly improved the condition of the patient and thus prevented any sequelae for mother and children.
Bryan EM see **Bendefy IM**
Bucaille-Fleury L see **Pauwels C**
Bui TH see **Rådestad A**
Bukovski I see **Caspi E**
Bulas DI see **Mercado MG**
Burkhardt D, Schirren CG, Schuffenhauer S, Ullmann S, Schirren H: [Dyskeratosis congenita in monozygous twins] Hautarzt 1994 Apr;45(4):249-55 (Eng. Abstr.) (Ger)
Dyskeratosis congenita (DC) is a very rare form of genodermatosis with variable manifestations, which mainly affects male patients. The main clinical symptoms are poikilodermia, nail dystrophy and leucoplakia; there are many other cutaneous and systemic symptoms. To avoid complications and improve the prognosis early diagnosis and regular close surveillance of the patients are important. We report on 13-year-old monozygotic twin brothers who, in addition to the typical symptoms, had increased vulnerability of the skin, scarring of the hands and atrophy of the oral mucosa as well as splenomegaly, pancytopenia with severe aplasia of bone marrow and aseptic necrosis of the hip. The two brothers had nearly synchronous clinical manifestation and progression. This paper reviews the clinical symptoms, pathogenesis, differential diagnosis and genetic aspects of DC.
Burton EM, Strange ME, Pitts RM: Malrotation in twins: a rare occurrence. Pediatr Radiol 1993; 23(8):603-4
Although malrotation is commonly found in infants with intestinal obstruction, the presence of malrotation in twins is rare. We report a set of twins who each had malrotation and non-bilious vomiting on the first day of life.
Busenbark K see **Pahwa R**
Buxaderas R see **Balasch J**

C

Calderón E see **Moreno E**
Calipari G see **Pustorino S**
Callahan TL, Hall JE, Ettner SL, Christiansen CL, Greene MF, Crowley WF Jr: The economic impact of multiple-gestation pregnancies and the contribution of assisted-reproduction techniques to their incidence [see comments] N Engl J Med 1994 Jul 28;331(4):244-9
BACKGROUND. Although the medical complications associated with multiple-gestation pregnancies have been well documented, little is known about the effects of such pregnancies on the use of health care resources and the associated costs. This is an important issue because of the increasing use of assisted-reproduction techniques, which commonly result in multiple-gestation pregnancies. METHODS. We determined hospital charges and the use of assisted-reproduction techniques (such as induction of ovulation, in vitro fertilization, and gamete intrafallopian transfer) for 13,206 pregnant women (11,986 with singleton pregnancies, 1135 with twin pregnancies, and 85 with more than two fetuses) who were admitted for delivery to Brigham and Women's Hospital, Boston, in 1986 through 1991 and their 14,033 neonates (11,671 singletons, 2144 twins, and 218 resulting from higher-order multiple gestations). RESULTS. After we controlled for variables known to affect hospital charges, the predicted total charges to the family in 1991 for a singleton delivery were $9,845, as compared with $37,947 for twins ($18,974 per baby) and $109,765 for triplets ($36,588 per baby).
Assisted-reproduction techniques were used in 2 percent of singleton, 35 percent of twin, and 77 percent of higher-order multiple-gestation pregnancies; such procedures were approximately equally divided between induction of ovulation alone and in vitro fertilization or gamete intrafallopian transfer. CONCLUSIONS. Multiple-gestation pregnancies, a high proportion of which result from the use of assisted-reproduction techniques, dramatically increase hospital charges. If all the multiple gestations resulting from assisted-reproduction techniques, dramatically increase hospital charges. If all the multiple gestations resulting from assisted-reproduction techniques had been singleton pregnancies, the predicted savings to the health care delivery system in the study hospital alone would have been over

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$3 million per year. Although assisted reproduction provides tremendous benefits to families with infertility, the increased medical risks entailed by multiple-gestation pregnancies and the associated costs cannot be ignored. We suggest that more attention be paid to approaches to infertility that reduce the likelihood of multiple gestation.

Callan NA see **Watson RM**

Camerota AJ, Rash FC: External hydrocephalus in a set of triplets [letter] Clin Pediatr (Phila) 1994 Apr; 33(4):255-6

Camorlinga Diaz G, Navarro Castañon J, Chora Serrano MA, Ramos Fuentes LR: [Conjoined twins (becephalos tribrachius). Prenatal diagnosis and obstetric management. Report of a case] Ginecol Obstet Mex 1994 Jul;62:204-6 (Eng. Abstr.) **(Spa)**

Candinas R see **Solenthaler M**

Cantor-Graae E, McNeil TF, Torrey EF, Quinn P, Bowler A, Sjöström K, Rawlings R: Link between pregnancy complications and minor physical anomalies in monozygotic twins discordant for schizophrenia. Am J Psychiatry 1994 Aug; 151(8):1188-93

OBJECTIVE: The aim of the current study was to explore the relevancy of early pregnancy complications for the development of minor physical anomalies in monozygotic twins discordant and concordant for schizophrenia. METHOD: Pregnancy complications and minor physical anomalies were independently assessed in 22 discordant, 10 concordant, and six normal comparison monozygotic twin pairs. RESULTS: Complications occurring during early pregnancy were associated with a higher frequency of minor physical anomalies in the total group and in the discordant twin pairs particularly. While no significant differences in anomaly rates were observed among the discordant, concordant, and normal comparison groups, the discordant ill twins showed a trend toward having more anomalies than their well co-twins. CONCLUSIONS: Complications occurring early in pregnancy are relevant for the development of minor physical anomalies and may be of particular importance for the development of these anomalies in twin pairs discordant for schizophrenia.

Cantor-Graae E, McNeil TF, Rickler KC, Sjöström K, Rawlings R, Higgins ES, Hyde TM: Are neurological abnormalities in well discordant monozygotic co-twins of schizophrenic subjects the result of perinatal trauma? Am J Psychiatry 1994 Aug; 151(8):1194-9

OBJECTIVE: Neurological abnormalities found in schizophrenic subjects and their healthy relatives have raised questions concerning etiology. The aim of the present study was to investigate the genetic and environmental antecedents of neurological impairment in monozygotic twins discordant for schizophrenia, with particular focus on the well discordant twins. The etiological factors of interest were history of obstetric complications, family history of psychosis, history of substance abuse, and history of postnatal cerebral trauma. METHOD: History of obstetric complications, including information from pregnancy through the neonatal period, and data on neurological "hard" and "soft" signs were obtained blindly and separately for each member of 22 monozygotic twin pairs discordant for schizophrenia and seven normal comparison monozygotic twin pairs. Clinical and family interviews provided information about background factors. RESULTS: Degree of neurological impairment in the well discordant monozygotic twins was significantly positively related to history of both neonatal and total obstetric complications. None of the three other background factors investigated was related to degree of neurological impairment in the ill or well co-twins. CONCLUSIONS: The contribution of obstetric complications to the current level of neurological impairment in well discordant co-twins suggests that the spectrum of neuroabnormality, ranging from neurological signs to schizophrenia, in monozygotic discordant twins may be the result of subtle gene-environment interaction.

Cantor-Graae E see **McNeil TF**

Caporaso NE see **Braun MM**

Cardon LR, Fulker DW: A model of developmental change in hierarchical phenotypes with application to specific cognitive abilities. Behav Genet 1994 Jan; 24(1):1-16

A hierarchical longitudinal path model is described for analysis of twin and sibling data. The model combines multivariate and longitudinal methodologies for assessment of continuity and change in the relationships among characters over time. Additionally, the model permits assessment of shared and independent etiologies for groups of measures at single and multiple occasions. The procedure is illustrated by application to specific cognitive ability data from 103 adopted and 109 nonadopted sibling pairs at ages 3, 4, 7, and 9 years, and 50 pairs of monozygotic and dizygotic twins at ages 3 and 4 years. The results suggest that much of the observed continuity in general intelligence measures is attributable to genetic influences common to specific abilities and indicate differential etiologies for specific abilities at different occasions in childhood.

Cardon LR, Carmelli D, Fabsitz RR, Reed T: Genetic and environmental correlations between obesity and body fat distribution in adult male twins. Hum Biol 1994 Jun;66(3):465-79

Genetic and environmental correlations between measures of obesity [body mass index (BMI)] and body fat distribution [waist/hip ratio (WHR) and subscapular/triceps ratio (SSTR)] were examined in 133 monozygotic and 129 dizygotic pairs of elderly white male twins, age 59 to 70 years, participating in the third cardiovascular examination of the National Heart, Lung, and Blood Institute Twin Study. The BMI, WHR, and SSTR fat measures were significantly correlated in these twins, with BMI more closely related to WHR ($r = 0.52$) than to SSTR ($r = 0.18$), and the WHR-SSTR association intermediate ($r = 0.27$). Multivariate genetic analyses of the three indexes using the LISREL modeling approach indicated a significant heritable component for each fatness variable, $h2 = 0.66$, 0.46, and 0.25 for BMI, WHR, and SSTR, respectively, and a significant correlation between genetic influences on BMI and WHR (genetic $r = 0.51$). The common genetic component accounted for 54% of the observed BMI-WHR correlation, suggesting that overall obesity and abdominal adiposity distribution are mediated to some extent by similar genetic influences. The genetic correlations between SSTR and BMI and between SSTR and WHR were not significantly different from zero, suggesting that genetic influences on skinfold distribution are independent of those on abdominal body fat and overall obesity. The genetic findings support the hypothesis that the WHR and SSTR indexes do not assess the same dimensions of fat patterning.

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Cardon LR see **Carmelli D**

Carels C see **Lauweryns I**

Carmelli D, Cardon LR, Fabsitz R: Clustering of hypertension, diabetes, and obesity in adult male twins: same genes or same environments?
Am J Hum Genet 1994 Sep;55(3):566-73
We investigated the mediating role of genetic factors in the clustering of hypertension, diabetes, and obesity, using the twin registry maintained by the National Academy of Sciences--National Research Council. The study sample included 2,508 male twin pairs born between 1917 and 1927 who responded to a mailed questionnaire that covered demographic variables, cardiovascular risk factors, and health behaviors. The incidence of hypertension and diabetes in this cohort was ascertained from subjects' self-report of a physician diagnosis and/or the use of prescription medications. The body-mass index calculated from self-reports of height and weight was used as a measure of obesity. Descriptive analyses indicated probandwise concordance rates of 34.0%, 31.2%, and 32.7%, respectively, for the joint occurrences of hypertension and diabetes, hypertension and obesity, and diabetes and obesity in MZ twin pairs. Corresponding concordance rates in DZ twin pairs were 8.1%, 14.9%, and 2.8%. The probandwise concordance for the clustering of all three conditions in the same individuals was 31.6% in MZ pairs and 6.3% in DZ pairs (relative risk 5.0; $X2(1) = 2.6$; $P < .15$). Multivariate genetic modeling of the correlation in liabilities to develop these conditions suggested the presence of a common latent factor mediating the clustering of hypertension, diabetes, and obesity in this twin sample. This common factor was influenced by both genetic and environmental effects (59% 8 genetic, 41% environmental). The genetic influences on the common latent factor were due to dominant rather than additive sources; the environmental influences appeared to be specific rather than shared by co-twins.

Carmelli D, Selby JV, Quiroga J, Reed T, Fabsitz RR, Christian JC: 16-year incidence of ischemic heart disease in the NHLBI twin study. A classification of subjects into high- and low-risk groups.
Ann Epidemiol 1994 May;4(3):198-204
Prospective data from the National Heart, Lung, and Blood Institute (NHLBI) Twin Study were used to investigate the relationship of risk factors measured in 1970 to 1971 to 16-year incidence of ischemic heart disease (IHD) in 905 males born between 1917 and 1927. A newly developed methodology, tree-structured survival analysis (TSSA), was used to classify subjects into discrete subgroups that differed significantly in profiles of risk factors and incidence of IHD. On the basis of five characteristics--systolic blood pressure (SBP), high-density-lipoprotein cholesterol (HDL-C), 1-hour postload glucose levels, forced expiratory volume in 1 second (FEV1), and a family history score for heart disease--the TSSA algorithm partitioned the cohort into six discrete subgroups that formed three clusters of individuals with distinct IHD experience. Highest IHD incidence rates were experienced by a subgroup of 56 men with baseline SBP above 134 mm Hg and HDL-C levels lower than 33 mg/dL. No IHD events were observed in a subgroup of 117 men who had low SBP, high FEV1, and a negative family history of heart disease. Relationships to the twinning condition showed that for both zygosities, cotwin-pair members were in the same risk subgroup more often than expected; however, the overall difference between the frequency of monozygotic (MZ) and dizygotic (DZ) cotwins was relatively small. The highest MZ/DZ ratios of observed to expected cotwin-pair membership occurred in subgroups with the highest and lowest incidences of IHD, suggesting that these extremes of incidence are most likely to be genetically determined.

Carmelli D, Robinette D, Fabsitz R: Concordance, discordance and prevalence of hypertension in World War II male veteran twins. J Hypertens 1994 Mar;12(3):323-8
OBJECTIVE: To determine concordance for hypertension in adult male twins and to examine individual environmental factors associated with the manifestation of the disease in one member but not both members of a twin pair. METHODS: The subjects were 1003 monozygotic and 858 dizygotic Caucasian, male, World War II veteran twins born in the USA between 1917 and 1927, who were aged 56-66 years when surveyed by the National Heart, Lung, and Blood Institute for health behaviors and cardiovascular disease status. Hypertensive status was determined by the subjects' diagnostic reports from physicians and the subjects' past or current use of antihypertensive medications. Self-reports were validated in a subsample of 675 individual twins who were participants in a series of cardiovascular examinations and for whom blood pressure measurements were available. RESULTS: The data analyses indicate that in this cohort of adult male twins, 62% of monozygotic and 48% of dizygotic cotwins of the hypertensive twins were hypertensives, compared with a prevalence of 36% in the whole cohort. Among the 281 monozygotic twins discordant for hypertension, hypertensive twins differed significantly from their non-hypertensive cotwins in the weight gain throughout adulthood and in alcohol consumption. They did not differ in weight at induction into the military, or according to smoking, physical activity or demographics. Those pairs that were concordant for hypertension gained significantly more weight throughout adulthood, consumed more alcohol, and were physically less active than concordant-negative pairs. CONCLUSIONS: The findings from this study suggest that although genetic factors influence the development of hypertension, non-genetic and potentially modifiable lifestyle behaviors, including adult weight gain, alcohol consumption and physical activity, are closely related to the clinical manifestation of the disease.

Carmelli D see **Cardon LR**

Carthy D see **Jawaheer D**

Casaceli CJ see **Shah YG**

Casper FW, Seufert RJ, Brockerhoff P: Risk weighing in twin pregnancy.
Asia Oceania J Obstet Gynaecol 1994 Jun; 20(2):199-202
Multiple pregnancies are more often associated with complications than singleton pregnancies. In our retrospective study of 613 twin pregnancies the most important risk factors in twin pregnancies were premature labour before the 37th week of gestation and the premature rupture of the membrane. The increase of perinatal mortality and morbidity for twins might be primary the result of premature delivery.

Caspi B see **Appelman Z**

Caspi E, Raziel A, Sherman D, Arieli S, Bukovski I, Weinraub Z: Prevention of pregnancy-induced hypertension in twins by early administration of low-dose aspirin: a preliminary report.
Am J Reprod Immunol 1994 Jan;31(1):19-24

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PROBLEM: Effectiveness of early administered low-dose aspirin in prevention of pregnancy-induced hypertension (PIH) and fetal growth retardation in twin pregnancies was investigated in a randomized placebo controlled, double-blind trial in 47 twin pregnancies. METHOD: Twenty-four women received 100 mg of aspirin daily from mean gestational age of 17.7 wk, and 23 women ingested placebo from a mean gestational age of 18 wk until delivery. The placebo and aspirin group were similar in age, weight gain, zygosity, gravidity, parity, and obstetrical antecedents. Treatment lasted for a mean period of 16.8 wk and 18.3 wk in the placebo and aspirin groups, respectively. The mean gestational age at birth was 35.0 wk and 36.4 wk in the placebo and aspirin groups, respectively. RESULTS: PIH was noted in six women (26%) in the placebo group, but in only one woman (4%) in the aspirin treated patients ($P < .05$). The mean combined fetal weights of both twins, and the mean weight of the second twin at delivery were significantly higher in the aspirin treated mothers than in the placebo treated gravidas (mean difference of 781 g, $P < .02$ and mean difference of 488 g, $P < .005$, respectively). Intrauterine growth retardation (< 10th percentile) concerned 11 (24%) and six (13%) fetuses in the placebo and aspirin groups, respectively. No adverse effects of treatment to either the mothers or the infants were noted. CONCLUSION: Low-dose aspirin reduces the incidence of PIH and has a beneficial effect on fetal growth in twin pregnancies. Additional clinical trials are needed in order to define and select subgroups of twins where aspirin treatment is recommended.

Cellini A see **Offidani A**

Chakraborty S see **Das Chaudhuri AB**

Chandra R see **Mercado MG**

Chang S, Prados MD: Identical twins with Ollier's disease and intracranial gliomas: case report. Neurosurgery 1994 May;34(5):903-6; discussion 906 (23 ref.)

Sarcomatous transformation of the enchondromas is a well-known complication of Ollier's disease, and nonsarcomatous malignancies have usually been associated with Maffucci's syndrome. Only 13 cases of multiple enchondromatosis associated with intracranial gliomas have been described, 5 of which were in patients with Ollier's disease. We describe three patients, including identical twins, who had both Ollier's disease and primary brain tumors. This is the first report of Ollier's disease in identical twins. These three cases support the theory that Ollier's disease and Maffucci's syndrome may represent a spectrum of the same disease process rather than two distinct diseases.

Chang SP see **Chen SC**

Changchien CC, Eng HL, Chen WJ: Twin pregnancy with hydatidiform mole (46, XX) and a coexistent fetus (46, XY): report of a case. J Formos Med Assoc 1994 Apr;93(4):337-9

Coexistent hydatidiform mole (46, XX) and live fetus (46, XY) in the second trimester is a rare phenomenon. In this case, the clinical manifestations presented as pregnancy-induced hypertension, including hypertension, proteinuria and oliguria. Ultrasonic examination found an enlarged placenta with a typical honeycomb picture, placenta previa and a normal developing fetus. The patient underwent an emergency cesarean section at 23 weeks' gestation on a preliminary diagnosis of acute chorioamnionitis. A 700 g immature male baby was delivered with Apgar scores of 3 at one minute, and 7 at five minutes. The placenta was composed of two parts: one was a molar pregnancy and the other was a normal placenta, both were separated by the membrane. The membrane consisted of one chorion and two amnions. Postmolar persistence of human chorionic gonadotropin was found one month after termination of this pregnancy. Chemotherapy with a single agent (methotrexate) was given. The patient is doing well and has no evidence of recurrence after one year of follow-up.

Chassagne D see **Parmentier L**

Chavanne E see **Garel M**

Chavkin Y, Kupfersztain C, Guedj P, Stark M: Conservative treatment with successful outcome of a triplet pregnancy after the miscarriage of one fetus in the second trimester. Int J Gynaecol Obstet 1994 Feb;44(2):161-3

Due to the increased availability of infertility treatment, multiple pregnancies, with various resulting complications have become more common. A woman in the 19th week of a triplet pregnancy came to the hospital after the miscarriage of one of the fetuses at home. In keeping with our philosophy of minimal intervention in childbirth, we treated the woman conservatively. After confirming that the remaining two fetuses were in good condition, the woman was released home under ambulatory observation, with no antibiotics or tocolytic drugs. No further complications developed, and the woman gave birth in her 31st week to healthy twin girls 82 days later. The successful outcome of this case demonstrates that non-interventional, conservative methods could be a feasible alternative to invasive intervention. We hope that our case will encourage more physicians to try out and report noninterventional methods, so that enough information could be gathered to help make correct management decisions in the future.

Chen SC, Lee FK, Chang SP, Too LL, Shu LP, Ng HT: Selective embryo reduction in multiple pregnancies resulting from assisted conception. Chung Hua I Hsueh Tsa Chih (Taipei) 1994 Jan; 53(1):37-41

BACKGROUND. Assisted conception not only raises the pregnancy rate by treating infertility, but also increases the chance of obstetrical complication of multiple pregnancy. So it is important to develop a means by which the number of developing embryos can be reduced. METHODS. Eight multiply pregnant women (from triplets to octuplets) asked to have the number of viable fetuses reduced. By means of sonar guided puncture, a mixture of demerol and xylocaine was injected to the fetal thorax until the fetal heart ceased to beat. The procedures were done between the 7th and 11th week of gestational age. Repeated scans were done for three consecutive days to confirm the viability of the remaining fetuses. RESULTS. Except for vanishing twins, no serious complication was noted. For six of the women, 10 healthy births have resulted; the remaining two have ongoing pregnancies. CONCLUSIONS. The procedure described is an easy, safe and effective method to diminish obstetrical morbidity of multiple pregnancy.

Chen SE, Trupin L, Trupin S: Antepartum rupture of diamniotic membranes separating monozygotic twins. A case report. J Reprod Med 1994 Jan; 39(1):67-70

The partitioning membrane of a monochorionic, diamniotic twin gestation was visualized by ultrasound at weeks 18 and 22. The pregnancy progressed without difficulty to week 37. Delivery

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by cesarean section was warranted when intrapartum fetal heart rate decelerations were detected in one of the twins. Cord entanglement was noted at the time of delivery. Ultrasonography at week 29 had failed to demonstrate a partitioning membrane but as late as week 36 did not visualize cord entanglement. The diamniotic environment became monoamniotic from an unknown event some time in the late second or third trimester of pregnancy. This report emphasizes that ultrasonographic visualization of a partitioning membrane does not preclude future cord accidents.

Chen WJ see **Changchien CC**

Chenevey P see **Hill LM**

Cherny SS see **Schmitz S**

Chew SY see **Loh SF**

Chiewsilp P see **Sumethkul V**

Chike-Obi U: Preterm delivery in Ilorin: multiple and teenage pregnancies as major aetiological factors. West Afr J Med 1993 Oct-Dec;12(4):228-30
This study reports the aetiological factors responsible for 291 preterm births among 5019 deliveries at the University of Ilorin Teaching Hospital (UITH) during a 12-month period. It was found that although preterm babies made up 5.8% of all deliveries, they were responsible for 42% perinatal deaths. Important aetiological factors predisposing to preterm delivery included multiple pregnancy in 41.2% and primiparity in 23.4%. One-fifth of the primiparous were teenage mothers. Other factors included premature rupture of membrane, antepartum haemorrhage, grandmultiparity and eclampsia. It is suggested that early identification, monitoring and intervention in these high risk groups will improve gestational duration thereby reducing morbidity and mortality associated with preterm deliveries.

Chora Serrano MA see **Camorlinga Diaz G**

Christiaens GC, Oosterwijk JC, Stigter RH, Deutz-Terlouw PP, Kneppers AL, Bakker E: First-trimester prenatal diagnosis in twin pregnancies. Prenat Diagn 1994 Jan;14(1):51-5
Two twin pregnancies at risk for a sex-linked disorder are described. Both pregnancies were dichorionic. Transabdominal sampling was chosen for prenatal diagnosis. Molecular genetic techniques raised suspicion with regard to the accuracy of the samples in one case. Second-trimester amniocentesis confirmed the error. Selective feticide of the affected fetus was performed. When first-trimester prenatal diagnosis is offered in dichorionic twin pregnancies, confirmation through molecular genetic testing can confirm that villi have been obtained from different fetuses. All parties must be aware that additional invasive diagnostic procedures in the second trimester may be required in cases of doubt.

Christian JC see **Carmelli D**

Christiansen CL see **Callahan TL**

Chung PH, Abramowicz JS, Edgar DM, Sherer DM: Acute maternal obstructive renal failure in a twin gestation despite normal physiological pregnancy-induced urinary tract dilation. Am J Perinatol 1994 May;11(3):242-4
Obstructive renal failure due to an overdistended uterus is a very rare complication of pregnancy. Most previously reported cases have involved twin gestations, the majority occurring in the presence of polyhydramnios. We describe a patient with a twin gestation who developed acute obstructive renal failure despite only very mild physiological pregnancy-induced dilation of the urinary collecting system in the absence of polyhydramnios. This case suggests that acute obstructive uropathy should be considered as a rare cause of acute renal failure even in cases with seemingly normal pregnancy-induced physiological urinary tract dilation.

Clarke JP, Roman JD: A review of 19 sets of triplets: the positive results of vaginal delivery. Aust N Z J Obstet Gynaecol 1994 Feb;34(1):50-3
The outcome of 19 triplet pregnancies delivered at Waikato Women's Hospital is analyzed, with particular regard to the mode of delivery. During the period 1981-1992 the incidence of triplets was 1:1,945. Twelve sets of triplets were delivered by Caesarean section (63%) with 6 perinatal deaths occurring in this group, compared to none in 7 sets of triplets delivered vaginally (37%). All triplet pregnancies were correctly diagnosed antenatally by ultrasound examination at a mean gestational age of 19 weeks (range 11-28 weeks). The most common antenatal complications were preterm labour in 18 pregnancies (95%) and preeclampsia in 4 (21%). The mean gestation at delivery was 33 weeks (range 25-39 weeks). The outcome of triplet pregnancies was better in the group that delivered vaginally than those delivered by Caesarean section. Greater maturity of the infants delivered vaginally appeared to be the major factor for the lower neonatal morbidity and mortality.

Cleveland M see **Wagner SL**

Cloninger CR see **Heath AC**

Cohen AW see **Pustilnik TB**

Cohen RN see **Dror Y**

Colau JC see **Pinet C**

Collin H see **Tremblay JP**

Collins JA: Reproductive technology--the price of progress [editorial; comment] N Engl J Med 1994 Jul 28;331(4):270-1

Colombo M, Maestri L, Lucci G, Introvini P, Gaslini P, Magni LA: [Cough and vomiting association in an infant: where does the vicious circle start?] Pediatr Med Chir 1993 Nov-Dec;15(6):583-4 (Eng. Abstr.) **(Ita)**
The Authors describe the clinical history and diagnostical problems of a premature twin with the three classical symptoms cough-vomiting-growth retardation in the first year of life. Is the diagnostic route required to stabilize whether this condition is primarily gastroenterological or pulmonary?

Compston DA see **Thorpe JW**

Consolo F see **Pustorino S**

Conte RA see **Verma RS**

Corrigall RJ, Murray RM: Twin concordance for congenital and adult-onset psychosis: a preliminary study of the validity of a novel classification of schizophrenia. Acta Psychiatr Scand 1994 Feb; 89(2):142-5
As a test of the hypothesis that the psychoses can be divided into congenital and adult-onset forms, we applied operational criteria for these two disorders to the case summaries of 24 monozygotic and 33 dizygotic schizophrenic twin pairs. Our results indicate that the reliability and validity of this novel classification are comparable with the best of the existing systems and support further investigation of the hypothesis.

Cottrell F see **Tremblay JP**

Cox C see **Sherer DM**

Cragan JD, Martin ML, Waters GD, Khoury MJ: Increased risk of small intestinal atresia among twins in the United States. Arch Pediatr Adolesc Med 1994 Jul;148(7):733-9
OBJECTIVE: To compare the prevalence of small intestinal atresia among twins and singletons in the United States. DESIGN: Descriptive analysis. MEASUREMENTS: The McDonnell Douglas

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Health Information System (MDHIS), a national registry of newborn diagnoses, 1982 through 1988; and the Metropolitan Atlanta Congenital Defects Program (MACDP), a registry of defects among infants in Atlanta, 1968 through 1989. PATIENTS: Live-born infants with small intestinal atresia. INTERVENTIONS: None. MAIN RESULTS: In both systems, the rate of small intestinal atresia was higher among twins than singletons (MDHIS: 5.5 per 10,000 vs 2.0, relative risk [RR] = 2.8, 95% confidence interval [CI] = 1.9 to 4.0; MACDP: 7.3 vs 2.5, RR = 2.9, 95% CI = 1.5 to 5.7). The increase was more notable among same-sex twins than opposite-sex twins, suggesting an increase among monozygotic twins. It was also more notable among twins with jejunoileal atresia than those with duodenal atresia, suggesting a vascular cause in many cases. CONCLUSION: Twins have a higher rate of small intestinal atresia than singletons, possibly due to vascular disruption in monozygotic twins.

Creus M see **Balasch J**

Crouchley R see **Pickles A**

Crowley WF Jr see **Callahan TL**

Czeizel AE, Métneki J, Dudás I: Higher rate of multiple births after periconceptional vitamin supplementation [letter] N Engl J Med 1994 Jun 9; 330(23):1687-8

D

D'Amelio R see **Nisini R**

D'Amico ML see **Sherer DM**

Dancoisne P see **Abossolo T**

Dapunt OE see **Antretter H**

Das Chaudhuri AB, Basu S, Chakraborty S: Twinning rate in the Muslim population of West Bengal. Acta Genet Med Gemellol (Roma) 1993;42(1):35-9
Total birth records for the Bengalee Muslim population (BMP) and the Bengalee Hindu caste population (BHCP) for the period 1980-1988 were 17,720 and 119,107 respectively. Of these, the number of twin pairs were 363 BMP and 1,229 BHCP. These data were obtained from the registers of the following hospitals: Islamia Hospital, NRS Medical College and Hospitals and RG Kar Medical College and Hospitals, Calcutta and Medinipore Sadar Hospital, West Bengal, India. The twinning rates found were 20.48 and 10.57 per thousand deliveries in the BMP and BHCP respectively. The proportion of twins, 0.02048, in the BMP was significantly higher ($Z = 12.38$, $p < \text{or} = 0.01$) than that in the BHCP, 0.01057. This finding of a higher twinning rate in the BMP is corroborated by the fact that available data on the Muslim population of Srinagar in Kammu and Kashmir, and Lucknow and Kanpur in Uttar Pradesh show higher twinning rates than the other populations of India. This increased twinning rate may be due to the greater amount of inbreeding in the BMP.

David V see **Benson CB**

Davidson J see **Jawaheer D**

Davis A, Annett M: Handedness as a function of twinning, age and sex. Cortex 1994 Mar;30(1):105-11
Questions about twin birth, sex, age and handedness for writing were asked as part of a survey of hearing disability (Davis, 1989) in a large sample of the adult population. The findings show unequivocally that the prevalence of left handedness is higher in twins than in the singleborn, in males than in females and in younger than in older adults. There was a marked and regular decline in the percentage of left writers with increasing age, but the effects for twinning and sex were evident in all of 7 age bands from 18 years to 80+. The findings are consistent with the assumption of the right shift theory of handedness (Annett, 1972, 1985) that the rs+ gene is expressed more strongly in females than in males, and in the singleborn than in twins.

Deapen D see **Richardson JL**

de Keyser JL see **Gualandi M**

Delezoide AL see **Pinet C**

Dennis M, Barnes MA: Neuropsychologic function in same-sex twins discordant for perinatal brain damage. J Dev Behav Pediatr 1994 Apr;15(2):124-30
We studied childhood neuropsychologic function in two pairs of low birth weight, same-sex twins reared together but with different patterns of concordance and discordance for intraventricular hemorrhage (IVH) and hydrocephalus (HYD). Same-sex twins have discordant levels of cognitive skills when one twin but not the other develops IVH alone or IVH and HYD at birth. The results bear on several issues: the effects of prematurity, the effects of IVH, the combined effects of IVH and HYD, and the potential applications of the present methodology of pairwise-matched twin comparisons for understanding how different forms of perinatal brain damage affect childhood cognitive functions important for learning.

Densem JW see **Wald NJ**

De Prost Y see **Vabres P**

Després JP see **Oppert JM**

Deter RL see **Milner LL**

Deutz-Terlouw PP see **Christiaens GC**

Dock BS see **Evans MI**

Dolmans WM see **Walraven GE**

Dommergues JP see **Romand S**

Dommergues M, Aknin J, Boulot P, Nisand I, Lewin F, Oury JF, Herlicoviez M, Dumez Y, Evans MI: [Embryo reduction in multiple pregnancies. A French multicenter study]
J Gynecol Obstet Biol Reprod (Paris) 1994; 23(4):415-8 (Eng. Abstr.) **(Fre)**
OBJECTIVE. To study the outcome of multifetal pregnancy embryo reductions (MFPR) in France. STUDY DESIGN. A retrospective questionnaire multicenter survey was conducted in 11 French centers. 262 consecutive MFPR were collected. Miscarriage and prematurity rates were analyzed as a function of the starting number of embryos, the finishing number after MFPR, and the technique of MFPR. RESULTS. There were 41 pregnancy losses before 24 weeks (16%), and 221 deliveries at 25 menstrual weeks or later (84%). Prematurity was significantly correlated to the finishing number of embryos following MFPR. However, even when a single embryo was left, there were 30% of premature deliveries. CONCLUSION. MFPR decreases the risk of prematurity in multifetal pregnancies of high order, and this is best achieved when a single embryo is left.

Dommergues M see **Evans MI**

Donn SM see **Klarr JM**

Doubilet PM see **Benson CB**

Dowling PM see **Tyler JW**

Dror Y, Gelman-Kohan Z, Hagai Z, Juster-Reicher A, Cohen RN, Mogilner B: Aplasia cutis congenita, elevated alpha-fetoprotein, and a distinct amniotic fluid acetylcholinesterase electrophoretic band.
Am J Perinatol 1994 Mar;11(2):149-52
Aplasia cutis congenita affecting the elbows, knees, hips, and gluteal area was observed in a female newborn, product of a twin pregnancy. One of the twins was a fetus papyraceous detected at 15 weeks of pregnancy. During the course of the pregnancy,

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maternal thrombocytosis was diagnosed and treated with aspirin. alpha-Fetoprotein was elevated in maternal serum and amniotic fluid, and a distinct electrophoretic acetylcholinesterase band was seen in amniotic fluid. These findings are in agreement with the classification of aplasia cutis congenita as proposed by Frieden et al in which type V is related to the presence of a fetus papyraceous or placental infarcts. The findings in the present case may be explained by the effect of the dead twin on the surviving fetus and the extensive denuded skin areas. Long-term follow-up of the infant showed that the lesions were cured, most of them with minimal scars. Increased risk for aplasia cutis congenita should be considered when elevated maternal and amniotic fluid alpha-fetoprotein and a distinct electrophoretic band of acetylcholinesterase are found. Especially when one of the twins is dead.

Drouin V see **Kanold J**

Dubrey S, Akhras F, Song GJ, Hardman T, Travill C, Hynd J, Noble MI, Lo SS, Leslie RD: Exercise electrocardiography and aortic Doppler velocimetry in asymptomatic identical twins discordant for type 1 (insulin dependent) diabetes. Br Heart J 1994 Apr; 71(4):341-8

OBJECTIVE--To determine the influence of insulin dependent diabetes on the prevalence of myocardial ischaemia and on global left ventricular systolic performance. DESIGN--Stress treadmill electrocardiograms and simultaneous Doppler measurement of aortic maximum acceleration were obtained during exercise on symptom free subjects. The electrocardiograms were scored blindly according to the Minnesota code.

PARTICIPANTS--39 identical twin pairs (22 male) discordant for insulin dependent diabetes and 39 non-diabetic controls of similar age and sex were examined. The twins and controls had a mean age of 37 (range 25-69) with a mean (SD) duration of diabetes in the diabetic twin of 17 (7) years. Those selected were normotensive and had no renal impairment. RESULTS--Systolic blood pressure was significantly higher in the diabetic twins than in their non-diabetic cotwins both at rest ($p < 0.05$) and at peak exercise ($p < 0.01$).

Electrocardiographic evidence of ischaemia was not correlated within twin pairs and was found in similar numbers of diabetic twins, their non-diabetic cotwins, and control subjects. Abnormal electrocardiograms were found in a similar number of diabetic twins (23%), non-diabetic cotwins (18%), and controls (15%). There was a significant correlation in Doppler measurements of global left ventricular systolic function within the identical twins; no significant difference was found for these Doppler measurements in the diabetic twins, non-diabetic cotwins, or controls.

CONCLUSION--Exercise characteristics and cardiac function seem to be subject to shared genetic or shared environmental influences or both, whereas electrocardiographic features of ischaemia seem to be environmentally determined. In a selected cohort of diabetic identical twins without evidence of nephropathy there was no evidence that diabetes influenced the prevalence of myocardial ischaemia or global left ventricular systolic function.

Dubrey SW, Reaveley DR, Seed M, Lane DA, Ireland H, O'Donnell M, O'Connor B, Noble MI, Leslie RD: Risk factors for cardiovascular disease in IDDM. A study of identical twins. Diabetes 1994 Jun; 43(6):831-5

Patients with insulin-dependent diabetes mellitus (IDDM) have an excess mortality, predominantly attributable to cardiovascular disease. To determine the effect of IDDM on potential risk factors for cardiovascular mortality, we studied subjects from the British Diabetic Twin Study Group. Forty-five identical twin pairs discordant for IDDM were recruited in addition to 45 matched nondiabetic singleton control subjects. All were selected to be normotensive and to have normal albumin excretion rates. Four variables differed significantly between the diabetic twins and their nondiabetic identical co-twins: diabetic twins had higher systolic blood pressure (sBP) ([mean +/- SD] 127 +/- 17 vs. 123 +/- 18 mmHg, $P < 0.05$), high-density lipoprotein (HDL) cholesterol (1.36 +/- 0.31 vs. 1.25 +/- 0.29 mM, $P < 0.05$) and fibrinogen (3.23 +/- 0.81 vs. 2.98 +/- 0.71 mg/ml, $P < 0.05$) but lower factor VII (114 +/- 34 vs. 122 +/- 31%, $P < 0.05$). All four of these risk factors were significantly correlated ($P < 0.001$) within the identical twin pairs, as were the other risk factors. These significant correlations within twins for the risk factors studied reflects the impact of shared genetic and environmental influences. IDDM affects sBP, HDL cholesterol, fibrinogen, and factor VII, but only sBP and fibrinogen are affected adversely.

Duchamp de Chastaigne M, Mezin R: [The association of an abdominal pregnancy and an intrauterine pregnancy in the 3rd trimester. Apropos of a case and review of the literature]

J Gynecol Obstet Biol Reprod (Paris) 1994; 23(4):440-3 (5 ref.) (Eng. Abstr.) **(Fre)**

We observed a twin pregnancy during the third trimester with one intra-abdominal and one intrauterine infant. The first child was delivered via the normal vaginal route and the second via emergency laparotomy. Both infants were live at birth and the outcome was quite favourable for the mother and the two infants. A review of the literature confirmed the extreme rarity of such cases, and the almost unknown favourable outcome. Different pathophysiological mechanisms may have led to this rare combination of twin pregnancies and several points of the clinical course suggest how the diagnosis could have been made earlier during the pregnancy. Therapeutic problems related to abdominal pregnancy and questions of ethics are raised in case of early diagnosis.

Dudás I see **Czeizel AE**

Dumez Y see **Dommergues M**

Dumez Y see **Evans MI**

Dussault JH see **Oppert JM**

Duyar I, Güntay-Ayaz N: The frequency of multiple births in central Anatolia. Turk J Pediatr 1993 Oct-Dec;35(4):257-65 (17 ref.)

The purposes of the present study were to contribute additional data regarding the frequency of multiple births in Ankara, and to reassess both the relation between maternal age and twinning, and the inter-relation between twinning and seasonality. The frequency of twinning was found to be 0.0084858 +/- 0.00028 (0.85%), triplets 0.0001087 +/- 0.000031 (0.011%), and quadruplets 0.000009 (0.0009%). It is observed that there is a correlation between the frequency of twinning, maternal age and parity, and that the rate of twinning increases with maternal age. The twinning rate varies according to the month of the year in which birth takes place. Accordingly, the frequency of twin births is greater between May and August, and lower between September and December.

Dyer PA see **Jawaheer D**

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E

Eaves L see **Pickles A**
Eaves LJ see **Kendler KS**
Eaves LJ see **Kessler RC**
Eaves LJ see **Neale MC**
Eaves LJ see **Prescott CA**
Eaves LJ see **Silberg JL**
Eaves LJ see **Truett KR**
Edgar DM see **Chung PH**
Eik-Nes SH see **Jørgensen FS**
Eisman JA see **Tokita A**
Ekberg L see **Agrup M**
Elias E see **Moots RJ**
Eller A see **Mascola L**
Elliman A see **Bendefy IM**
Elliott JP: Multifetal reduction of triplets to twins improves perinatal outcome [letter; comment]
Am J Obstet Gynecol 1994 Jul;171(1):278
Elston RC see **Sepulveda RL**
Emancipator SN see **Wisnieski JJ**
Emanuel I: Low birthweight and ischaemic heart disease [letter; comment] Lancet 1994 May 14; 343(8907):1225
Emery P see **Moots RJ**
Emmett JR: Simultaneous idiopathic sudden sensorineural hearing loss in identical twins.
Am J Otol 1994 Mar;15(2):247-9
Two sisters, who are identical twins, had a simultaneous idiopathic sudden hearing loss (ISHL) while listening to loud music at a rock concert. The possibility that their hearing losses, along with the sudden hearing losses related to cordless telephone injuries, are attributable to intracochlear membrane ruptures is discussed.
Eng HL see **Changchien CC**
Engstrand L see **Malaty HM**
Eppel W, Schurz B, Frigo P, Adler A, Asseryanis E, Kudielka I, Vavra N, Reinold E: [Vaginal sonography of the cervix in twin pregnancies]
Geburtshilfe Frauenheilkd 1994 Jan;54(1):20-6 (Eng. Abstr.) **(Ger)**
In a prospective study of 97 uncomplicated twin pregnancies, vaginosonographic cervix measurements of length, thickness and width of the internal os were performed. Furthermore, a group of 113 uncomplicated primipara was measured by vaginosonography. The twin pregnancies were examined sonographically at 4–5 week intervals between the 14th and 34th week of gestation. The results of the measurements were correlated between these two groups in accordance with duration of pregnancy and the number of deliveries. The results showed in general, that the cervical length of multipara-multiple pregnancy is longer than in the primipara-multiple pregnancy. Between the 13th and 17th week of gestation the cervix of primipara showed a length of 48.1 +/- 2.1 mm, the multipara twins showed a length of 52.3 +/- 3.4 mm. Between the 18th and 22nd gestational week, the primipara showed a cervical length of 49.4 +/- 3.6 mm and the multipara a length of 49.6 +/- 2.6 mm. In the 23rd to 27th week, the primipara had a cervical length of 39.4 +/- 2.4 mm, the multipara of 49.3 +/- 3.7 mm. From the 28th to 33rd week, cervical length was reduced in primipara to 31.2 +/- 2.9 mm, and in multipara to 42.7 +/- 5.1 mm. In the normal group of multipara, the cervical length was slightly longer. The assessment of cervical thickness showed the widest cervices in multipara gemini followed by the primipara gemini, the smallest cervices were found in primipara-single pregnancies.(ABSTRACT TRUNCATED AT 250 WORDS)
Erdmann J, Nöthen MM, Stratmann M, Fimmers R, Franzek E, Propping P: The use of microsatellites in zygosity diagnosis of twins.
Acta Genet Med Gemellol (Roma) 1993;42(1):45-51
Although numerous genetic and anthropological markers are available for determining zygosity of twins, there is still a need for a more practical and informative method in zygosity diagnosis. Dinucleotide repeats or other short repeats (microsatellites) are highly variable between individuals and offer a simple, fast, cheap, and exact approach for zygosity determination. The feasibility of a set of microsatellites to be used for this purpose is demonstrated.
Erickson MT see **Silberg JL**
Ertan AK see **Rühle W**
Escrivá Aparici A see **Sanchís Calvo A**
Essel JK, Opai-Tetteh ET: Twin birth-weight discordancy in Transkei. S Afr Med J 1994 Feb; 84(2):69-71
A study of twin birth-weight discordancy revealed a high incidence of 11.7% (1 in 9 deliveries) among 478 pairs of twins delivered. The second twin had a lower birth weight and a poorer perinatal outcome, as does the smaller twin irrespective of birth order. Major birth-weight discrepancies were found in dichorionic twins. In twins of unlike sex, males were heavier, irrespective of birth order, which suggests that fetal gender may be an important aetiological factor. It is suggested that growth retardation of one of a pair of twins, rather than twin transfusion syndrome, is a more important contributor to birth-weight discordancy.
Ettner SL see **Callahan TL**
Evans MI, Goldberg JD, Dommergues M, Wapner RJ, Lynch L, Dock BS, Horenstein J, Golbus MS, Rodeck CH, Dumez Y, et al: Efficacy of second-trimester selective termination for fetal abnormalities: international collaborative experience among the world's largest centers. Am J Obstet Gynecol 1994 Jul;171(1):90-4
OBJECTIVE: Our goal was to develop the most comprehensive database possible to counsel patients about selective termination for fetal abnormalities, because no one center has sufficient data to assess much more than crude loss rates. STUDY DESIGN: A total of 183 completed cases of selective termination from 9 centers in 4 countries were combined (169 twins, 11 triplets, 3 quadruplets). Variables included indications, methods, (potassium chloride, exsanguination, air embolus), gestational age at procedure, pregnancies lost (< or = 24 weeks), gestational age at delivery, and neonatal outcome. RESULTS: Indications for selective termination were 96 chromosomal, 76 structural, and 11 mendelian. Selective termination was technically successful in 100% of cases. In 23 of 183 (12.6%) miscarriage occurred before 24 weeks; 2 of 37 (5.4%) occurred when the procedure done at < or = 16 weeks and 21 of 146 (14.4%) when it was done thereafter. Air embolization had a higher loss rate: 10 of 24 (41.7%) compared with 13 of 156 (8.3%) by potassium chloride (chi 2 = 117, p < 0.0001). Three cases of selective termination performed in monochorionic pregnancies all resulted in pregnancy loss. Among 183 potentially viable deliveries, 7 occurred before 28 weeks, 19 at 29 to 32 weeks, 41 at 33 to 36 weeks, and 93 at > or = 37 weeks. Gestational age at delivery was not influenced by the technique used or the indication but was negatively correlated with gestational age at the time

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of selective termination. No coagulopathy or ischemic damage was observed in survivors. There was no maternal morbidity. CONCLUSIONS: (1) Selective termination in experienced hands for a dizygotic abnormal twin is safe and effective when done with potassium chloride. A total of 83.8% of viable deliveries occurred after 33 weeks and only 4.3% at 25 to 28 weeks. (2) Gestational age at the procedure correlated positively with loss rate and inversely with gestational age at delivery; this emphasizes the need for early diagnosis in multifetal pregnancies. (3) Coagulopathy tests are probably unnecessary.

Evans MI see **Dommergues M**
Ewert DP see **Mascola L**

F

Fábregues F see **Balasch J**
Fabsitz R see **Carmelli D**
Fabsitz RR see **Cardon LR**
Fabsitz RR see **Carmelli D**
Fabsitz RR see **Reed T**
Falkert U see **Briese V**
Fallet C see **Larroche JC**
Farlow MR see **Wagner SL**
Farquharson RG see **Pickersgill A**
Farrow JS see **Wagner SL**
Fattorossi A see **Nisini R**
Federico G see **Pustorino S**
Fenton TR, Thirsk JE: Twin pregnancy: the distribution of maternal weight gain of non-smoking normal weight women. Can J Public Health 1994 Jan-Feb;85(1):37-40
We documented the pattern and distribution of weight gain through twin pregnancies of healthy non-smoking women with good birth outcomes. The mean birthweight was 2621 g and the mean gestational age at delivery was 37.6 weeks. As few of the women were weighed after 34 weeks, the weight gain graph was drawn to this point. The sample was separated into subgroups based on birthweights and gender of the infants. Weight gains, parity, income, first measured weight, BMI and Apgars were not different between the subgroups. The only difference between those with infants that were small for gestational age (SGA), over 3 kg, or intermediate in weight was gestational age. For the groups divided by infant gender, the only differences were maternal age and infant birthweight. The mean, median and 80% confidence limits for weight gain at 34 weeks were 14.1, 13.6, and between 8.5 and 19.4 kg, respectively. There was a wide range of weight gained by these women carrying twin pregnancies.
Ferlini C see **Nisini R**
Ferrer Jiménez R see **Sanchís Calvo A**
Ferri S see **Olivieri I**
Fimmers R see **Erdmann J**
Fisch B see **Avrech O**
Fisher KR see **McManus CA**
Fisher WW see **Hagopian LP**
Fleischman AR: The Lakeberg conjoined twins [letter; comment] J Perinatol 1994 Mar-Apr;14(2):168-9
Folstein MF see **Breitner JC**
Formigli L see **Brambati B**
Fournie A see **Pessonnier A**
Franco JG Jr: The risk of multifetal pregnancy. Hum Reprod 1994 Feb;9(2):185-6
Franzek E see **Erdmann J**
Freckmann N see **Puchner MJ**
Frenzer A, Gyr T, Schaer HM, Herren H, Krähenbühl S, Schaer M [corrected to Schaer HM]: [Triplet pregnancy with HELLP syndrome and transient diabetes insipidus] Schweiz Med Wochenschr 1994 Apr 23;124(16):687-91 (Eng. Abstr.) **(Ger)**
A 35 year old primigravida with a triplet pregnancy developed polyuria and epigastric pain in the 31st week of pregnancy. During that week, emergency cesarean section was performed due to evidence of liver disease and imminent fetal hypoxia. Three girls were delivered who were healthy apart from transient neonatal respiration distress syndrome. Following surgery, the mother developed HELLP syndrome with hemolysis, increased transaminases and thrombocytopenia. She also developed diabetes insipidus with daily urine outputs of up to 7000 ml and poor response to desmopressin. Both the HELLP syndrome and the diabetes insipidus resolved spontaneously within ten days. In pregnant patients with right upper quadrant pain, HELLP syndrome or acute fatty liver of pregnancy should be considered. The association of diabetes insipidus with acute fatty liver of pregnancy is an established, but rare phenomenon. As far as is known, this is the first report of a patient presenting with a combination of HELLP syndrome and diabetes insipidus. Patients with HELLP syndrome have a good prognosis, if the diagnosis is early and the pregnancy terminated at the right time. With close supervision further pregnancies are possible.
Frigo P see **Eppel W**
Fulker DW see **Cardon LR**
Fulker DW see **Schmitz S**
Funakoshi S see **Nishiyama K**
Furuoka H, Tsuno T, Wada Y, Matsui T: Peripheral neuropathy in twin calves. Vet Pathol 1994 Mar; 31(2):265-8
Fusade T see **Kanold J**

G

Gabler S, Voland E: Fitness of twinning. Hum Biol 1994 Aug;66(4):699-713
On the basis of a family reconstitution of the rural Krummhörn population (Ostfriesland, Germany) of the eighteenth and nineteenth centuries, we pursued the question of to what extent the birth of twins contributed to the reproductive fitness of their mothers. The twinning rate was 16.2/1000; the secondary sex ratio among twins was 0.93, and it was 1.16 among their singleton siblings. Mothers of twins were older, had a longer generative life phase, and achieved higher age-specific fertility rates with shorter birth intervals. Parity effects on twinning tendency could not be detected. Twin maternities caused reproductive costs, namely, increased maternal, infant, and child mortality and obviously higher intrafamilial competition, because adult twins had fewer local marriage chances and to a higher degree were forced to emigrate. These reproductive disadvantages mean that the productivity of a male pair of twins, as measured by the number of live-born grandchildren, is clearly less than the productivity of a single boy. On the other hand, the birth of a female pair of twins led to more live-born grandchildren than the birth of a single girl. In sum, mothers of twins achieved greater reproductive success, with 13.5% more live-born grandchildren, than mothers of singletons only. The results are discussed against the background of Anderson's (1990) error hypothesis of twinning.
Gabler S see **Voland E**
Gangarossa S: Acute myeloid leukemia in a twin with

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a suprasellar arachnoid cyst: a possible correlation [letter] Childs Nerv Syst 1994 Mar;10(2):77–8

Garden AS see **Pickersgill A**

Garel M, Chavanne E, Blondel B: [Follow-up of mothers of triplets 2 years after delivery. Results of a longitudinal study] Contracept Fertil Sex 1994 Jun;22(6):414–7 (Eng. Abstr.) **(Fre)**

The aim of the study was to assess the health of mothers of triplets, two years after delivery. As part of a longitudinal study, 11 mothers having delivered consecutively in clinique Baudelocque were interviewed at home. They reported considerable fatigue and stress. Four women suffered with anxiety and depressive symptoms and three of them used psychotropic medication. Considering the possible consequences of maternal depression upon the child development, one third of the children in the study are particularly at risk. These results showed that the difficulties experienced by mothers of triplets persisted and remained important even under favourable medical and social circumstances.

Garty BZ see **Geyer O**

Gaslini P see **Colombo M**

Gau BA see **Breitner JC**

Gelez J see **Romand S**

Gelman-Kohan Z see **Dror Y**

Gendall PW, Baird CE, Becroft DM: Rhizomelic chondrodysplasia punctata: early recognition with antenatal ultrasonography. J Clin Ultrasound 1994 May;22(4):271–4

Genest DR see **Steller MA**

Gewertz BL see **Bech F**

Geyer O, Loewenstein A, Garty BZ, Lazar M: Different manifestation of Rieger syndrome in monozygotic twins. J Pediatr Ophthalmol Strabismus 1994 Jan–Feb;31(1):57–8

Gilgenkrantz S see **Tremblay JP**

Girard N see **Larroche JC**

Glagov S see **Bech F**

Gleicher N, Karande V, Rabin D, Pratt D: Laparoscopic removal of twin cornual pregnancy after in vitro fertilization. Fertil Steril 1994 Jun; 61(6):1161–2

The laparoscopic management of tubal pregnancies by salpingostomy has become a clinical standard of care (5). Those surgeries usually are performed for tubal pregnancies that are located distally to the cornua and the intramural piece of the tube. We previously reported on the conservative surgical management of interstitial pregnancies (3). To our knowledge, cornual pregnancies have never before been approached laparoscopically. Such a surgical approach is reported here, involving a twin gestation in the left uterine cornua conceived by IVF in a women with bilaterally absent tubes.

Golbus MS see **Evans MI**

Goldberg JD see **Evans MI**

Goldberg TE, Torrey EF, Berman KF, Weinberger DR: Relations between neuropsychological performance and brain morphological and physiological measures in monozygotic twins discordant for schizophrenia. Psychiatry Res 1994 Mar;55(1):51–61

Correlational approaches that examine the relation between neuropsychological measures and brain morphology or physiology in schizophrenia have yielded inconsistent results. This may be due in part to difficulties in ascertaining precisely to what degree each measure deviates from its genetically and environmentally determined potential level. We attempted to surmount this problem in a paradigm involving monozygotic twin pairs discordant for schizophrenia. In this paradigm, the difference score between the unaffected member and affected member of a twin pair should represent the degree of pathologic involvement irrespective of actual level. In correlating intrapair difference scores of anatomic structures measured from magnetic resonance imaging (n = 15) and prefrontal regional cerebral blood flow (rCBF) (n = 10) with cognitive abilities (after partialing IQ), we found strong associations between (1) the left hippocampus and a parameter of verbal memory, and (2) prefrontal rCBF with symptom scores and perseveration on the Wisconsin Card Sorting Test. These results support other research implicating medial temporal and prefrontal regions as important in the symptomatic expression and cognitive failures of schizophrenia. Overall, however, there was a relative paucity of significant associations between neuroanatomic and neurocognitive variables. This may have been due to the relatively restricted ranges of hippocampal size or cognitive ability found in this sample.

Golding J see **Ashley D**

Goldstein DP see **Steller MA**

Gonzalez B see **Sepulveda RL**

González Martínez MA see **Sanchís Calvo A**

Govind A see **Kilby MD**

Grace K see **Schnur RE**

Gragg LA see **Shah YG**

Graham DY see **Malaty HM**

Gray C see **Pahwa R**

Greene MF see **Callahan TL**

Greenwood R see **Ashley D**

Grimalt L see **Gutiérrez Gutierrez AM**

Gualandi M, Steemers N, de Keyser JL: [First reported case of preoperative ultrasonic diagnosis and laparoscopic treatment of unilateral, twin tubal pregnancy] Rev Fr Gynecol Obstet 1994 Mar; 89(3):134–6 (13 ref.) (Eng. Abstr.) **(Fre)**

Since the first case of a unilateral tubal twin pregnancy was reported by Deott in 1891, on average, one case is reported per year in the literature. Ninety-nine such cases have been described and the present case is described as the one hundredth. The unilateral twin pregnancies were diagnosed during or after surgery in all but two cases. Santos et al. described the first unilateral, tubal twin pregnancy to be diagnosed before surgery through the use of ultrasound. Sherer et al. describe the second such case detected by ultrasound from the beating of the fetal heart by the abdominal ultrasound probe. We describe here the first case of unilateral, tubal twin pregnancy to be documented by ultrasound, with cardiac activity of two foetuses detected by the endovaginal probe. Furthermore, this case was treated by laparotomy, which had not previously been described.

Guedj P see **Chavkin Y**

Gugliantini P, Marino B: [Echocardiography, CT-angiography and angiocardiography in the evaluation of feasibility of separating thoracopagus Siamese twins] Radiol Med (Torino) 1994 Jul–Aug; 88(1–2):130–6 **(Ita)**

Guidozzi F see **Ball JH**

Guilleminault C see **Hublin C**

Gülmezoglu AM see **Hofmeyr GJ**

Güntay-Ayaz N see **Duyar I**

Gutiérrez Gutierrez AM, Grimalt L, Remohí J, Pellicer A: [Twin pregnancy after oocyte donation in a woman with Turner syndrome]

Ginecol Obstet Mex 1994 Jul;62:182–4 (Eng. Abstr.) **(Spa)**

It is extremely rare for pregnancy to occur spontaneously in patients with Turner's syndrome, and if it happens this will have an increased risk

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of fetal wastage and congenital malformations in the new born, specially of the sexual chromosome. Oocyte donation is at present the technique of choice to release the reproductive wishes of these women. We present a case of a woman with Turner's syndrome, with a 45, X0 karyotype, to whom ovum donation and intrauterine embryo transfer were performed, obtaining a twin pregnancy without complications. A cesarean section was made at term, obtaining two healthy new born infants.

Guzick D see **Hill LM**

Gyr T see **Frenzer A**

H

Habbema JD see **Brandenburg H**

Habonimana E see **Armstrong O**

Hackländer T see **Steinmetz H**

Hadi HA see **Livingston JC**

Häfliger M see **Brühwiler H**

Hagai Z see **Dror Y**

Hagopian LP, Fisher WW, Legacy SM: Schedule effects of noncontingent reinforcement on attention-maintained destructive behavior in identical quadruplets. J Appl Behav Anal 1994 Summer;27(2):317-25

Noncontingent reinforcement (NCR), a response-independent schedule for the delivery of reinforcement, has been found to be effective in reducing behavior when the reinforcer delivered is responsible for behavioral maintenance. In this study, dense and lean schedules of response-independent attention were compared to determine whether it is necessary to begin with a dense schedule before fading to a lean schedule, or whether treatment would be as effective using a lean schedule at the outset. The subjects were 5-year-old identical quadruplets diagnosed with mental retardation and pervasive developmental disorder who displayed destructive behavior that was maintained by social attention. NCR was selected partially because it is not very labor intensive and could be implemented by a single mother simultaneously with all 4 children. Using a combination multielement and multiple baseline design, it was found that (a) a dense schedule of response-independent reinforcement (i.e., fixed-time 10 s) resulted in immediate and dramatic reductions in destructive behavior with no evidence of an extinction burst, and (b) an equivalent reduction in destructive behavior was achieved with a lean schedule of response-independent reinforcement (fixed-time 5 min) only after a systematic fading procedure was implemented. The findings suggest that the effectiveness of NCR may be dependent on the use of a dense schedule initially, and that systematic fading can increase the effectiveness of a lean schedule.

Hahn-Zoric M see **Konradsen HB**

Hall JE see **Callahan TL**

Hall P: Anorexic siblings [letter] Br J Psychiatry 1994 Feb;164(2):268-9

Hanson LA see **Konradsen HB**

Hardman T see **Dubrey S**

Hata T see **Milner LL**

Hauspie RC, Bergman P, Bielicki T, Susanne C: Genetic variance in the pattern of the growth curve for height: a longitudinal analysis of male twins. Ann Hum Biol 1994 Jul-Aug;21(4):347-62

Genetic aspects of the pattern of growth and of short-term variations in growth velocity for height were studied in a sample of 44 MZ and 42 DZ twin pairs from the Wroclaw Longitudinal Twin Study. The data consists of serial measurements of height, taken between 8.5 years of age and adulthood. The intra-pair resemblance of the pattern of attained height was quantified by means of the average Euclidean distance coefficient and the coefficient of shape difference, calculated on the raw height-for-age data. Comparison of these resemblance coefficients between the two types of twins indicated that the growth curves of MZ twins are closer to each other, and more similar in shape, than those of DZ twins. The shape of the growth curve was further characterized by a set of biological parameters, derived from Preece Baines model I (PB) fitted to each subject's serial growth data. Genetic analysis of these parameters, according to the model of Christian, Won Kang and Norton (1974), revealed a strong genetic component in the variance of size at particular milestones in the growth process (height at take-off, at peak velocity and at adulthood), and also in the timing of the growth process (age at take-off and at peak velocity). Height velocity at take-off and peak height velocity were also strongly genetically determined. Finally, short-term variations in growth velocity were analysed on the basis of the profiles of the residuals, obtained by the PB fits to each subject's serial measurements of height. Resemblance coefficients were calculated for the profiles of residuals. The results revealed a significantly greater similarity of profile shapes of the residuals in MZ twins than in DZ twins, strongly suggesting that there is a genetic component in the short-term variations of growth velocity.

Hawa M see **Peakman M**

Hayakawa F see **Okumura A**

Heath A see **Kessler RC**

Heath AC, Martin NG: Genetic influences on alcohol consumption patterns and problem drinking: results from the Australian NH&MRC twin panel follow-up survey. Ann N Y Acad Sci 1994 Feb 28; 708:72-85

Self-report questionnaire data from 3,000 adult twin pairs participating in the 1988-1989 follow-up survey of the Australian NH&MRC twin panel were analyzed to determine (1) the contribution of genetic factors to risk of problem drinking in males and females; and (2) the magnitude of the correlation between genetic effects on problem drinking and genetic effects on alcohol consumption level. Significant genetic contributions were found both for average weekly consumption of alcohol and for problem-drinking history. For level of consumption, genetic factors accounted for approximately 58% of the variation in females and 45% of the variation in males. Heritability estimates for problem drinking, though significantly greater than zero, were variable in magnitude, ranging (under different models) from 8-44% in females and 10-50% in males. Likewise, estimates of the magnitude of the genetic correlation, whilst in all cases significantly greater than zero, ranged from 0.42-1.00 in females and 0.45-1.00 in males under different models.

Heath AC, Cloninger CR, Martin NG: Testing a model for the genetic structure of personality: a comparison of the personality systems of Cloninger and Eysenck. J Pers Soc Psychol 1994 Apr;66(4):762-75

Genetic analysis of data from 2,680 adult Australian twin pairs demonstrated significant genetic contributions to variation in scores on the Harm Avoidance, Novelty Seeking, and Reward Dependence scales of Cloninger's Tridimensional Personality Questionnaire (TPQ), accounting for between 54% and 61% of the stable variation in

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these traits. Multivariate genetic triangular decomposition models were fitted to determine the extent to which the TPQ assesses the same dimensions of heritable variation as the revised Eysenck Personality Questionnaire. These analyses demonstrated that the personality systems of Eysenck and Cloninger are not simply alternative descriptions of the same dimensions of personality, but rather each provide incomplete descriptions of the structure of heritable personality differences.

Heath AC see **Kendler KS**
Heath AC see **Prescott CA**
Heath AC see **Truett KR**
Hegemier S see **Milner LL**
Heiba IM see **Sepulveda RL**
Heikkila K see **Hublin C**

Heinonen KM, Jokela V: Multiple fetuses, growth deviations and mortality in a very preterm birth cohort. J Perinat Med 1994;22(1):5-11
The associations between deviant fetal growth and fetal to 1st year mortality were analysed using univariate and multivariate techniques in a very preterm birth cohort (N = 355; 285 live births; 70 stillbirths) born at or before 32 weeks' gestation in the province of Kuopio, Finland, in 1978-86. Regional fetal growth norms were obtained from non-malformed preterm singletons live-born during a separate five-year period to mothers without chronic diseases or pregnancy complications. Both small and large for gestational age preterms (SGAs and LGAs) showed significantly higher fetal to 1st year mortality (66% and 53%, respectively) than the appropriately-grown group (35%). However, the mortality risk increased markedly if deviant growth (either SGA or, in particular, LGA) was present in multiple fetuses. In such cases, careful follow-up of fetal and neonatal well-being is indicated through the remaining perinatal period. Interactions between perinatal variables should also be taken into account as determinants of outcome both in interventional studies and quality assessments of the care of mid-pregnancy fetuses and preterm infants.

Heiss WD see **Holthoff VA**
Herholz K see **Holthoff VA**
Herlicoviez M see **Dommergues M**
Herren H see **Frenzer A**

Hershberger SL, Lichtenstein P, Knox SS: Genetic and environmental influences on perceptions of organizational climate. J Appl Psychol 1994 Feb; 79(1):24-33
Genetic and environmental influences on perceptions of organizational climate were assessed by using a 4-group twin design. Data were obtained as part of the Swedish Adoption/Twin Study of Aging. The Work Environment Scale (WES) was used to evaluate perceptions of organizational climate. A measure of job satisfaction was also used to evaluate the effects of genes and environments on job attitudes. Maximum likelihood estimates of genetic and environmental influence suggested significant genetic effects for Supportive Climate--1 factor resulting from a factor analysis of the WES--but not for a second factor, Time Pressure. Significant environmental effects were found for both Supportive Climate and Time Pressure. Genetic effects were not significant for job satisfaction. The relevance of findings to organizational climate research and personnel selection are discussed.

Herzberg A see **Schnur RE**
Herzog A see **Steinmetz H**
Heshka S see **Allison DB**
Hetherington EM see **McGuire S**
Hewitt J see **Pickles A**
Hewitt JK see **Prescott CA**
Hewitt JK see **Silberg JL**
Hewitt JK see **Truett KR**
Heymsfield SB see **Allison DB**

Higgins CR, Navsaria H, Stringer M, Spitz L, Leigh IM: Use of two stage keratinocyte-dermal grafting to treat the separation site in conjoined twins. J R Soc Med 1994 Feb;87(2):108-9

Higgins ES see **Cantor-Graae E**
Higgins ES see **McNeil TF**

Hill LM, Guzick D, Chenevey P, Boyles D, Nedzesky P: The sonographic assessment of twin growth discordancy. Obstet Gynecol 1994 Oct;84(4):501-4
OBJECTIVE: To determine: 1) the frequency with which standard fetal biometry (head circumference [HC], abdominal circumference [AC], and femur length [FL]) and the transverse cerebellar diameter can be measured in twin pregnancies; and 2) the efficacy of fetal biometry using these measures in the detection of twin growth discordancy. METHODS: The study population consisted of 203 twin pregnancies reviewed retrospectively. The frequency with which standard biometry and the transverse cerebellar diameter could be obtained was recorded. Forty-nine twin pairs who were delivered within 3 weeks of their last ultrasound examination were divided into three groups based on birth weight differences: 20% or more, 10-19%, and less than 10%. The sensitivity, specificity, and predictive values of the specific fetal biometric measurements and of the sonographic estimation of fetal weight were assessed for this subgroup for the prediction of twin discordancy. RESULTS: The FL could be measured consistently throughout gestation, but the ability to measure the AC decreased after 35 weeks' gestation. The frequency with which HC and transverse cerebellar diameter could be measured decreased with advancing gestation. The transverse cerebellar diameter could be measured only in 91 of 151 and 14 of 49 pregnancies at 31-35 and 36-40 weeks' gestation, respectively. An intra-pair AC difference of 20 mm or more had a sensitivity and a positive predictive value of 83% for the detection of twin discordancy, defined as at least a 20% difference in birth weight. Estimated fetal weight had a sensitivity and positive predictive value of 92.9 and 72%, respectively. In contrast, a difference of 4 mm or more in the intra-pair transverse cerebellar diameter had a sensitivity of 28% and a positive predictive value of 50% in detecting twin weight discordancy. CONCLUSIONS: Appropriate twin fetal biometry can be measured throughout gestation. Estimated fetal weight has a higher sensitivity but a lower positive predictive value than AC for predicting twin growth discordancy.

Hill RM see **Milner LL**
Ho MM see **Teng RJ**

Hocking B: Non ionising electromagnetic radiation [letter; comment] Aust Fam Physician 1994 Jul; 23(7):1388-9

Hofmeyr GJ, Gülmezoglu AM, Nikodem VC, Moolla S: Selective birth in twins with discordant chromosomal abnormality. S Afr Med J 1994 Feb; 84(2):72-3
Selective termination in twin pregnancies with a chromosomal abnormality in one twin may be offered to prevent long-term suffering for the infant and/or the family. The procedure poses considerable risks to the remaining fetus and also to the mother, and these, together with the ethical aspects, should be discussed thoroughly with the couple. We report 2 successful cases of selective midtrimester termination by intracardiac potassium chloride

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injection, and recommend a management protocol for selective birth in twins with discordant chromosomal abnormalities.

Holthoff VA, Vieregge P, Kessler J, Pietrzyk U, Herholz K, Bönner J, Wagner R, Wienhard K, Pawlik G, Heiss WD: Discordant twins with Parkinson's disease: positron emission tomography and early signs of impaired cognitive circuits. Ann Neurol 1994 Aug;36(2):176–82

We evaluated 7 pairs of twins (2 monozygotic and 5 dizygotic) discordant for Parkinson's disease (PD), of whom the cotwins showed no signs of motor impairment on neurological examination. All subjects underwent positron emission tomographic measurements of cerebral glucose metabolism and dopaminergic, nigrostriatal function following injection of 2-[18F]fluoro-2-deoxy-D-glucose and L-6-[18F]fluorodopa ([18F]dopa), respectively, as well as testing for anterograde, verbal episodic, and semantic memory performance. Statistical analysis demonstrated significant reduction of striatal [18F]dopa uptake not only in the twin patients with PD but also in all of the cotwins, who showed significantly ($p < 0.05$) impaired [18F]dopa metabolism in at least one of the striatal measures including caudate, putaminal, and the rostrocaudal putaminal gradient of [18F]dopa uptake. Compared with age-matched controls, regional glucose metabolism was unchanged in all the twins. Neuropsychological testing showed significant ($p < 0.05$) impairment in verbal memory processing in the twin patients with PD and in 6 of the cotwins. Semantic memory skills were affected in 2 twin patients only. A significant correlation was found between scores obtained in Buschke's Selective Reminding Test and striatal [18F]dopa uptake, further substantiating the role of dopaminergic pathways in memory processing. The present study is the first to reveal not only significant disturbance of nigrostriatal dopaminergic function in verbal episodic memory that is known to be affected in PD. Larger studies with a longitudinal design will be necessary to answer the question of whether cognitive changes found in the cotwin group are signs of incipient PD.

Holzgreve W, Tercanli S, Krings W, Schuierer G: A simpler technique for umbilical-cord blockade of an acardiac twin [letter; comment] N Engl J Med 1994 Jul 7;331(1):56–7

Hoover RN see **Braun MM**

Horenstein J see **Evans MI**

Hoshi K, Morimura Y, Azuma C, Saji F, Azuma T, Sato A: A case of quadruplet pregnancy containing complete mole and three fetuses.

Am J Obstet Gynecol 1994 May;170(5 Pt 1):1372–3

A case of a quadruplet pregnancy containing a complete mole and three fetuses is reported. A 29-year-old Japanese woman who had received clomiphene therapy was delivered of a complete mole, one dead and two living fetuses, and three placentas. Deoxyribonucleic acid fingerprint analysis proved the androgenesis of molar tissue and the trizygosity of the three fetuses.

Hosid S see **Smith S**

Huang Y see **Steinmetz H**

Hublin C, Kaprio J, Partinen M, Koskenvuo M, Heikkila K, Koskimies S, Guilleminault C: The prevalence of narcolepsy: an epidemiological study of the Finnish Twin Cohort. Ann Neurol 1994 Jun; 35(6):709–16

We investigated the prevalence of narcolepsy using a well-defined white population previously used for epidemiological investigations: the Finnish Twin Cohort. The Cohort consists of 13,888 monozygotic and dizygotic twin pairs born before 1958. There were 16,179 individuals who participated in the study, with a 77.3% response rate. The study methodology included a questionnaire covering sleep and alertness, the Ullanlinna Narcolepsy Scale (UNS), a scale specifically developed and tested for the study, telephone interviews, and finally, clinical evaluation, polygraphic recording, and HLA blood typing. Seventy-five subjects were selected for telephone interviews and laboratory evaluations based on data from both questionnaires. Five of them were strongly suspected of narcolepsy, but laboratory data identified only 3. All were dizygotic (fraternal) twins discordant for the disease with a negative family history and presence of DR2 DQw1 (i.e., DRw15 DQw6, new World Health Organization classification). The prevalence of narcolepsy in the Finnish population is 0.026% (95% confidence interval, 0.0–0.06). This prevalence is lower than that reported in studies performed without polygraphic recording and is close to that reported in 1945 in the black U.S. population. The tools developed to perform this study, the largest population study of its kind yet performed, can now be used for other population investigations.

Hubscher S see **Moots RJ**

Hussain MJ see **Peakman M**

Hussain MJ see **Tun RY**

Huttunen M see **Suonio S**

Hwang JL see **Lien YR**

Hyde TM see **Cantor-Graae E**

Hynd J see **Dubrey S**

I

Ikeda T see **Nishiyama K**

Imaizumi Y: Perinatal mortality in single and multiple births in Japan, 1980–1991.

Paediatr Perinat Epidemiol 1994 Apr;8(2):205–15

Perinatal mortality rates (PMR) decreased significantly per year in single, twin, triplet, quadruplet and quintuplet births during the period 1980–1991. The PMRs were 7.7 per 1000 livebirths for singletons, 45.6 for twins, 89.0 for triplets, 116.8 for quadruplets, and 476.2 for quintuplets during the 12 years. The relative risks of perinatal death in multiplets vs. singletons were 6 for twins, 12 for triplets, 15 for quadruplets and 62 for quintuplets. The PMR was significantly higher in males than females for singletons and twins, but there was no sex differential in PMRs for higher order of multiple births. The PMR increased with birth order in twins and triplets, whereas there was no birth order effect on the PMR for quadruplets. An increasing proportion of multiple births among perinatal deaths may be related to the increasing multiple birth rate in Japan.

Inaba S see **Yoshikawa T**

Introvini P see **Colombo M**

Ireland H see **Dubrey SW**

Ito RK see **Wagner SL**

Ivashkin VT, Kalinin AV, Lapaev IB, Verteletskiĭ VV, Spesivtsev VN: [A case of common variable immunodeficiency in monozygotic twins]

Ter Arkh 1994;66(2):56–8 (12 ref.) **(Rus)**

Izumoto S see **Nishiyama K**

J

Jahoda MG see **Brandenburg H**

Jakobovits AA: The abnormalities of the presentation

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AUTHOR SECTION

in twin pregnancy and perinatal mortality.
Eur J Obstet Gynecol Reprod Biol 1993 Dec 30; 52(3):181–5
The author conducted a retrospective review of the obstetric patient material in his department between January 1, 1975 and December 31, 1992, concerning the clinical implications associated with various lies and presentations of twins. The material included 329 twins (1.07% of all births). Breech, or transverse lies complicated 186 (56.53%) twin gestations. The frequency of premature newborns was among 186 malpresented twin pairs 85 (45.7%) and 101 (54.3%) were mature. The percentage of malpresented twin fetuses increased with maternal age and parity. Abnormal presentations were more frequent (78.49%) among B than A fetuses (54.84%). Perinatal mortality was more frequent among B than A fetuses and more frequent between malpresented twin pairs than the vertex-vertex presented twins.

Jakobovits AA: The significance of birth weight discordance in twins. Acta Med Hung 1992–93; 49(3–4):195–200
The author found, among 329 twin pairs, 50 (15.2%) cases of weight discordancy reaching or exceeding 22%. Among the 50 twin pairs, there were 65 boys and 35 girls, a sex ratio of 185.7. This degree of weight discordancy appears to be unrelated to maternal age, parity and gestational length. Growth retardation of one or both fetuses was significantly more frequent (80%) among weight-discordant than among concordant one (11.1%). There were more perinatal deaths between discordant than concordant twins. Among the twins who were born with evidence of growth discordancy, there was slightly increased incidence of abnormal presentation, delivery by cesarean section, and low Apgar score as compared to the concordants.

Jakupcak JB: Examination of placenta after twin delivery [letter; comment]
J Am Board Fam Pract 1994 May-Jun;7(3):277

Jäncke L, Steinmetz H: Auditory lateralization in monozygotic twins. Int J Neurosci 1994 Mar; 75(1–2):57–64
In an attempt to investigate whether auditory lateralization has a heritable component, 20 monozygotic (MZ) twin pairs were examined with four different dichotic listening tests known to produce reliable right-ear advantages (REAs) in right-handers. Ten twin pairs were concordantly right-handed (MZ-RR), and ten twin pairs were discordant for handedness (MZ-RL). Intraclass correlations for MZ twin pairs were weak or nonexistent for ear advantage, but relatively strong for overall correct scores and mean reaction times, measures unrelated to laterality scores. These results support the hypothesis that auditory lateralization, as measured with dichotic tests, is nongenetic in origin. A comparison of MZ twins and right-handed siblings (n = 20) showed that right-handed siblings exhibited strong REAs, whereas left-handed siblings (n = 20) and MZ twins showed weak or absent REAs, indicating that twins may be atypically lateralized with respect to auditory lateralization.

Jawaheer D, Thomson W, MacGregor AJ, Carthy D, Davidson J, Dyer PA, Silman AJ, Ollier WE: "Homozygosity" for the HLA-DR shared epitope contributes the highest risk for rheumatoid arthritis concordance in identical twins. Arthritis Rheum 1994 May;37(5):681–6
OBJECTIVE. To assess the contribution of HLA-DRB1 alleles in determining rheumatoid arthritis (RA) concordance in monozygotic twins. METHODS. Ninety-one monozygotic twins pairs in which at least 1 twin was affected were typed for HLA-DRB1 using both serologic methods and polymerase chain reaction amplification with sequence-specific oligonucleotide hybridization. The role of DR4 and of the shared epitope in disease concordance was investigated. Relative risks (RR) with 95% confidence intervals were determined. RESULTS. Increased concordance for RA was observed in both DR4 positive and shared epitope positive pairs (RR 3.4 and 3.7, respectively). A 5-fold risk for RA concordance was seen in twins who were "homozygous" for the shared epitope, compared with those negative for the shared epitope. CONCLUSION. In the absence of the shared epitope, RA concordance in monozygotic twins is rare. In contrast, "homozygosity" for the shared epitope is the most important factor in determining RA concordance.

Jehng CH see **Lien YR**

Jenh AL see **Lien YR**

Jenni R see **Solenthaler M**

Jirasiritham S see **Sumethkul V**

Johnshrud N see **Ramadani HM**

Johnstone WM Jr see **Livingston JC**

Jokela V see **Heinonen KM**

Jørgensen FS, Bang J, Tranebjaerg L, Berge LN, Eik-Nes SH, Schwartz M: Early prenatal direct gene diagnosis of cystic fibrosis in a twin pregnancy and subsequent selective termination. Prenat Diagn 1994 Feb;14(2):149–52
We present a case of prenatal diagnosis of cystic fibrosis (CF) in one twin at 11–12 weeks of gestation. The parents had previously had two children, one of whom is alive and healthy and one who died of CF at the age of 2 1/2 months. The parents were both known to be carriers of the delta F508 mutation. Chorionic villus sampling (CVS) was performed and direct gene analysis showed that one fetus was homozygous for the delta F508 mutation, while the other fetus did not have the mutation at all. Both fetuses had normal karyotypes. Selective termination was subsequently performed. The pregnancy continued without complications except for mild pre-eclampsia at term. The woman had a Caesarean section. The genetic diagnosis was confirmed after birth.

Jou HJ see **Lien YR**

Jou HJ see **Teng RJ**

Juster-Reicher A see **Dror Y**

K

Kalinin AV see **Ivashkin VT**

(Kallmann FJ), Kallmann FJ: The genetic theory of schizophrenia. An analysis of 691 schizophrenic twin index families. 1946 [classical article]
Am J Psychiatry 1994 Jun;151(6 Suppl):188–98

Kallmann FJ: The genetic theory of schizophrenia. An analysis of 691 schizophrenic twin index families. 1946 [classical article] Am J Psychiatry 1994 Jun; 151(6 Suppl):188–98

Kamoshita S see **So BH**

Kan JS see **Watson RM**

Kane PK see **Rudney JD**

Kanold J, Vannier JP, Fusade T, Drouin V, Thomine E, Prudent M, Tron P: [Langerhans-cell histiocytosis in twin sisters] Arch Pediatr 1994 Jan;1(1):49–53 (Eng. Abstr.) **(Fre)**
BACKGROUND--Histiocytosis of Langerhans cells includes a range of clinical manifestations that have been described as bone eosinophilic granuloma, Hand-Schüller-Christian syndrome, Letterer-Siwe

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syndrome and Hashimoto-Pritzker histiocytosis. These syndromes represent a spectrum of severity and prognosis of the same underlying disorder which is usually sporadic. It has occurred in monozygotic twins and in a familial pattern. This report describes monozygotic twins who developed the disease a few months after their father was found to be suffering from Hodgkin's disease. Case n. 1.--A 4 month-old girl was admitted because of fever, disseminated lymphadenopathy and hepatomegaly. She also had interstitial pneumonia. Infiltrating abnormal histiocytes were demonstrated in lymph node and bone marrow biopsies. X-rays showed lytic areas in the skull. Serology for EBV infection was negative. Special studies with immune markers of lymph node histiocytes confirmed the diagnosis of Langerhans cell histiocytosis, and more precisely, Letterer-Siwe syndrome. The patient was given prednisolone followed by vinblastine without success. She was given etoposide 11 weeks later, which induced remission. This treatment was replaced by vinblastine when the patient was aged 2 years 9 months. Case n. 2.--The monozygotic twin of the case n. 1 was also admitted at 4 months of age because of the same manifestations. Laboratory findings were identical to those of her sister, as was her response to the same drugs. The father was diagnosed as having Hodgkin's disease 3 months before the first manifestation of Langerhans cell histiocytosis in his daughters. His maternal uncle had also been treated for Hodgkin's disease. Immunologic studies of the twin were negative. CONCLUSION--These cases of Langerhans cell histiocytosis in monozygotic twins have no apparent relationship with the Hodgkin's disease of their father. Etoposide seems to be useful for treating such severe forms of the disease.

Kaplan MM, Rabson AR, Lee YM, Williams DL, Montaperto PA: Discordant occurrence of primary biliary cirrhosis in monozygotic twins [letter] N Engl J Med 1994 Oct 6;331(14):951

Kaprio J: Lessons from twin studies in Finland [editorial] Ann Med 1994 Jun;26(3):135-9

Kaprio J see **Hublin C**

Kaprio J see **Viken RJ**

Karande V see **Gleicher N**

Karapurkar S see **Birmole B**

Karayuba R see **Armstrong O**

Keith L see **Luke B**

Kelly PJ see **Tokita A**

Kendall BE see **Thorpe JW**

Kendler KS, Neale MC, Heath AC, Kessler RC, Eaves LJ: A twin-family study of alcoholism in women. Am J Psychiatry 1994 May;151(5):707-15

OBJECTIVE: The authors seek to understand in general the sources of familial resemblance for alcoholism and in particular how parents transmit the vulnerability to alcoholism to their daughters. METHOD: The authors interviewed 1,030 pairs of female same-sex twins of known zygosity from the population-based Virginia Twin Registry and 1,468 of their parents. They examined a narrow definition of alcoholism, requiring tolerance or dependence, and a threshold approach that classified individuals either as unaffected or as suffering from one of three levels of severity of alcohol-related problems. Twin-family structural equation models were fitted to the observed tetrachoric or polychoric correlation matrices by using asymptotic weighted least squares. RESULTS: In the best-fitting model from both diagnostic approaches, 1) the familial resemblance for alcoholism was due to genetic factors, with the heritability of liability estimated at 51% to 59%; 2) genetic vulnerability to alcoholism was equally transmitted to daughters from their fathers and from their mothers; and 3) alcoholism in parents was not environmentally transmitted to their children. Assortative mating for alcoholism was found only for the broader definitions of illness. Genetic factors that influenced the liability to alcoholism were the same in the parental and twin generation for the narrow definition of alcoholism. When broader definitions were used, these factors, while substantially correlated, were not identical. CONCLUSIONS: The transmission of the vulnerability to alcoholism from parents to their daughters is due largely or entirely to genetic factors.

Kendler KS see **Kessler RC**

Kendler KS see **Neale MC**

Kendler KS see **Truett KR**

Kennedy CT see **Sansom JE**

Kessler J see **Holthoff VA**

Kessler RC, Kendler KS, Heath A, Neale MC, Eaves LJ: Perceived support and adjustment to stress in a general population sample of female twins. Psychol Med 1994 May;24(2):317-34

The stress-buffering effect of perceived support is explored in a large panel survey of adult female twins. The analysis begins by documenting a significant interaction between perceived support and acute stress in predicting DSM-III-R major depression. Various hypotheses are investigated to explain this interaction. These include the possibilities that the interaction is due to a stress-buffering effect of perceived support which is mediated by received support, that perceived support promotes either the increased use or the increased effectiveness of certain coping strategies, or that there is some underlying genetic factor that affects both the perception of support and adjustment to stress. No evidence was found for any of these hypotheses. The paper closes with a discussion of directions for future research aimed at explaining the interaction between perceived support and acute stress.

Kessler RC see **Kendler KS**

Kessler S see **Theile U**

Khoury MJ see **Cragan JD**

Kiely EM see **Spitz L**

Kiely JL see **Powers WF**

Kilby MD, Govind A, O'Brien PM: Outcome of twin pregnancies complicated by a single intrauterine death: a comparison with viable twin pregnancies. Obstet Gynecol 1994 Jul;84(1):107-9

OBJECTIVE: To examine the perinatal and maternal outcomes in twin pregnancies when a single intrauterine death occurs. METHODS: This was a retrospective, observational study. Comparison was made to viable twin pregnancies. RESULTS: Of a total 34,804 live deliveries, 342 were documented as twin births at a gestation of greater than 20 weeks (incidence 0.98%). Of the twin pregnancies over this period, 20 (5.85%) were complicated by a single intrauterine death. There was an increase in the incidence of congenital structural abnormalities among those twins dying in utero as compared to uneventful twin pregnancies (25 versus 0.3%; $P < .001$). A significant proportion of these twin pregnancies had monochorionic placentas (35 versus 9%; $P < .001$) and were admitted to special care units (70 versus 5.6%; $P < .001$) as compared to the normal twin sample. Maternal morbidity has previously been described as being increased. Although there was an increased risk of nonproteinuric and mild pregnancy-induced hypertension, no adverse maternal effects of

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conservative management were noted in this study. CONCLUSION: The risk of a single fetal death in twin pregnancies is increased with a monochorionic placenta or a structural abnormality. Conservative management and regular surveillance seem advisable.

Kingsland CR see **Pickersgill A**

Klarr JM, Bhatt-Mehta V, Donn SM: Neonatal adrenergic blockade following single dose maternal labetalol administration. Am J Perinatol 1994 Mar; 11(2):91-3

A single 30 mg intravenous dose of labetalol given 20 minutes prior to cesarean delivery at 35 weeks of gestation for severe pregnancy-induced hypertension was associated with symptoms of beta-adrenergic blockade (hypoglycemia, bradycardia, hypotension) in preterm twins. The infants were subsequently found to have therapeutic labetalol concentrations (180 and 150 ng/mL) in umbilical cord blood. The pharmacology of transplacental labetalol is reviewed and potential mechanisms for neonatal beta-adrenergic blockade are discussed.

Klein ML, Mauldin WM, Stoumbos VD: Heredity and age-related macular degeneration. Observations in monozygotic twins. Arch Ophthalmol 1994 Jul; 112(7):932-7

OBJECTIVE: To determine the concordance of age-related macular degenerative changes in monozygotic twins. PATIENTS: Between 1984 and 1993, we examined a total of nine pairs of monozygotic twins with substantial age-related macular degenerative changes in at least one member of the pair, ranging from extensive large drusen to advanced atrophic and/or disciform scarring. Eight pairs were female and one pair was male. Ages ranged from 62 to 88 years. Monozygosity was confirmed by genetic testing in each of the seven twin pairs on whom it was performed. RESULTS: In eight of the nine twin pairs, the fundus appearance and the incidence of visual impairment were similar. In the ninth pair, one twin had advanced exudative age-related macular degeneration with vision loss in one eye, while the other had large, confluent drusen and good visual function in both eyes. Environmental factor, including diet, geographic background, and medical history, were essentially similar in the twin pairs. CONCLUSION: Although selection factors and similar environmental influences might impact our findings, the markedly similar incidence of macular degenerative changes in these monozygotic twins suggests that a substantial genetic component may exist in a potentially large proportion of patients with age-related macular degeneration. Further studies are warranted to define this hereditary influence.

Kneppers AL see **Christiaens GC**

Knop J: Familial alcoholism: family, twin adoption and high risk studies. EXS 1994;71:121-31

The nature-nurture question in the etiology of alcoholism is discussed. The research results from twin and adoption studies indicate a considerable genetic (= biological) component in the etiology of alcoholism. A longitudinal high risk study of alcoholism is presented. The sons of alcoholic men and matched controls have been followed prospectively since before birth. The main results from previous phases of the study and a recent 30-year follow-up assessment are presented.

Knox SS see **Hershberger SL**

Ko-Kivok-Yun P see **Pessonnier A**

Koller WC see **Pahwa R**

Konradsen HB, Oxelius VA, Hahn-Zoric M, Hanson LA: The importance of G1m and 2 allotypes for the IgG2 antibody levels and avidity against pneumococcal polysaccharide type 1 within mono- and dizygotic twin-pairs. Scand J Immunol 1994 Aug;40(2):251-6

Eighty-two mono- or dizygotic Caucasian twins vaccinated with a 23-valent pneumococcal vaccine, who had previously had their IgG2 antibody levels to pneumococcus type 1 determined before and after vaccination, were included in this study. Their IgG2 antibody levels were related to their G1m and G2m allotypes/phenotypes and their Gm amounts. Eight different Gm phenotypes were found and characteristically IgG2 antibody levels were related to them. G2m (n) homozygotic twins had significantly higher IgG2 levels than heterozygotic twins who had significantly higher levels than G2m (-n) homozygotic twins ($P < 0.05$). The G1m allotype, on the other hand was without influence on the IgG2 levels and so were the Gm amounts among G2m (n) heterozygotic twins. The IgG2 antibody avidities were not related to Gm allotypes but significantly correlated to IgG2 levels ($P = 0.05$). Finally, a highly significant intra-pair correlation was found for avidity in the monozygotic twins supporting a genetic regulation of avidity ($P < 0.002$). These results may explain our earlier findings that IgG2 antibody levels after pneumococcal vaccination are significantly more closely correlated within mono- compared to dizygotic twins.

Koopmans JR see **Boomsma DI**

Korman NJ see **Wisnieski JJ**

Koskenvuo M see **Hublin C**

Koskenvuo M see **Viken RJ**

Koskimies S see **Hublin C**

Krähenbühl S see **Frenzer A**

Krig MA see **Rudney JD**

Krings W see **Holzgreve W**

Kudielka I see **Eppel W**

Kulkarni B see **Birmole B**

Kuno K see **Okumura A**

Kupfersztain C see **Chavkin Y**

Kurauchi O see **Ohno Y**

L

Laatikainen T, Ranta R: Hypodontia in twins discordant or concordant for cleft lip and/or palate. Scand J Dent Res 1994 Apr;102(2):88-91

The aims of this study were to determine the frequency of hypodontia of permanent teeth in twins discordant or concordant for clefts in each type of cleft, to determine the concordance of hypodontia in mono- and dizygotic twins, and to compare the findings with some earlier data. Thirty-nine pairs of twins between 7 and 23 yr of age were investigated. Six of 13 monozygotic and 24/26 dizygotic pairs were discordant for clefts. Orthopantomograms of the dentition, treatment records, and anamnestic data were studied. Twenty-three pairs of twins (59%) had at least one twin with hypodontia: 9/13 (69%) monozygotic and 14/26 (54%) dizygotic. The prevalence of hypodontia was 37% for monozygotic and 32.7% for dizygotic twins, 16.7% in the noncleft and cleft lip groups, 41.1% in the cleft palate group, and 64.3% in the cleft lip and palate group. All these were above the values observed earlier in the noncleft twins and in the Finnish normal and cleft group populations. Four of 13 pairs of monozygotic twins had no hypodontia, 8/9 pairs were discordant,

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and only 1/9 was concordant for hypodontia. The corresponding figures for the 26 dizygotic pairs were: 12/26, 11/14, and 3/14 pairs. Maxillary second premolars were the most frequently absent teeth, followed in order of frequency by the maxillary lateral incisors and the mandibular second premolars. Hence, for this sample of twins, the genetic component seems to be weak.

Lage JM see **Steller MA**

Lane DA see **Dubrey SW**

Lapaev IB see **Ivashkin VT**

Larroche JC, Girard N, Narcy F, Fallet C: Abnormal cortical plate (polymicrogyria), heterotopias and brain damage in monozygous twins. Biol Neonate 1994;65(6):343-52

We report 5 cases of abnormal cortical plate (polymicrogyria or microgyric-like pattern) and heterotopias associated with hypoxic-ischemic brain injuries in monochorionic diamniotic twin fetuses of respectively 22, 26, 28, 31, 32 weeks gestation. These fetuses belonged to a series of 5 pairs of patients (10 cases) presenting with the characteristic features of the twin-to-twin transfusion syndrome. Three of them (2 donors and 1 recipient) were macerated and the brains were not available for study. Two (most likely recipient twins) survived. In the remaining 5 fetuses (3 donors and 2 recipients) with neuropathological study there were cortical plate abnormalities. In 2 cases, the cortex was dysmorphic and consisted of focal nodular distribution or vertical stripes of neurons. True polymicrogyria was focal in 2 cases and involved almost the entire surface of the hemispheres in another one. Heterotopias of immature cells were found in 4 cases, either in the white matter or in the cortex or in both sites. There was a focal laminar necrosis only in 2 cases. The morphological pattern of the anomalies depends on the time of occurrence of the insult and on its severity. These abnormalities, although similar to those already described in singleton fetuses, illustrate the variety of cortical dysmorphia which may be associated with fetal hypoxic-ischemic injuries and emphasize the particular vulnerability of the brain in monozygotic twins, whether it belongs to the donor or the recipient.

Lass JH see **Wisnieski JJ**

Lauria A see **Pustorino S**

Lauweryns I, van Cauwenberghe N, Carels C: Interobserver and intraobserver agreement of clinical orthodontic judgments based on intraoral and extraoral photographs. Angle Orthod 1994; 64(1):23-30

The purpose of this study was to calculate the agreement between and within observers for orthodontic judgments based on intraoral and extraoral photographs at two separate occasions in ten twin pairs. Eighteen variables were scored by two orthodontic students according to well-defined rating scales. Interobserver and intraobserver proportion of agreement as well as the agreement which could be expected only by chance and the remaining agreement beyond chance were calculated. The calculated agreement beyond chance was not significant (alpha = 0.05%) for middle and upper facial height, anterior apical area in lower jaw and posterior apical area in both jaws within the first observer and for upper facial height within the second observer. Interobserver reliability was not acceptable at the 5% level for judging asymmetry, facial animation, posterior apical area in the upper and lower jaws, sagittal lip position and the upper facial height. Lower facial height, sagittal lip position and middle apical area in the lower jaw agreed significantly at this level for only one interobserver comparison.

Lavery JP, Austin RJ, Schaefer DS, Aladjem S: Asynchronous multiple birth. A report of five cases. J Reprod Med 1994 Jan;39(1):55-60 (37 ref.)

The feasibility of prolonging the delivery interval of the fetus or fetuses in multiple gestations after the preterm delivery of one fetus has been demonstrated. Five clinical reports and a literature review served as the database for this study. Pregnancy was extended in each of five patients with multiple gestations after the extreme preterm delivery of one fetus. Four of the six remaining infants survived. The literature reviewed shows successful survival in 42 of 52 (81%) such asynchronously delivered infants. Use of tocolytic therapy, broad-spectrum antibiotics and cerclage allows pregnancy extension when delivery occurs asynchronously in multiple gestations. The patient's strong desire and full understanding of the potential risks are mandatory before such an endeavor is attempted.

Lazar M see **Geyer O**

Lazarov L: [Vaginal birth following a cesarean section in twin pregnancy] Akush Ginekol (Sofiia) 1993; 32(1):9-10 (Eng. Abstr.) **(Bul)**

On the basis of his own experience and investigation and a survey of published materials the author supports the view that the combination of a bigeminal pregnancy and a previous Caesarean operation should not in itself lead to an obligatory indication for a second Caesarean operation. The rigid criterion for a safe vaginal delivery applied in cases of unifetal pregnancy should be applied here, too. If there are no other contraindications the possibility of a vaginal delivery should not be excluded. Caesarean operation with all accompanying inconveniences, prolonged stay in the hospital and possible complications is not the best choice for a woman which is to look after two new-born babies.

Le Guennec JC see **Ardila J**

Lee FK see **Chen SC**

Lee YM see **Kaplan MM**

Legacy SM see **Hagopian LP**

Leigh IM see **Higgins CR**

Lemerrer M see **Bouloc A**

Leslie RD see **Dubrey S**

Leslie RD see **Dubrey SW**

Leslie RD see **Peakman M**

Leslie RD see **Tun RY**

Lewin F see **Dommergues M**

Li JJ see **Lu HL**

Lichtenstein P see **Hershberger SL**

Lien YR, Jehng CH, Hwang JL, Jou HJ, Jenh AL, Tsaur GT: First-trimester selective termination in multiple gestation by transvaginal ultrasound-guided intrathoracic injection of potassium chloride. Int J Fertil Menopausal Stud 1994 Mar-Apr; 39(2):90-4

PATIENTS AND METHODS--Selective termination by transvaginal ultrasound-guided intrathoracic injection of potassium chloride (KCl) was performed between 8 and 10 weeks' gestation in eight women with multiple gestation after ovulation induction (6/8) or in vitro fertilization (IVF) (2/8). RESULTS--Four patients have delivered uneventfully at term, one delivered prematurely at 34 weeks' gestation with good neonatal outcome, and the other 3 patients lead a smooth pregnancy at present. No pregnancy loss or any major complication was found. CONCLUSIONS--Transvaginal ultrasound-guided

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intrathoracic injection of KCl may be the procedure of choice for first-trimester selective termination with acceptable safety. However, more experience is needed to clarify the risk/benefit ratio associated with this procedure.

Lim CT, Parasakthi N, Puthucheary SD: Neonatal meningitis due to non-encapsulated Haemophilus influenzae in a set of twins--a case report. Singapore Med J 1994 Feb;35(1):104-5
A set of twins born to a 24-year-old primigravida had evidence of sepsis 24 to 60 hours after birth and were treated empirically with penicillin and gentamicin. A non-encapsulated H. influenzae biotype IV strain was isolated from the blood cultures of both and from the CSF of twin II. The isolates were beta-lactamase positive and hence showed resistance to ampicillin and therapy was changed to chloramphenicol only. Twin II recovered but Twin I developed a brain abscess in the left occipital region which resolved with extended antibiotic treatment. Although ampicillin-resistant H. influenzae have been reported in Malaysia, invasive disease by such strains are rare.

Linkowski P: Genetic influences on EEG sleep and the human circadian clock. A twin study. Pharmacopsychiatry 1994 Jan;27(1):7-10
The study of neuroendocrine and sleep abnormalities in major depressive disorders has been the focus of major interest in the past few years. However, while sleep and neuroendocrine research in neuropsychiatric disorders has progressed considerably during the last few years, conceptional and methodological advances in sleep and neuroendocrine physiology are still needed for further understanding of the basic aspects of sleep and to clarify the control and significance of the temporal fluctuations of the neuroendocrine systems. In particular, identification of the genetic mechanisms governing sleep regulation are of interest. In this respect, twin studies constitute a powerful method for identifying genetic influences on human physiological variables. In a first study, we explored the sleep patterns of 26 pairs of noncohabiting normal male twins (both mono- and dizygotic). The results indicate that a significant genetic effect is found for some sleep variables. Stages 2, 4, and delta sleep as well as waking are substantially determined by genetic factors, in contrast to stage REM which seems to be mainly affected by nongenetic influences. These data thus provide consistent evidence that some aspects of human sleep are genetically determined. In a second study we analyzed the 24-hour profile of plasma cortisol in 21 pairs of male twins. The 24-hour profile of plasma cortisol is the most widely used marker of the human circadian clock: Its study offers the possibility of assessing the status of the human circadian clock and of determining whether genetic factors affect human circadian rhythmicity. In the protocol, blood was sampled every 15 min and circadian rhythmicity was characterized by measures of amplitude, phase, and overall waveshape.(ABSTRACT TRUNCATED AT 250 WORDS)

Lipitz S see **Weissman A**

Little C see **Robinson J**

Livingston JC, Johnstone WM Jr, Hadi HA: Electroconvulsive therapy in a twin pregnancy: a case report. Am J Perinatol 1994 Mar;11(2):116-8
We present a case of twin gestation complicated by severe depression and psychotic behavior; the mother was treated with electroconvulsive therapy (ECT). She had received multiple medications for treatment of her depression earlier during the first part of the pregnancy. However, frequent use of ECT later in the course of pregnancy did not result in adverse fetal outcome as is evident from normal fetal surveillance tests. We conclude that, when indicated, ECT during pregnancy improves maternal condition and does not adversely affect fetal well-being.

Lo SS see **Dubrey S**

Lo SS see **Peakman M**

Lo SS see **Tun RY**

Loesberg A see **Bech F**

Loewenstein A see **Geyer O**

Loh SF, Tee CS, Chew SY: Acardiac anomaly. Int J Gynaecol Obstet 1994 May;45(2):153-7
Two cases of acardius, one in a twin and the other in a triplet pregnancy are presented. The obstetrical significance and current management options are discussed.

Lohmann F see **Puchner MJ**

Lopez-Zeno JA see **Luke B**

Lu HL, Wang CX, Wu FQ, Li JJ: Paternity identification in twins with different fathers. J Forensic Sci 1994 Jul;39(4):1100-2
If a female has sexual intercourse with two males at short intervals within the same ovulatory period, superfecundation may occur. This article reports two cases of paternity identification in twins. The results showed that each twin had come from a different father. Thus, great attention should be paid to such a situation when the twin paternity identification is asked for.

Lucci G see **Colombo M**

Luke B, Keith L, Lopez-Zeno JA, Witter FR, Saquil E: A case-control study of maternal gestational weight gain and newborn birthweight and birthlength in twin pregnancies complicated by preeclampsia. Acta Genet Med Gemellol (Roma) 1993;42(1):7-15
To evaluate the influence of rate of gestational weight gain on newborn birthweight and birthlength in twin gestations complicated by preeclampsia, 74 cases of preeclampsia in twin pregnancy were matched to 148 non-preeclamptic twin controls for maternal race, height, pregravid weight, age and length of gestation. Total weight gain was significantly higher for all cases versus controls and for mild cases versus controls. However, the rate of early weight gain was lower for severe cases and severe cases with thrombocytopenia compared to their controls. Mean birthweight and birthlength did not differ between cases and controls, although the proportion with birthlength below the 10th percentile was significantly higher among cases than controls. In addition, the proportion of birthweights and birthlengths < 10th percentile was significantly higher among cases than controls. These findings suggest that inadequate early weight gain in twin gestations complicated by preeclampsia results in retarded birthlength and birthweight. The implication of these findings are discussed.

Luke B: The changing pattern of multiple births in the United States: maternal and infant characteristics, 1973 and 1990. Obstet Gynecol 1994 Jul;84(1):101-6
OBJECTIVE: To evaluate changes in the incidence and proportion of live births by plurality in the United States between 1960 and 1990, and to compare the distribution of singleton, twin, and triplet and higher-order births (triplet+) by maternal and infant characteristics for 1973 and 1990. METHODS: Vital statistics data were used to conduct a population-based analysis of all live births from 1960-1990 and to compare changes in the

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incidence and outcomes of live births between 1973 and 1990 by maternal and infant characteristics. RESULTS: Between 1960 and 1973, the number of twin births paralleled that of singletons, whereas the number of triplet+ births remained fairly constant. Between 1973 and 1990, twin births increased at twice the rate of singletons (65 versus 32%), and triplet+ births increased at seven times the rate of singletons (221 versus 32%). The resulting frequencies of occurrence changed from one in 55 to one in 43 births for twins and from one in 3323 to one in 1341 for triplet+ births. In 1990, preterm births accounted for 9.7% of singleton births, compared to 47.9% of twin births and 87.8% of triplet+ births. Because of the greater frequency of twin and triplet+ births in 1990, the observed number of very low and low birth weight infants was 24.2% greater among twin births and 142.3% greater among triplet+ births than would be expected if the 1973 ratios to singleton births had remained constant. CONCLUSION: The rise in multiple births, with the associated greater risks of prematurity and low birth weight, is of national importance. Comprehensive and aggressive prenatal care to assure the best outcomes should be the goal for clinicians caring for these women.

Luke S see **Verma RS**
Lüscher KP see **Brühwiler H**
Luzza G see **Pustorino S**
Lydyard P see **Tun RY**
Lynch L see **Evans MI**

M

Macdonald RR, Watters J: Successful intra- and extrauterine IVF twin pregnancy.
Br J Obstet Gynaecol 1994 May;101(5):458-60
McDonald WI see **Thorpe JW**
McFadden ER see **Wisnieski JJ**
MacGregor AJ see **Jawaheer D**
McGuire S, Neiderhiser JM, Reiss D, Hetherington EM, Plomin R: Genetic and environmental influences on perceptions of self-worth and competence in adolescence: a study of twins, full siblings, and step-siblings. Child Dev 1994 Jun; 65(3):785-99
Although it is generally assumed that the origins of adolescents' perceptions of self-competence lie in shared family environmental influences, the contributions of nonshared environmental or genetic influences have not been explored. We investigated sibling resemblance for perceived competence and self-worth in 720 adolescent pairs aged 10 to 18 years, using a twin, full sibling, and step-sibling design. Our goals were to assess the magnitude of shared and nonshared environmental influences and to disentangle resemblance due to shared genetic heritage from that due to shared environmental experiences. Shared environment was not significant for any of the scales. 4 of the subscales showed significant genetic influence: scholastic, social, physical, and athletic competence. We also explored possible sources of genetic influences on perceived competence. Bivariate models revealed common genetic variance between scholastic competence and vocabulary and social competence and sociability. These measures, however, did not account for all of the genetic variance in perceived social and scholastic competence.
Machin GA: Twins and their zygosity [letter]
Lancet 1994 Jun 18;343(8912):1577
Machin GA see **Sperber GH**
Mack TM see **Richardson JL**
McKnight AL see **Tyler JW**
McManus CA, Partlow GD, Fisher KR: Conjoined twin piglets with duplicated cranial and caudal axes.
Anat Rec 1994 Jun;239(2):224-9
BACKGROUND: Twins with doubling of the cranial and caudal poles, yet having a single thorax, are rare. METHODS: One set of diprosopus, dipygus porcine conjoined twins was studied. RESULTS: In addition to the conjoining anomaly, these twins also exhibited ambiguous internal reproductive features. The twins had two snouts, three eyes, a single thorax, and were duplicated from the umbilicus caudally. Radiography indicated a single vertebral column in the cervical region. The vertebral columns were separate caudally from this point. There was a total of six limbs--one pair of forelimbs and two pairs of hindlimbs. Many medial structures failed to develop in these twins. Medial cranial nerves V-XII were absent or displaced although apparently normal laterally. The medial palates were present but shortened, whereas the medial mandibular rami had folded back on themselves rostrally to form a midline mass between the two chins. Each twin had only one lateral kidney and one lateral testis. Medial scrotal sacs were present but devoid of a testis. There was a midline, "uterine"-like structure which crossed between the twins. However, histological analysis of this structure revealed it to be dysplastic testicular tissue. CONCLUSIONS: The relationship between the abnormal reproductive features in these twins and the conjoining is unclear. The anatomy of these twins, in addition to the literature reviewed, illustrates the internal anatomical heterogeneity of grossly similar conjoined twins. A review of the literature also suggests that conjoined twinning may be more common in swine than was previously suspected.
MacManus DG see **Thorpe JW**
McNeil TF, Cantor-Graae E, Torrey EF, Sjöström K, Bowler A, Taylor E, Rawlings R, Higgins ES: Obstetric complications in histories of monozygotic twins discordant and concordant for schizophrenia.
Acta Psychiatr Scand 1994 Mar;89(3):196-204
Histories of obstetric complications (OCs) during pregnancy, labor-delivery and the neonatal period were investigated by detailed maternal report for 23 monozygotic (MZ) twin pairs discordant for schizophrenia, 10 MZ twin pairs concordant for schizophrenia and 7 normal MZ control pairs. Statistically significant differences in OC rates were found across these 3 groups. OCs being most frequent in discordant pairs and least frequent in normal control pairs. Labor complications were significantly more frequent in discordant than concordant pairs. OC rates were equivalent in sick and well discordant twins. The results provide evidence for the role of OCs in the development of schizophrenia, complications at the time of birth being especially associated with the development of schizophrenia in discordant twins.
McNeil TF see **Cantor-Graae E**
Maes HH see **Neale MC**
Maestri L see **Colombo M**
Magal N see **Appelman Z**
Magni LA see **Colombo M**
Mair P see **Antretter H**
Malaty HM, Engstrand L, Pedersen NL, Graham DY: Helicobacter pylori infection: genetic and environmental influences. A study of twins [see comments] Ann Intern Med 1994 Jun 15; 120(12):982-6

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OBJECTIVE: To investigate the importance of genetic effects for acquiring Helicobacter pylori infection. DESIGN: Cross-sectional study on monozygotic and dizygotic twins, reared apart and reared together. SETTING: Twins from a subregistry of the Swedish Twin Registry, which includes entries for about 25,000 twin pairs who were born in Sweden. MEASUREMENTS: Helicobacter pylori status was assessed as the presence of anti-H. pylori IgG in 269 pairs of twins, including 36 monozygotic twin pairs reared apart, 64 monozygotic twin pairs reared together, 88 dizygotic twin pairs reared apart, and 81 dizygotic twin pairs reared together. RESULTS: The probandwise concordance rate for H. pylori infection was higher in monozygotic twin pairs (81%) than in dizygotic twin pairs (63%) ($P = 0.001$). Probandwise concordance rates for H. pylori infection among 124 pairs of twins reared apart were 82% and 66% for monozygotic and dizygotic twins, respectively ($P = 0.003$). The correlation coefficient was 0.66 for monozygotic twins reared apart, and it provides the best single estimate of the relative importance of genetic effects (heritability) for variation in the acquisition of H. pylori infection. The heritability estimate from model-fitting analyses was 0.57, a similar result. The remaining variance was accounted for by shared rearing environmental (20%) and nonshared environmental factors (23%). The latter contribute to differences, not similarities, among family members. CONCLUSION: This twin study showed that genetic effects influence the acquisition of H. pylori infection because of greater similarities within the monozygotic twin pairs. Further, sharing the same rearing environment also contributes to the familial tendency for acquiring H. pylori infection.

Malina RM see **Song TM**
Malinowski W see **Biskup I**
Malone PS see **Sugarman ID**
Malouin F see **Tremblay JP**
Manor M see **Appelman Z**
Margulis A see **Parmentier L**
Marino B see **Gugliantini P**
Martin ML see **Cragan JD**
Martin NG see **Heath AC**
Martin NG see **Truett KR**

Mascola L, Ewert DP, Eller A: Listeriosis: a previously unreported medical complication in women with multiple gestations. Am J Obstet Gynecol 1994 May; 170(5 Pt 1):1328-32
OBJECTIVE: Our purpose was to determine whether women pregnant with multiple gestations are at greater risk for perinatal listeriosis than are women pregnant with singletons. STUDY DESIGN: Active surveillance for perinatal listeriosis was carried out in Los Angeles County, California, medical records were reviewed, and rates of listeriosis were calculated from live birth and fetal death data. RESULTS: From January 1985 through December 1992, 12 (4.0%) of 301 perinatal listeriosis cases occurred in pregnant women with multiple gestations, almost four times the overall multiple gestation rate in Los Angeles County. Rates of listeriosis in pregnant women per 100,000 live births and fetal deaths were 19.8 for singleton and 74.9 for multiple gestations (risk ratio 3.8, 95% confidence interval 2.1 to 6.8). Compared with singleton pregnancies, greater risk of listeriosis was observed in pregnancies with triplet gestations (risk ratio 38.4, 95% confidence interval 9.6 to 153.3) than in those with twin gestations (risk ratio 3.2, 95% confidence interval 1.7 to 6.0). Increased risk of listeriosis during multiple-gestation pregnancies was most notable among women > or = 35 years (risk ratio 13.6, 95% confidence interval 5.2 to 35.5) and Hispanic women (risk ratio 5.3, 95% confidence interval 2.8 to 10.0). CONCLUSIONS: To reduce the risk of listeriosis, obstetricians should incorporate dietary recommendations into routine prenatal nutritional counseling for all pregnant women and should especially counsel women pregnant with multiple gestations of their greater risk.

Mashiach S see **Weissman A**
Mathews T see **Verma RS**
Matricardi PM see **Nisini R**
Matsui T see **Furuoka H**
Mauldin WM see **Klein ML**
Mayer E see **Selby JV**

Mee JF: Bovine multiple births [letter; comment] Vet Rec 1994 Feb 12;134(7):176

Menez F see **Pinet C**

Mercado MG, Bulas DI, Chandra R: Prenatal diagnosis and management of congenital volvulus.
Pediatr Radiol 1993;23(8):601-2
We present a case of a twin gestation in which one twin developed a complex abdominal mass and signs of small bowel obstruction. Following delivery, an exploratory laparotomy revealed a meconium pseudocyst and midgut volvulus. While the infant survived, a large portion of small bowel was atretic, resulting in short bowel syndrome. The prenatal diagnosis of volvulus is rare. When volvulus is present, the risk of bowel infarction is high, with variable perinatal outcome.

Metlay LA see **Sherer DM**
Métneki J see **Czeizel AE**
Meyer J see **Pickles A**
Meyer JM see **Silberg JL**
Meyer JM see **Truett KR**
Mezin R see **Duchamp de Chastaigne M**
Mezzaroma I see **Nisini R**
Michalowicz BS see **Rudney JD**
Mieth DG see **Arlettaz R**
Migliorato D see **Pustorino S**
Miller DH see **Thorpe JW**

Milner LL, Deter RL, Hill RM, Hegemier S, Hata T, Stefos T: Prediction of neonatal crown-heel length in normal singletons, twins, and triplets using individualized growth assessment.
J Clin Ultrasound 1994 May;22(4):253-6
In groups of normally growing singletons (20), twins (20), and triplets (13), predicted femur diaphysis length (FDL) values at birth were obtained using Rossavik growth models specified from second-trimester ultrasound studies of fetal growth. Six previously published functions were utilized to obtain predicted crown-heel length (CHL) values from predicted FDL values. These values were compared to the actual CHL values and the percent differences calculated. Based on their systematic (mean percent difference) and random (standard deviation of percent difference) prediction errors, the functions of Vintzileos (singletons), Hadlock (twins), and Brown (triplets) were found to give optimal results (no systematic error; random error: +/- 6%). Using predicted CHL values obtained with these optimal functions, growth potential realization index values for CHL (GPRICHL) were determined for singletons, twins, and triplets. In all three groups, the mean GPRICHL value was 100% with a range of approximately 95% to 105%. These results indicate that the CHL can be predicted from second-trimester growth patterns and evaluated using individualized growth assessment methods.

Mizutani S see **Ohno Y**
Mkanje RJ see **Walraven GE**

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O'Connor B see **Dubrey SW**

O'Donnell M see **Dubrey SW**

Offidani A, Cellini A, Simonetti O, Bossi G: Urticaria pigmentosa in monozygotic twins [letter]
Arch Dermatol 1994 Jul;130(7):935-6 (4 ref.)

Ofodile A see **Ozumba BC**

Ohno Y, Ando H, Tanamura A, Kurauchi O, Mizutani S, Tomoda Y: The value of Doppler ultrasound in the diagnosis and management of twin-to-twin transfusion syndrome. Arch Gynecol Obstet 1994; 255(1):37-42
To evaluate the efficiency of the Doppler examination of umbilical arterial blood flow for the antenatal diagnosis and the monitoring of fetal condition during intrauterine treatment of twin-to-twin transfusion syndrome (TTTS), we studied 33 pairs of twins including 5 TTTS cases. In all cases umbilical arterial blood flow was examined by Doppler ultrasound and pulsatility index (PI) was calculated as umbilical arterial impedance. In twins with TTTS, PI of the recipient was outside the normal range and the difference of PI was greater than +0.5. In discordant twins without TTTS and concordant twins, the PI was within the normal range and the difference of PI ranged from -0.5 to +0.5. In 2 cases these findings were found before the appearance of fetal hydrops. In 2 TTTS cases transmaternal digitalization prevented the development of hydrops in the recipient. The difference of PI decreased with improvement in the fetal condition, and vice versa. Our data suggested that, in cases with TTTS, Doppler examination of umbilical arterial blood flow was effective in predicting fetal hydrops. Doppler was also very useful for monitoring the fetal condition during intrauterine treatment.

Okamura K, Murotsuki J, Tanigawara S, Uehara S, Yajima A: Funipuncture for evaluation of hematologic and coagulation indices in the surviving twin following co-twin's death. Obstet Gynecol 1994 Jun;83(6):975-8
OBJECTIVE: To examine the changes in hematologic and coagulation indices in the surviving twin when the co-twin dies because of the twin-twin transfusion syndrome. METHODS: Fetal blood was obtained by funipuncture in seven surviving twins upon the death of their co-twins. Five of them were monochorionic. In one case at 32 weeks' gestation, two repeated funipunctures were done in both twins before and in the surviving twin after the death of the co-twin. Fetal blood was examined for blood coagulation factors as well as complete blood counts. RESULTS: Although coagulation factors were not abnormal, three of the five monochorionic surviving twins had cerebral abnormalities postnatally. The fetal blood profile revealed anemia in the surviving twin, especially in the cases in which funipunctures were performed within 24 hours after the co-twin's death. This demonstrates that acute anemia in the surviving twin was induced by hemorrhage from the larger to the smaller twin at the time of death. CONCLUSION: Following the death of one twin, morbidity in the surviving twin can be produced by hypotensive ischemia of the brain due to hemorrhage through placental vascular anastomoses.

Oku Y see **Nishiyama K**

Okumura A, Hayakawa F, Kuno K, Natsume J, Watanabe K: [Identical twin cases of benign infantile epilepsy with complex partial seizure]
No To Hattatsu 1994 May;26(3):275-6 **(Jpn)**

Olivieri I, Pappone N, Padula A, Rengo C, Ruju GP, Pucino A, Trippi D, Ferri S, Pasero G: Ossification of the posterior longitudinal ligament in one of a pair of identical twins concordant for ankylosing spondylitis. Clin Rheumatol 1994 Jun;13(2):309-11
A pair of identical twins suffering from ankylosing spondylitis is reported. One brother developed an earlier-onset disease and showed ossification of the posterior longitudinal ligament and the flavum ligament in his cervical spine.

Ollier WE see **Jawaheer D**

Olsen ME: Bilateral twin ectopic gestation with intraligamentous and interstitial components. A case report. J Reprod Med 1994 Feb;39(2):118-20
Twin ectopic gestations are rare; the majority involve one or both fallopian tubes. The case presented is the first known report of a bilateral twin ectopic pregnancy of this type. The patient experienced a concurrent right broad ligament ectopic pregnancy along with a left interstitial pregnancy. Her history was significant for a left cornual resection eight years previously. This case is additionally noteworthy in that intraligamentous gestations are rare, while interstitial pregnancies following cornual resection are even more uncommon.

Ooki S, Yamada K, Asaka A: Zygosity diagnosis of twins by questionnaire for twins' mothers.
Acta Genet Med Gemellol (Roma) 1993;42(1):17-22
Subjects were 74 twin pairs, 61 MZs and 13 same-sexed DZs who entered the High School affiliated with Tokyo University, Japan. Their mothers also participated. The twins' zygosity was previously identified by many genetic markers. This study aimed at clarifying the effectiveness of zygosity diagnosis by questionnaires distributed to twins' mothers. The questionnaire consisted of three questions concerning the degree of similarity of twins at one year of age; whether they were confused, and if so, by whom. It was slightly modified from that reported earlier by Ooki et al [11] for twins themselves. According to the degree of similarity of the twins, points were allotted thus: from 1 to 3 points for answers to questions (1) and (2) and from 1 to 4 points for answers to questions (3). The sum of the points was calculated, then ranged from 3 to 10. Zygosity was determined by the sum of these points. If the sum was 3-6, the twin pairs were considered MZ and if the sum was 7-10 DZ. It was revealed that more than 90% of twins were identified correctly as MZ or DZ by applying this cutting point and this result was in accordance with that obtained by use of discriminant function analysis. Moreover, the accuracy of the mothers' responses was nearly the same as that obtained by the questionnaire for twins themselves. It was concluded, therefore, that the information from twins' mothers is as correct as that from twins themselves. This questionnaire is simple, practical and especially useful when twins are still too young to participate personally.

Oosterwijk JC see **Christiaens GC**

Opai-Tetteh ET see **Essel JK**

Oppert JM, Dussault JH, Tremblay A, Després JP, Thériault G, Bouchard C: Thyroid hormones and thyrotropin variations during long term overfeeding in identical twins. J Clin Endocrinol Metab 1994 Aug;79(2):547-53
The aim of this study was to evaluate variations in plasma thyroid hormones and TSH during a standardized long term overfeeding protocol (4.2 millijoules/day during a 100-day period) in 24 lean adults (12 pairs of monozygotic twins) and to assess their relationships with body composition and resting metabolic rate (RMR) changes. Compared to preoverfeeding values, basal plasma T3

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concentrations were increased on day 25, but not later; basal plasma T4 and free T4 (FT4) concentrations were unchanged; basal plasma rT3 concentrations were persistently decreased throughout the entire protocol; and the TSH response to TRH stimulation was persistently enhanced. The TSH response to TRH before overfeeding was positively correlated with the changes in RMR with overfeeding ($r = -0.53$; $P < 0.01$). No association was found between changes in basal plasma T3 concentrations and changes in RMR. However, changes in basal T3 were positively related to changes in body weight ($r = 0.46$; $P < 0.05$). A significant within-pair similarity was found for changes in T4 and FT4 with overfeeding ($P < 0.05$). We conclude that 1) during overfeeding, the early increase in T3 concentrations is a transitory phenomenon, whereas the decrease in rT3 concentrations and the increased TSH response to TRH are more sustained; 2) the TSH responsiveness to TRH stimulation could be a predictor of the changes in RMR during times of increased energy intake; 3) there is no evidence for a direct role of T3 in the adaptation of resting energy expenditure during a long term overfeeding protocol; and 4) the genotype could be involved in the changes in T4 and FT4 during a prolonged positive energy balance period.

Orlebeke JF see **Boomsma DI**

Ortega C see **Moreno E**

Orvain E see **Abossolo T**

Ottman R: Epidemiologic analysis of gene-environment interaction in twins.
Genet Epidemiol 1994;11(1):75-86
Our aim was to develop a simple method for testing gene-environment interaction in twin data ascertained through affected twins (probands), with known exposure status of both cotwins. To this end we derived formulae for two epidemiologic measures, as a function of prevalence of an exposure and genotype, and disease risk conditional on exposure and genotype: (1) relative risk of disease in exposed vs. unexposed cotwins, stratified by zygosity and proband exposure status (RRE), and (2) relative risk of disease in MZ vs. DZ cotwins, stratified by exposure status of proband and cotwin (RRZ). Then we investigated the behavior of these two measures under different assumptions about the relations between exposure and genotype in terms of their effect on disease risk. If an exposure has a different effect in the presence vs. absence of the genotype, RRE differs between MZ and DZ cotwins. Similarly, if a genotype has a different effect in exposed vs. unexposed persons, RRZ differs between exposed and unexposed cotwins. However, large differences in RRE between MZ and DZ cotwins, or large differences in RRZ between exposed and unexposed cotwins, do not occur except under very extreme conditions, such as a genotype that increases disease risk in exposed individuals, and has a protective effect in unexposed individuals. These results suggest that power to detect gene-environment interaction is limited with this approach. Conversely, if large differences in RRE or RRZ are observed, they are likely to reflect strong gene-environment interaction.

Oury JF see **Dommergues M**

Ovadia J see **Avrech O**

Oxelius VA see **Konradsen HB**

Ozumba BC, Ofodile A: Twin pregnancy involving complete hydatidiform mole and partial mole after five years of amenorrhoea.
Eur J Obstet Gynecol Reprod Biol 1994 Mar 15; 53(3):217-8
A case of twin pregnancy involving a single fetus and complete hydatidiform mole in a 56-year-old woman after 5 years of amenorrhoea is reported. The patient presented with threatened abortion and was managed with bed rest and blood transfusion. Six weeks after admission and at 20 weeks gestation, she had a spontaneous vaginal delivery of a molar pregnancy and a fresh stillbirth with molar degeneration of the placenta. The uterine cavity was evacuated by suction curettage after delivery and plasma, BHCG was negative 4 weeks subsequently. In a case of pregnancy after a long period of amenorrhoea in the older woman, molar degeneration is a strong probability.

P

Padula A see **Olivieri I**

Page WF see **Braun MM**

Pahwa R, Busenbark K, Gray C, Koller WC: Identical twins with similar onset of Parkinson's disease: a case report. Neurology 1993 Jun;43(6):1159-61
The role of heredity in Parkinson's disease (PD) is controversial. We report a pair of monozygotic twins (confirmed by DNA fingerprints) concordant for PD. Their disease began when they were 62 and 63 years old. Both patients presented with left-side bradykinesia. One of the twins had a long history of depression. Both patients had typical manifestations of PD, which were responsive to dopaminergic therapy. The similar age of onset along with the similar clinical characteristics of these twins suggests that hereditary or genetic susceptibility may be important in the etiology of PD.

Pandian MR see **Wagner SL**

Papageorgiou A see **Ardila J**

Pappone N see **Olivieri I**

Parasakthi N see **Lim CT**

Parmentier L, Avril MF, Margulis A, Prade M, Nguyen T, Zeller J, Chassagne D, Brison O: [Multiple cylindroma in twin brothers]
Ann Dermatol Venereol 1993;120(11):814-6 **(Fre)**

Partinen M see **Hublin C**

Partlow GD see **McManus CA**

Pascal E see **Abadi RV**

Pasero G see **Olivieri I**

Paulson RJ see **Sauer MV**

Pauwels C, Bucaille-Fleury L, Recanati G: Pruritic urticarial papules and plaques of pregnancy: relationship to maternal weight gain and twin or triplet pregnancies [letter; comment]
Arch Dermatol 1994 Jun;130(6):801-2

Pawlik G see **Holthoff VA**

Peakman M, Leslie RD, Vergani D: Immunological studies on type 1 diabetes in identical twins.
Arch Dis Child 1993 Jul;69(1):97-9 (25 ref.)
Diabetes is a multifactorial disease, the pathogenesis of which involves participation of the host immune system in beta cell destruction. Studies on identical twins offer the opportunity to define genetic and non-genetic factors which may contribute to susceptibility to the disease. Our own work indicates that the number and nature, as well as the intensity and persistence of immune abnormalities of cellular and humoral immune responses can be powerful predictors of the disease and also identify twins who have a degree of protection from the disease.

Peakman M, Alviggi L, Hussain MJ, Lo SS, Hawa M, Leslie RD, Vergani D: Increased expression of T-cell markers of immunological memory associated with protection from type I diabetes. A study of

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identical twins. Diabetes 1994 May;43(5):712–7
Disturbances in the balance of CD4+ helper T-lymphocytes expressing the surface molecules CD45RA and CD45R0, which define naive and memory populations, respectively, are present at diagnosis of type I diabetes. In a prospective study over 10 years, these subsets were analyzed in samples obtained from 18 identical twins of patients with type I diabetes, 8 of whom became diabetic (prediabetic twins), whereas the rest remained nondiabetic after at least 8 years follow-up and are now unlikely to develop the disease (diabetes-protected twins). At the beginning of the study, percentage levels of naive (CD45RA+) CD4+ lymphocytes were significantly elevated in prediabetic twins compared with diabetes-protected twins ($P < 0.05$) and remained so throughout the study ($P < 0.01$). Percentage levels of naive cells in diabetes-protected twins were significantly reduced compared with control subjects both at the beginning and throughout the study ($P < 0.05$, $P < 0.01$, respectively). In contrast, diabetes-protected twins at the beginning of the study had elevated percentage levels of memory (CD45R0+) CD4+ lymphocytes that persisted throughout the study compared with prediabetic twins ($P < 0.05$ for both). Percentage levels of memory cells in prediabetic twins were significantly reduced compared with control subjects both at the beginning and throughout the study ($P < 0.01$, $P < 0.05$, respectively). Increased percentage levels of a population of CD4+ lymphocytes coexpressing CD45RA and CD45R0 were seen in both twin groups compared with control subjects at entry into and during the study ($P < 0.05$ for all), but persisted only in the prediabetic twins.(ABSTRACT TRUNCATED AT 250 WORDS)

Peakman M see **Tun RY**

Pedersen NL see **Malaty HM**

Peleg D, Bar-Hava I, Neuman-Levin M, Ashkenazi J, Ben-Rafael Z: Early diagnosis and successful nonsurgical treatment of viable combined intrauterine and cervical pregnancy. Fertil Steril 1994 Aug;62(2):405–8
Cervical pregnancy is a rare form of EP often resulting in an obstetric catastrophe. We report a case of a combined viable IUP and cervical pregnancy resulting from IVF-ET treatment and which was diagnosed during the 7th week of gestation. Nonsurgical treatment consisting of selective intra-arterial catheterization and administration of MTX directly into the uterine arteries was carried out successfully. Complications were avoided, and the patient's reproductive capability was preserved.

Pellicer A see **Gutiérrez Gutierrez AM**

Perusse L see **Song TM**

Peskind ER see **Wagner SL**

Pessonnier A, Ko-Kivok-Yun P, Fournie A: [Monochorionic, monoamniotic twin pregnancies. Diagnostic problems. Outcome risk factors] J Gynecol Obstet Biol Reprod (Paris) 1994; 23(3):299–302 (Eng. Abstr.) **(Fre)**
A monochorial monoamniotic twin pregnancy was conducted to term with the delivery of two live infants. The diagnostic problems are due to the rarity of this type of twin pregnancy. The main complications are recalled, essentially related to funicular and dystocic problems at delivery. Such pregnancies require careful management. A caesarean section should always be entertained.

Petri M see **Watson RM**

Petrill SA see **Thapar A**

Pickersgill A, Kingsland CR, Garden AS, Farquharson RG: Multiple gestation following gonadotrophin releasing hormone therapy for the treatment of minimal endometriosis. Br J Obstet Gynaecol 1994 Mar;101(3):260–2

Pickles A, Crouchley R, Simonoff E, Eaves L, Meyer J, Rutter M, Hewitt J, Silberg J: Survival models for developmental genetic data: age of onset of puberty and antisocial behavior in twins. Genet Epidemiol 1994;11(2):155–70
The use of survival analysis for developmental genetic data is discussed. The main requirements for models based on the decomposition of frailty distributions into shared and unshared components are outlined for the simple case of twins. Extending the earlier work of Clayton, Oakes, and Hougaard, among others, three forms of hazard model are presented, all of which can be applied to pedigree data with flexible baseline hazards without the use of numerical integration. The first two models use an additive decomposition of frailty, with either gamma or positive stable law distributed (PSL) components. The third model previously described by Hougaard involves a multiplicative PSL decomposition. The models are applied to data on the onset of puberty in male twins and illustrate the importance of correct specification of the baseline hazard for correct inference about genetic effects. The difficulty of assessing model specification using information only on the margins is also noted. Overall, the new model with additive PSL components appeared to fit these data best. A second application illustrates the use of a time-varying covariate in examining the impact of puberty on the onset of conduct disorder symptomotology.

Pietrzyk U see **Holthoff VA**

Pihlstrom BL see **Rudney JD**

Pinet C, Colau JC, Delezoide AL, Menez F: [Acardiac twins] J Gynecol Obstet Biol Reprod (Paris) 1994; 23(1):85–92 (38 ref.) (Eng. Abstr.) **(Fre)**
An acardiac twin in a multiple pregnancy initially develops normally and is a specific complication of monozygous multiple pregnancies. Development results from arterio-arterial and veno-venous anastomoses leading to predominance of one of the twins. The haemodynamic abnormalities in the dominated twin lead to the disappearance of the heart and major morphologic malformations. Outcome is generally unfavourable in 50% of the pregnancies with an acardiac twin. Complications in the healthy twin include heart failure, then hydramnios, and finally premature delivery which is the cause of most of the deaths. Proposed treatment currently relies on treating the heart failure in the healthy twin or interrupting vascularization between the two twins leading to in utero death of the acardiac twin. Antenatal diagnosis is made by echography and is useful for evaluating the prognosis for the pregnancy according to the growth of the acardiac twin.

Pinter E see **Nisini R**

Pitts RM see **Burton EM**

Plesse R see **Briese V**

Plomin R see **McGuire S**

Polimeni F see **Pustorino S**

Powers WF, Kiely JL: How to find a wombmate: validation of an algorithm to identify twin pairs in Linked Birth/Infant Death Files. Am J Epidemiol 1994 Mar 1;139(5):535–40
Linked Birth/Infant Death Files available from the National Center for Health Statistics identify an infant as a twin, but do not identify twin pairs. An algorithm based on maternal, paternal, and infant

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characteristics has been used to identify twin pairs, but the validity of this algorithm has never been tested. The Missouri linked birth/infant death file from 1980 to 1990 identifies twin pairs by a sequence number. The authors tested the rate and accuracy with which the algorithm identified true pairs in the Missouri file and whether estimates of risk and possible risk factors calculated from pairs of twins identified by the algorithm agreed with these characteristics as calculated from known twin pairs. The algorithm identified 96% (8,273 of 8,620) of true pairs and one false pair. Despite incomplete pair identification, and even identification of a false pair, estimates from the subset identified by the algorithm generally agreed well with characteristics measured from all twin pairs. Nonetheless, incorporation of a multiple birth sequence number into Linked Birth/Infant Death Files would enhance their utility.

Prade M see **Parmentier L**

Prados MD see **Chang S**

Pratt D see **Gleicher N**

Prescott CA, Hewitt JK, Truett KR, Heath AC, Neale MC, Eaves LJ: Genetic and environmental influences on lifetime alcohol-related problems in a volunteer sample of older twins.
J Stud Alcohol 1994 Mar;55(2):184–202
Few studies have employed genetically informative designs to study the causes of alcohol-related problems in nonclinical populations. We report patterns of alcohol abuse in a community-based U.S. volunteer sample of 3,049 female and 1,070 male twins aged 50 to 96. Significant gender and age effects were found for self-report measures of current and lifetime alcohol-related problems, with higher prevalence among males and lower frequency among older birth cohorts. Significant associations were found between severity of alcohol abuse (adapted from Feighner criteria) and age of drinking onset, parental history of alcohol problems and, among males, lower educational attainment. Model-fitting analyses based on data from 650 identical and 479 fraternal twin pairs indicate substantial family resemblance for a variety of definitions of lifetime alcohol abuse and alcohol problems. The median estimate of genetic variance across several definitions of alcohol problems was 38.5%, while that for shared environmental influence was 15.5%. Gender heterogeneity was not found for magnitude of genetic and environmental influences, but these comparisons were limited by low statistical power. Findings are discussed with reference to the literature on alcohol abuse among older adults and the genetic epidemiology of alcoholism.

Prescott CA, Hewitt JK, Heath AC, Truett KR, Neale MC, Eaves LJ: Environmental and genetic influences on alcohol use in a volunteer sample of older twins.
J Stud Alcohol 1994 Jan;55(1):18–33
A growing literature supports genetic contributions to familial resemblance for alcohol use characteristics, but few studies have focused on the mechanisms underlying alcohol use among older persons. We report patterns of alcohol use in a U.S. volunteer sample of 3,049 female and 1,070 male twins aged 50 to 96. Significant gender and age effects were found for self-report measures of current and lifetime alcohol use, with greater intake among males and current and lifetime abstinence more common among older participants. Comparisons with data obtained 4 years previously revealed high stability for quantity and frequency of alcohol consumption. Twin pairs with more frequent social contact tended to be more similar for lifetime and current alcohol use. Biometrical genetic modeling results indicate that use of alcohol is highly familial, with both genetic and shared environmental factors contributing to initiation of alcohol use among men and women. Among drinkers, however, the degree of twin resemblance for consumption behaviors is low to moderate and appears to be regulated by shared genes rather than shared environments. These data are consistent with a multidimensional process, suggesting that the determinants of whether one drinks in older age differ from those underlying how much or how often alcohol is consumed.

Prins RP: The second-born twin: can we improve outcomes? Am J Obstet Gynecol 1994 Jun; 170(6):1649–56; discussion 1656–7
OBJECTIVE: Second-born twin outcome was compared with that of the first-twin birth mate to determine whether there were differences, the reason for the differences, if any, and the clinical decisions that could be made to eliminate or ameliorate these differences. STUDY DESIGN: Twin pregnancies from 1989 through 1992 were retrospectively reviewed. Charts demonstrating both twins stillborn, either twin weighing < 500 gm, or either twin with a serious congenital anomaly were excluded from evaluation. After these exclusions 200 twin pairs remained for analysis. Each twin was compared directly with its birth mate. The first twin is postulated as having the best possible outcome for the pregnancy involved, and second-twin outcomes are compared with these. RESULTS: The second-born twin was more likely to be intubated, have respiratory distress syndrome, need resuscitation, and have lower 5-minute Apgar scores. Second-born twins had more nursery complications. The < 1500 gm group appeared to be at special risk. In this group there were more second-born twin neonatal deaths and much higher rates of intubation and resuscitation. Nonvertex presentation in the second-born twin increased chances for resuscitation, intubation, respiratory distress syndrome, and nursery complications. These outcomes in the second-born were not affected by cesarean delivery. CONCLUSIONS: The second-born twin is at increased risk of untoward outcome compared with its birth mate. Some of this risk can be attributed to birth weight. The risk posed by nonvertex presentation is small. Cesarean section delivery does not appear to eliminate the difference between first- and second-twin outcome. Prospective studies are needed.

Prior S see **Bendefy IM**

Propping P see **Erdmann J**

Provost TT see **Watson RM**

Provow S see **Wagner SL**

Prudent M see **Kanold J**

Puchner MJ, Lohmann F, Valdueza JM, Siepmann G, Freckmann N: Monozygotic twins not identical with respect to the existence of intracranial aneurysms: a case report. Surg Neurol 1994 Apr;41(4):284–9 (51 ref.)
The hypothesis that intracranial aneurysms are inherited is based on published accounts of aneurysms occurring in two or more members of the same family. This hypothesis has been strongly supported by rare cases of intracranial aneurysms in pairs of identical twins. Seven such pairs have been reported to date. In all pairs, both twins had intracranial aneurysms, most of them located at the same site. Only rarely did they appear at exact contralateral locations. In five pairs, both twins suffered from a subarachnoid hemorrhage (SAH). In one case, the asymptomatic twin underwent

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angiography and was treated before an SAH occurred. We now present the first pair of identical twins. One twin had an SAH and two intracranial aneurysms. The other was asymptomatic and showed no aneurysms with either three-dimensional magnetic resonance angiography or intra-arterial digital subtraction angiography. Based on epidemiologic data, we assume that there must be many unreported cases of identical twins with at least one twin suffering from SAH. Our case indicates that the trait of intracranial aneurysms is not inherited with complete penetrance, which might otherwise be assumed on the basis of all other accounts previously described in the literature. However, as long as the exact means of inheritance of intracranial aneurysms is not understood, we still recommend an angiographic examination of the asymptomatic identical twin in cases where the other sibling had already suffered from an aneurysmal SAH.

Pucino A see **Olivieri I**

Pustilnik TB, Cohen AW: Parvovirus B19 infection in a twin pregnancy. Obstet Gynecol 1994 May;83(5 Pt 2):834–6

BACKGROUND: Parvovirus infection has been associated with the development of nonimmune hydrops fetalis in pregnancy. This report describes a twin pregnancy in which one fetus was affected by parvovirus B19 and the other was not. CASE: A 35-year-old woman was found to have a twin gestation at genetic amniocentesis. Subsequent ultrasound at 18 weeks showed that twin B had evidence of hydrops fetalis. Serum from the mother tested positive for parvovirus B19 immunoglobulin (Ig) G and IgM. Cultured amniotic fluid from twin B was subsequently found to be positive for parvovirus B19. At 20 weeks' gestation, the hydropic fetus died. The unaffected fetus grew normally. At 40 weeks, the unaffected fetus was delivered vaginally with no difficulties. Cord blood from the unaffected fetus was negative for parvovirus B19 IgM. CONCLUSION: This case demonstrates differential infection of parvovirus B19 in a diamniotic, dichorionic twin pregnancy. One twin developed signs of hydrops fetalis consistent with parvovirus B19. The diagnosis was confirmed immunologically and by amniotic fluid culture. The second twin had no evidence of parvovirus B19 and no immunologic suggestion of infection at birth. This is the only known report of such differential transmission of parvovirus B19 in a twin pregnancy.

Pustorino S, Polimeni F, Migliorato D, Luzza G, Calipari G, Federico G, Lauria A, Borrello P, Consolo F: [Chronic idiopathic intestinal pseudo-obstruction associated with volvulus of the transverse colon. The identical mode of clinical presentation and of the intestinal manometric pattern in monozygotic twins] Minerva Gastroenterol Dietol 1994 Mar;40(1):37–46 (Eng. Abstr.) **(Ita)**

Two monozygotic female twins with chronic idiopathic intestinal pseudo-obstruction associated with transverse colon volvulus are described. Quite similar clinical events and temporal coincidences characterized the symptoms which has preceded and followed right colectomy undergone by both of them due to intestinal volvulus. The esophageal, gastroduodenal, colonic and anorectal manometric investigation revealed very similar alterations in both girls. Increased amplitude of distal contractions of the esophagus, a depressed fasting antro-duodenal motility, with absence into antrum and oro-aboral non-propagation in the duodenum of the phase III activity of the interdigestive motor complex were the main findings along with a state of pronounced colonic hypomotility and an hypoesthesia of the rectal ampulla to the volumetric stimulus. This report indicates the association between chronic intestinal pseudo-obstruction and transverse colon volvulus in monozygotic female twins, and it points out the rarity both of the specific symptomatic coincidences and the similar clinical events and of the almost absolute identity of the intestinal motor patterns.

Puthucheary SD see **Lim CT**

Pyke DA see **Tun RY**

Q

Qi JC see **Tokita A**

Quesenberry CP Jr see **Selby JV**

Quinn P see **Cantor-Graae E**

Quiroga J see **Carmelli D**

R

Rabin D see **Gleicher N**

Rabl W see **Antretter H**

Rabson AR see **Kaplan MM**

Rådestad A, Bui TH, Nygren KG: Multifetal pregnancy reduction in Sweden. Utilization rate and pregnancy outcome (1986–1992).

Acta Obstet Gynecol Scand 1994 May;73(5):403–6

All departments of Obstetrics and Gynecology, as well as all private clinics in Sweden offering assisted conception, were surveyed by means of a questionnaire to determine the utilization rate and outcome of multifetal pregnancy reduction (MFR) for the period 1 January 1986 to 30 June 1992. The response rae was 100%. Multifetal reduction was performed in 26 women, giving an average utilization rate of 1/7 multiple births of three or more for the entire period. Of the various techniques used, intracardiac or intrathoracic injection of a potassium chloride solution was predominant. The experience of each center with multifetal reductions varied between one and six procedures. In this series, the overall complete pregnancy loss was 27% (n = 7). In 73% (n = 19) of women the pregnancy continued to delivery. One fetus died in utero in the second trimester, one child died from a subtentorial hemorrhage perinatally, and one child had a malformation of the right foot and hand. It seems necessary to limit MFR to a few centers in Sweden in order to maintain and increase the experience of the operators involved, and to decrease the fetal loss rate associated with the procedure. However, the ultimate goal is to make these procedures unnecessary when methods of avoiding excessive ovulation are refined and by limiting the number of replaced embryos in IVF-treatment.

Ramadani HM, Johnshrud N, al Nasser M, Rayes O: The antenatal diagnosis of cephalothoracopagus Janiceps conjoined twins.

Aust N Z J Obstet Gynaecol 1994 Feb;34(1):113–5

A case of cephalothoracopagus conjoined twins (Janiceps twins) is presented. The abnormality was detected antenatally by the use of ultrasonography and confirmed postnatally, clinically and by computed tomography (CT scan).

Ramos Fuentes LR see **Camorlinga Diaz G**

Ransley PG see **Spitz L**

Ranta R see **Laatikainen T**

Rash FC see **Camerota AJ**

Ratrie H 3rd see **Watson RM**

Rawlings R see **Cantor-Graae E**

AUTHOR SECTION

Rawlings R see **McNeil TF**
Rayes O see ***Ramadani HM***
Raziel A see **Caspi E**
Reaveley DR see **Dubrey SW**
Recanati G see **Pauwels C**
Reed T, Tracy RP, Fabsitz RR: Minimal genetic influences on plasma fibrinogen level in adult males in the NHLBI twin study. Clin Genet 1994 Feb; 45(2):71–7
Plasma fibrinogen was determined in 189 twins participating at the Indiana center during the third examination of the NHLBI twin study with a mean age of 63 years. Moderate heritability estimates were obtained from 44 complete MZ pairs and 39 complete DZ pairs. After adjustment of fibrinogen levels for age and other confounding variables related to cardiovascular disease risk, the maximum likelihood heritability estimate was only 30% ($p = 0.03$). Plasma fibrinogen was most strongly associated with smoking and the presence of diabetes. Omitting all subjects with diabetes or cardiovascular disease further reduced the heritability estimates slightly, and most path models including genetic parameters provided no significant improvement in fit over a model determined solely by random environmental effects. Our results are consistent with the environment rather than genetic influences having a greater influence on the level of plasma fibrinogen.
Reed T see **Bogle AC**
Reed T see **Cardon LR**
Reed T see **Carmelli D**
Reichelt B, Niemann H: Generation of identical twin piglets following bisection of embryos at the morula and blastocyst stage. J Reprod Fertil 1994 Jan; 100(1):163–72
Porcine morulae and blastocysts were microsurgically bisected and the resulting zona pellucida-free demi-embryos were either cultured in vitro for 48 h or transferred after 24 h of culture into--24 h asynchronous recipients. All demi-embryos were evaluated according to morphological criteria and classified into three categories (excellent, fair or degenerated). The average diameter and the number of cells were determined. Of 1162 bisected embryos, 764 pairs (66%) were evaluated as transferable after 24 h of culture in vitro. The average diameter after 48 h of culture in vitro was different ($P < 0.01$) among demi-embryos of the three morphological categories as was the number of cells. The greatest diameter and the greatest number of cells were found in demi-embryos classified as morphologically excellent. A total of 22 of 27 recipients (81.5%) remained pregnant and 21 recipients delivered 126 piglets of which six were stillborn. The survival rate of demi-embryos in farrowing recipients was 21.2% (126 of 594). Litter size was significantly reduced in recipients after transfer of demi-embryos compared with that of mated controls (6.0 +/- 2.5 versus 10.8 +/- 2.1 piglets). Similarly, the postpartum losses of piglets were higher in the experimental than in the control gilts (26.7% versus 11.6%). Duration of gestation, average birth weight and daily weight gain were not affected. Among the 126 piglets, seven pairs of identical twins (2.3% of 311 transferred pairs) were identified using several genetic markers in blood (blood groups, polymorphic enzymes and plasma proteins) in a total of 25 gene loci. DNA fingerprinting revealed an identical banding pattern between the two partners of each of the seven pairs. Birth and weaning weight as well as daily weight gain varied considerably between monozygotic partners.
Reinold E see **Eppel W**
Reiss D see **McGuire S**
Remohí J see **Gutiérrez Gutierrez AM**
Rengo C see **Olivieri I**
Revel M see **van Linthoudt D**
Richardson JL, Mondrus GT, Deapen D, Mack TM: Future challenges in secondary prevention of breast cancer for women at high risk. Cancer 1994 Aug 15;74(4 Suppl):1474–81
We are making great progress in singling out those among us who are at high risk of cancer, whether on the basis of epidemiologic characteristics that predict risk in the absence of a firm knowledge of mechanism or, more recently, by specifying the genetic site of a factor that unequivocally puts a specific person in danger. We have been less capable of identifying factors that, given awareness of increased risk, determine whether or not a person adopts an appropriately self-protective behavior. This article reports the experience of female twins whose co-twins have a diagnosis of breast cancer. Such individuals can be assumed to have been presented with incontrovertible evidence of their elevated risk almost as much as if they had been found to have a dangerous gene. Their subsequent actions can shed light on why persons do not always take steps to protect themselves from a clear but future danger. It is evident that cognition is not the sole, or even the most important, determinant of health promoting behavior. Among the others are beliefs about cancer causality and the state of personal health, the details of the medical experience of relatives, and the degree to which perceptions of that experience have intruded into consciousness. The gap between rational and actual efforts to reduce personal risk is great, and if technology is to offer us the benefits promised, we must give priority to narrowing that gap.
Rickler KC see **Cantor-Graae E**
Riese ML: Size for gestational age and neonatal sleep variables: behavioral indices of risk in fullterm twins. Acta Genet Med Gemellol (Roma) 1993;42(1):23–33
Neonatal sleep behaviors and behavioral state cycling were observed for 20 pairs of same-sex, fullterm twins in which one twin of the pair was appropriate-for-gestational-age (AGA) and the other twin was small-for-gestational-age (SGA). Time-sampling recordings were made in active sleep of number and vigor of limb movements, body and head movements, and mouth movements. No group differences were observed for time spent in first active sleep, first quiet sleep, or length of first sleep cycle. Examination of specific behaviors indicated a significantly higher incidence of vigorous limb movements and right hand-to-mouth movements, with a trend for more small limb movements and left hand-to-face movements, for AGA twins when compared with SGA twins. SGA twins had significantly more spontaneous smiles and a trend for spontaneous startles than AGA twins. A stepwise discriminant analysis indicated that a composite of the variables smile, large limb movement, startle, and left hand-to-face significantly discriminated between the two groups, with 90% correct classification of the AGA twins and 75% correct classification of the SGA twins. The results demonstrated the utility of evaluating specific sleep behaviors, rather than state cycling only, to describe differences in neonatal sleep characteristics between AGA and SGA twins.
Risteli J see **Tokita A**
Risteli L see **Tokita A**

AUTHOR SECTION

Ritter M see **Solenthaler M**

Rivière JP see **Abossolo T**

Rizzo G, Arduini D, Romanini C: Cardiac and extracardiac flows in discordant twins.
Am J Obstet Gynecol 1994 May;170(5 Pt 1):1321-7
OBJECTIVE: Our purpose was to evaluate Doppler-detectable differences in the fetal circulation of discordant twins with a growth defect resulting from either placental insufficiency or twin-to-twin transfusion syndrome. STUDY DESIGN: Serial weekly Doppler recordings were performed for at least 3 weeks preceding delivery in 15 pairs of dichorionic twins (group A) in which the smaller twin had fetal distress (i.e., antepartum fetal heart rate late decelerations) and in 10 pairs of diamniotic and monochorionic twins (group B) in which the diagnosis of twin-to-twin transfusion syndrome was confirmed postnatally. Doppler recordings were obtained from umbilical artery, descending aorta, and middle cerebral artery, and the pulsatility index values were calculated. Furthermore, peak velocity from cardiac outflow tract and the percent of reverse flow in the inferior vena cava were calculated. For all these index values the intertwin differences (delta value) were calculated by subtracting the values obtained in the larger twin with those of the smaller twin. RESULTS: In group A significant changes of delta values were evidenced for all the parameters tested. In particular, delta values of pulsatility index from the umbilical artery and descending aorta progressively increased approaching the occurrence of late decelerations, whereas the delta value for the middle cerebral artery reached a nadir 2 weeks before delivery. Similarly, delta values of peak velocity from outflow tracts significantly decreased, whereas those of the percent reverse flow in the inferior vena cava increased during the time considered. In group B fetuses no significant intertwin differences in pulsatility index values were evidenced in the vessels investigated, resulting in absence of modifications in delta values during the time interval considered. Moreover, significant changes were found in delta values of both the peak velocity from the outflow tract and the percent of reverse flow in the inferior vena cava. However, these changes were limited to the last recording, where the former delta value increased and the latter decreased. CONCLUSIONS: Serial Doppler recordings may show hemodynamic changes in the fetal circulation of discordant twins. Different trends occur according to the underlying pathophysiologic mechanisms of the growth defect. The knowledge of these temporal changes may be useful in the management of such fetuses.

Roach VJ, Baber R, Saunders D, Arnold J: Quintuplet pregnancy after clomiphene with successful outcome. Aust N Z J Obstet Gynaecol 1994 Feb; 34(1):53-5

Robinette CD see **Breitner JC**

Robinette D see **Carmelli D**

Robinson J, Little C: Emotional availability in mother-twin dyads: effects on the organization of relationships. Psychiatry 1994 Feb;57(1):22-31
The term "emotional availability" has evolved primarily in therapeutic contexts where it refers to the sensitive engagement of the therapist in the patient's narrative of life experiences and openness to the patient's emotional expressions (Emde 1980). In the therapeutic situation, emotional availability refers to the quality of the therapist in supporting the growth or development of the patient. It is anticipated that the outcome of the therapeutic experience will include an enhanced capacity for reciprocal emotional availability with others.

Rodeck CH see **Evans MI**

Roman JD see **Clarke JP**

Romand S, Bourée P, Gelez J, Bader-Meunier B, Bisaro F, Dommergues JP: [Congenital malaria. A case observed in twins born to an asymptomatic mother] Presse Med 1994 Apr 30-May 7; 23(17):797-800 (Eng. Abstr.) **(Fre)**
Even in endemic zones, congenital malaria, first described in 1876, is rarely encountered. The incidence has greatly increased however over the last 10 years suggesting several diagnostic problems. We observed a case of infected twins born to an asymptomatic mother which would throw some light on the pathophysiology involved in congenital transmission. A 2-month old infant was hospitalized for surgical cure of an umbilical hernia. Haemolytic anaemia (6.3 g/dl) and fever (39 degrees C) were observed during the postoperative period. A wide spectrum antibiotherapy was prescribed but the temperature remained at 39 degrees C. A blood swab cultured one week after the operation revealed Plasmodium falciparum. The infant's twin sister was in apparently good health but was also found to be anaemic (6.1 mg/dl Hg) and a blood sample was positive for P. falciparum. For the mother, the search for parasites was negative. Serology tests performed at diagnosis revealed anti-P. falciparum antibodies at 1/1600, 1/3200 and 1/6400 in the infant, his twin sister and the mother. Outcome was favourable. The mother had arrived in France from Togo 14 months earlier and had not returned to an endemic zone. She had had frequent episodes of fever in Togo and had taken quinine, but no episode of fever had occurred during the pregnancy or delivery. This twin case of vertical mother-infant transmission is the equivalent to transfusional malaria since red cells pass the placental barrier near the end of pregnancy, even when no placental lesion exists. Congenital transfusional malaria must however be dissociated from congenital infective malaria resulting from early primoinfection in endemic areas.

Romanini C see **Rizzo G**

Rook GA see **Tun RY**

Rose RJ see **Bogle AC**

Rose RJ see **Viken RJ**

Rosenblum J see **Bech F**

Rouche A see **Tremblay JP**

Rudney JD, Michalowicz BS, Krig MA, Kane PK, Pihlstrom BL: Genetic contributions to saliva protein concentrations in adult human twins.
Arch Oral Biol 1994 Jun;39(6):513-7
The heritability of saliva protein concentrations was investigated in stored samples of clarified stimulated whole saliva from adult twins participating in a study of periodontal disease genetics. Saliva was obtained from 29 monozygous and 20 dizygous twin pairs. Visits were scheduled so that both twins in a pair donated saliva at the same time of day. Flow rate was determined, and frozen samples later assayed for lactoferrin, lysozyme, secretory IgA, total peroxidase, myeloperoxidase and total protein. Pairs were always assayed together. Within- and between-pair variances were used to estimate twin intraclass correlations. Pearson correlations were used to estimate associations between saliva variables and clinical indices of gingivitis, dental plaque, periodontal attachment loss, and probing depth. Significant genetic contributions to variance were seen for total protein, lactoferrin, and total peroxidase. Total protein showed a significant positive correlation with gingivitis. There were no

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other correlations with clinical indices, and intraclass correlations for saliva variables did not change after adjustment for gingivitis. Dizygous twin correlations were higher than monozygous twin correlations for flow rate, lysozyme, and secretory IgA. That may be an artefact due to small numbers of pairs. It seems unlikely that a common environmental factor would strongly affect saliva in twins living apart as adults. Present findings, taken as sib correlations, support a genetic contribution to saliva protein concentrations. Problems with the twin model in saliva might be resolved by longitudinal studies of large numbers of twins.

Rühle W, von Ballestrem CL, Ertan AK, Schmidt W: [Antepartum monitoring and peripartal findings in mono- and dichorial twin pregnancy] Ultraschall Med 1994 Apr;15(2):60–4 (Eng. Abstr.) **(Ger)**

In a group of 65 twin pregnancies the difference of perinatal findings and antepartal test results was evaluated in relation to amnionicity and chorionicity. Monochorionic placentation was found in 33% of the pregnancies. The rate of foetal malformation (11%), neuromuscular dysfunction (6%), perinatal mortality (11%) and duration of neonatal intensive care was increased in those cases. The most useful diagnostic tool was B-Mode-ultrasound (first detection and surveillance of multiple pregnancy, especially diagnosis of inter-twin growth discordancy). Non stress test and Doppler sonography were found to be of value as additional tests for detection of functional differences between both twins. There were no differences between findings in first and second twin as well as between findings in pregnancies with mono- or dichorionic placentation.

Ruju GP see **Olivieri I**

Rutter M see **Pickles A**

Rutter ML see **Silberg JL**

Ryan MD: L4-5 degenerative spondylolisthesis in monozygous twins. Spine 1994 Apr 15;19(8):985–6

OBJECTIVE. The author reports symptomatic spinal canal stenosis due to degenerative spondylolisthesis at L4–5 in identical twins. SUMMARY OF BACKGROUND DATA. The patient reported his brother had a similar condition. METHODS. Monozygosity was established by phenotyping. CONCLUSIONS. Spinal morphology and degenerative disease may be genetically determined.

S

Saji F see **Hoshi K**

Salat-Baroux J, Alvarez S, Antoine JM: A case of triple monoamniotic pregnancy combined with a bioamniotic twinning after in-vitro fertilization. Hum Reprod 1994 Feb;9(2):374–5

Salmon M see **Moots RJ**

Sambrook PN see **Tokita A**

Samms-Vaughan M see **Ashley D**

Sanchís Calvo A, Ferrer Jiménez R, Escrivá Aparici A, González Martínez MA, Tío Guillamón MD, Nohales Alfonso FJ: [Twin reversed arterial perfusion sequence] An Esp Pediatr 1993 Dec; 39(6):545–7 **(Spa)**

Sandholzer C see **Selby JV**

Sansom JE, Kennedy CT: Simultaneous onset of spider naevi in identical twins [letter] Clin Exp Dermatol 1994 Mar;19(2):188–9

Saquil E see **Luke B**

Sato A see **Hoshi K**

Sauer MV, Paulson RJ: Quadruplet pregnancy in a 51-year-old menopausal woman following oocyte donation. Hum Reprod 1993 Dec;8(12):2243–4

A quadruplet pregnancy occurred in a woman 51 years of age following oocyte donation and embryo transfer. Successful pregnancy occurred following two previously unsuccessful attempts. The patient underwent a selective reduction of her pregnancy to two fetuses at approximately 13 weeks gestational age. Her pregnancy continued uneventfully and she underwent the delivery of two viable infants at 38 weeks gestational age by Caesarean section. This case represents the first quadruplet pregnancy to be established in a woman of 50 years of age or older. It illustrates both the benefits and risks of oocyte donation to women of advanced reproductive age.

Saunders D see **Roach VJ**

Savona-Ventura C, Bonello F: Beta-thalassemia syndromes and pregnancy. Obstet Gynecol Surv 1994 Feb;49(2):129–37 (38 ref.)

The literature relating to homozygous beta-thalassemia and the problems these patients have during their pregnancy is reviewed and another case report of a twin pregnancy in a homozygous beta-thalassemia individual is included. The majority of cases described refer to the intermedia clinical form of the hematological problem because patients with thalassemia major generally have poor sexual development. Although the reported cases had a greater frequency of delayed development, only one woman suffered from infertility and required ovulation induction agents. The thalassemia pregnant mother faces deleterious consequences resulting from chronic anemia and in nonsplenectomized patients there remains the risk of the onset of a hypersplenic crisis. The problems of splenectomized patients during pregnancy is also discussed. The chronic anemia of thalassemic patients predisposes to a poor fetal outcome with greater fetal loss, preterm labor, and intrauterine growth retardation.

Schaefer DS see **Lavery JP**

Schaer HM see **Frenzer A**

Schaer M [corrected to Schaer HM] see **Frenzer A**

Scheel JN see **Watson RM**

Schepank H: [Genetic or psychogenic. On the heredity-environment question of psychogenic diseases] Z Psychosom Med Psychoanal 1994; 40(1):11–24 (Eng. Abstr.) **(Ger)**

In the introduction the problems of and access to human genetical gains of knowledge are described, especially the research theoretical paradigm of the classic twin method. The article shows: In the last decades with the help of twin research hereditary determinants have been found also for many (so-called and predominantly) psychogenic illnesses: For personality disorders, for psychoneurosis as well as for several psychosomatic illnesses. In the sense of a complementary list--more psychogenic/environmentally determined or primarily somatically/hereditarily determined--several normal characteristics and clinical pictures are listed.

Schirren CG see **Burkhardt D**

Schirren H see **Burkhardt D**

Schmidt W see **Rühle W**

Schmitz S, Cherny SS, Fulker DW, Mrazek DA: Genetic and environmental influences on early childhood behavior. Behav Genet 1994 Jan; 24(1):25–34

The Child Behavior Checklist for Ages 2–3 (Adelbach et al., J. Abnorm. Child Psychol. 15;629–650; 1987) was completed by mothers of 229 pairs of twins (mean age = 33 months). Using the

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two broad-band groupings of Internalizing and Externalizing described by Achenbach et al. (1987), various models to estimate genetic and environmental parameters were fitted using LISREL 7. Model-fitting results showed that the genetic components to the observed phenotypical variation were small and not necessary in the model. Influences from the shared environment, however, could not be dropped from the model without a deterioration in fit. Parameter estimates were not significantly different in boys and girls.

Schnur RE, Grace K, Herzberg A: Buschke-Ollendorff syndrome, otosclerosis, and congenital spinal stenosis. Pediatr Dermatol 1994 Mar;11(1):31-4 (19 ref.)
We report a family with the Buschke-Ollendorff syndrome and several unusual features, including one individual with congenital spinal stenosis and another with hearing loss, probably due to otosclerosis. Other reported abnormalities associated with this syndrome, including otosclerosis, are reviewed.

Schoemaker J see **Braat DD**

Schoenfeld A see **Avrech O**

Schuffenhauer S see **Burkhardt D**

Schuierer G see **Holzgreve W**

Schurz B see **Eppel W**

Schwartz M see **Jørgensen FS**

Scott L see **Smith S**

Seed M see **Dubrey SW**

Segal NL: Twin research methods adopted by medical and behavioral science investigators for examining genetic and environmental influences on human characteristics [letter; comment]
J Dev Behav Pediatr 1994 Apr;15(2):146-7

Seidegård J see **Agrup M**

Selby JV, Austin MA, Sandholzer C, Quesenberry CP Jr, Zhang D, Mayer E, Utermann G: Environmental and behavioral influences on plasma lipoprotein(a) concentration in women twins. Prev Med 1994 May; 23(3):345-53
BACKGROUND. Genetic factors are firmly established as determinants of plasma lipoprotein(a) [Lp(a)] concentration. This study focused on behavioral or environmental factors that might also explain some of the variation in levels of this cardiovascular disease risk factor. METHODS. The study considers the 644 women twins (597 whites, 47 blacks; ages 30-91 years) who participated in the second examination of the Kaiser Permanente Women Twins Study. Cross-sectional associations of behaviors and environmental factors with Lp(a) concentration were studied before and after removing genetic influences on Lp(a) levels. RESULTS. Lp(a) levels were substantially higher among blacks than whites ($P < 0.0001$). The distribution of apo(a) size phenotypes also differed between blacks and whites, but this variation did not explain the difference in Lp(a) levels. A positive association of Lp(a) concentration with age was noted among blacks ($P = 0.06$) but not among whites ($P = 0.86$). No evidence was found for associations of Lp(a) with menopausal status, cigarette smoking, alcohol consumption, total or heavy recreational physical activity, 11-year weight gain, use of several antihypertensive medications, or diabetes status in either race. Among postmenopausal women, however, estrogen replacement therapy was associated with lower Lp(a) levels among whites (7.9 vs 9.9 mg/dl, $P = 0.05$). Removing genetic variation in Lp(a) concentration by matching 171 monozygotic (MZ) twins to their genetically identical co-twins did not alter these findings. CONCLUSION. The plasma concentration of Lp(a), unlike other lipoprotein risk factors for heart disease, has few behavioral or environmental correlates, at least among white women. Neither behavioral or environmental factors nor variation in the apo(a) size phenotype appeared to explain the higher mean Lp(a) levels among black compared with white women; further study seems warranted in larger samples of black women.

Selby JV see **Carmelli D**

Sepulveda RL, Heiba IM, Navarrete C, Elston RC, Gonzalez B, Sorensen RU: Tuberculin reactivity after newborn BCG immunization in mono- and dizygotic twins. Tuber Lung Dis 1994 Apr;75(2):138-43
SETTING: Studies showing significantly higher concordance of tuberculosis among monozygotic twins than dizygotic twins have provided support for genetically determined susceptibility to tuberculosis. OBJECTIVE: We wished to explore whether the development of delayed type hypersensitivity to tuberculin after newborn BCG immunization of twins suggested genetic regulation of the response to BCG in humans. DESIGN: Our study population consisted of 17 monozygotic twin pairs, 18 dizygotic twin pairs, and 64 single infants 3-34 months of age from Santiago, Chile. All had a BCG scar and were tuberculin tested by one trained nurse. RESULTS: The mean birth weight of both groups of twins was significantly lower than that of singletons and the percentage of individuals who failed to respond to tuberculin was approximately twice as high in twins as in singletons. After adjustment for birth weight and age by regression analysis, it was found that the distribution of tuberculin reactivity in both monozygotic and dizygotic twins was not significantly different from that of singletons. Both twin pair correlations is adjusted tuberculin reactivity were significantly greater than zero ($P < 0.01$) and led to a heritability estimate of 0.28. However, the monozygotic twin correlation was not significantly larger than the dizygotic twin correlation so that heritability is poorly estimated. CONCLUSION: These results are consistent with a genetic regulation of the response to newborn BCG immunization in humans by a mechanism capable of producing similar responses in identical and nonidentical twins alike.

Seufert RJ see **Casper FW**

Shah R see **Birmole B**

Shah YG, Sherer DM, Gragg LA, Casaceli CJ, Woods JR Jr: Diagnostic accuracy of different ultrasonographic growth parameters in predicting discordancy in twin gestation: a different approach. Am J Perinatol 1994 May;11(3):199-204
The purpose of this study was to examine the predictability of intrapair percentage differences of ultrasonic fetal biometric parameters in detecting twin discordancy. Fetal biometric parameters obtained in 90 twin gestations within 7 days of delivery were analyzed. Intrapair differences of 5% and 10% were used for biparietal diameter (BPD), head circumference (HC), abdominal circumference (AC), femur length, and HC/AC to assess their predictive value. Statistical analysis was performed using chi 2 test and Fisher's exact test. Receiver operator characteristic (ROC) analysis was done to determine if there was a difference between absolute and intrapair differences. Intrapair AC and HC differences of 5% were found to have significantly higher true positive rates in detecting discordancy. At an intrapair difference of 10%, AC and BPD were found to have high sensitivity rates in detecting discordancy. ROC analysis did not show any

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difference between use of absolute and intrapair difference in predicting discordancy (P = 0.0001). We conclude that fetal AC is the most significant sonographic parameter in detecting discordancy in twins.

Shattock M see **Tun RY**

Sherer DM, D'Amico ML, Cox C, Metlay LA, Woods JR Jr: Association of in utero behavioral patterns of twins with each other as indicated by fetal heart rate reactivity and nonreactivity. Am J Perinatol 1994 May;11(3):208-12

Prospective analysis of 75 pairs of nonstress tests (NSTs) obtained simultaneously from both members of 35 twin gestations was performed to quantitatively assess the incidence of simultaneous periods of fetal heart rate (FHR) reactivity and nonreactivity of twins. Comparative analysis of the paired NSTs was used to compute rates of simultaneous fetal heart rate reactivity and nonreactivity. Statistical analysis involved comparison of weighted averages of these rates, using sequence lengths as weights. Weighted standard deviations were used to describe variability between sets of NSTs. Trend analysis was performed using weighted linear regression to calculate slopes for pairs of twins with three or more repeat NSTs. Groups of twins were compared by performing a variance stabilizing transformation on the appropriate rates, and using a two sample t test to compare the means of transformed data. Analysis of this data revealed that twins exhibited similar in utero fetal heart reactivity and nonreactivity as indicated by simultaneous electronic fetal monitoring during 79.90% +/- 1.62 (SD) of the time monitored. The incidence of periods of simultaneously reactive FHR and simultaneously nonreactive FHR were 11.79% +/- 1.02 and 68.10% +/- 2.17, respectively, irrespective of gestational age. These data confirm the hypothesis that periods of FHR reactivity and nonreactivity of twins are strongly associated with each other.

Sherer DM see **Chung PH**

Sherer DM see **Shah YG**

Sherman D see **Caspi E**

Shohat M see **Appelman Z**

Shu LP see **Chen SC**

Siepmann G see **Puchner MJ**

Silberg J see **Pickles A**

Silberg J see **Truett KR**

Silberg JL, Erickson MT, Meyer JM, Eaves LJ, Rutter ML, Hewitt JK: The application of structural equation modeling to maternal ratings of twins' behavioral and emotional problems.
J Consult Clin Psychol 1994 Jun;62(3):510-21

The application of structural equation modeling to twin data is used to assess the impact of genetic and environmental factors on children's behavioral and emotional functioning. The models are applied to the maternal ratings of behavior of a subsample of 515 monozygotic and 749 dizygotic juvenile twin pairs, ages 8 through 16, obtained through mailed questionnaires as part of the Medical College of Virginia Adolescent Behavioral Development Twin Project. The importance of genetic, shared, and specific environmental factors for explaining variation is reported for both externalizing and internalizing behaviors, as well as significant differences in the causes of variation in externalizing behaviors among young boys and girls. The usefulness of applying structural equation models to data on monozygotic and dizygotic twins and the potential implications for addressing clinically relevant questions regarding the causes of psychopathology are discussed.

Silman AJ see **Brennan P**

Silman AJ see **Jawaheer D**

Simonetti O see **Offidani A**

Simonoff E see **Pickles A**

Sjöström K see **Cantor-Graae E**

Sjöström K see **McNeil TF**

Smith MD see **Tun RY**

Smith P see **Spitz L**

Smith S, Scott L, Hosid S: Combined intrauterine triplet and ectopic pregnancy following pronuclear embryo transfer in a patient with elevated serum progesterone during ovulation induction.
J Assist Reprod Genet 1993 Oct;10(7):478-80

We present a case of heterotopic pregnancy occurring after ET of pronuclear-stage embryos. This case demonstrates that pronuclear embryos have a good implantation potential and suggests that the potentially adverse effect of high follicular-phase serum progesterone levels on endometrial development might be offset by early ET of pronuclear embryos. This, however, is speculative and deserving of formal scientific evaluation. Finally, we are reminded that heterotopic pregnancy complicates 1 to 3% of IVF-ET pregnancies and that, even with a high index of suspicion, most heterotopic pregnancies are diagnosed after rupture. All assisted reproductive programs should be reminded frequently that ectopic and heterotopic pregnancies do occur and can lead to serious consequences if left undetected.

So BH, Tamura M, Kamoshita S: Liveborn twin with intrauterine death of one twin: report of two cases.
Acta Paediatr Sin 1994 Jul-Aug;35(4):312-8

Twin pregnancies carry a greater mortality and morbidity rate than singleton pregnancies. In case of an intrauterine fetal death (IUFD), the risk of mortality and morbidity of the surviving twin is increased. The pathogenesis is usually due to twin to twin transfusion. The donor twin is hypovolemic, anemic and often shows a growth retardation or even severe enough to cause an IUFD. The recipient twin is hypervolemic, polycythemic and weighs more than its co-twin. In this paper we reported two cases of liveborn twin complicated by an IUFD of its co-twin. Both cases were monochorionic twins. The first case was born at 29 weeks and 6 days of gestation, a male infant weighed 1054 g. His co-twin was stillborn and weighed 722 g. At birth the surviving infant showed respiratory distress syndrome (RDS), anemia and bilateral periventricular echogenicity (PVE). The second case was a female infant with a gestational age of 26 weeks and 2 days and weighed 850 g. Her stillborn co-twin weighed 804 g. Both twins showed signs of hydrops, and the liveborn infant had RDS, marked anemia (Hb 6 g/dl) and hypoalbuminemia. We will discuss the possible pathogenesis in our cases and also review some literature.

Solenthaler M, Ritter M, Candinas R, Jenni R, Amann FW: Arrhythmogenic right ventricular dysplasia in identical twins. Am J Cardiol 1994 Aug 1; 74(3):303-4

Sommer JC see **Abossolo T**

Song GJ see **Dubrey S**

Song TM, Perusse L, Malina RM, Bouchard C: Twin resemblance in somatotype and comparisons with other twin studies. Hum Biol 1994 Jun;66(3):453-64 (26 ref.)

Twin resemblance in somatotype components was considered in 28 male and 34 female monozygotic (MZ) twin pairs and 19 male and 21 female dizygotic (DZ) twin pairs, 9.3-23.5 years of age. The Heath-Carter anthropometric somatotype method

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was used. Mean somatotypes of male twins and female twins did not differ, whereas male twins were significantly more mesomorphic than female twins. Twin resemblance was evaluated in two ways: first, treating each somatotype component independently of the other two (as in earlier twin studies), and, second, looking at resemblance in each somatotype component after statistically controlling for the other two components (thus treating the somatotype as a composite). Intraclass correlations were consistently higher in MZ than in DZ twins of both sexes, and within-pair variances were consistently lower in MZ than in DZ twins of both sexes. However, after controlling for the effects of the other two somatotype components, within-pair variances of male MZ and DZ twins for each somatotype component did not differ. In general, Heath-Carter anthropometric somatotype components show (1) significant resemblance in MZ and DZ twins within each sex, although the degree of resemblance is altered in male twins when a different analytic strategy is used, (2) no sex difference in degree of resemblance, and (3) greater resemblance within MZ twin pairs than within DZ twin pairs. These results are compatible with the presence of genetic variation affecting physique in adolescents and young adults.

Sorensen RU see **Sepulveda RL**

Spano JS see **Tyler JW**

Sperber GH, Machin GA, Bamforth FJ: Mirror-image dental fusion and discordance in monozygotic twins. Am J Med Genet 1994 May 15;51(1):41-5

A pair of monozygotic twins had similar but not identical dental anomalies. One twin had fusion of deciduous mandibular lateral incisor and canine on the left, with normal dentition on the right; the co-twin had right mandibular incisor/canine fusion, with aplasia of the lateral incisor on the left. These findings are discussed in the context of the related phenomena of situs inversus, mirror-imaging in twins, and gradients of severity of anomalies in the four copies of the mandibular developmental dental field.

Spesivtsev VN see **Ivashkin VT**

Spitz L, Stringer MD, Kiely EM, Ransley PG, Smith P: Separation of brachio-thoraco-omphalo-ischiopagus bipus conjoined twins. J Pediatr Surg 1994 Apr; 29(4):477-81

Separation of 3-year-old brachio-thoraco-omphalo-ishiopagus bipus conjoined twin girls is reported. Detailed preoperative assessment and a multidisciplinary approach were essential prerequistes to surgery. The difficulties of managing the extensive body wall defect resulting from separation are discussed. Despite the use of subcutaneous and intraperitoneal tissue expanders, a large area of prosthetic material was required to reconstruct the abdominal wall. Skin cover was achieved using a combination of meshed allogeneic skin, homograft split skin, and autologous cultured keratinocytes. One twin died in the early postoperative period, but the other has recovered well and is awaiting further rehabilitative treatment.

Spitz L see **Higgins CR**

Stark M see **Chavkin Y**

Steemers N see **Gualandi M**

Stefos T see **Milner LL**

Steinmetz H, Herzog A, Huang Y, Hackländer T: Discordant brain-surface anatomy in monozygotic twins [letter] N Engl J Med 1994 Oct 6;331(14):951-2

Steinmetz H see **Jäncke L**

Steller MA, Genest DR, Bernstein MR, Lage JM, Goldstein DP, Berkowitz RS: Clinical features of multiple conception with partial or complete molar pregnancy and coexisting fetuses. J Reprod Med 1994 Mar;39(3):147-54 (26 ref.)

The estimated incidence of twin pregnancy consisting of hydatidiform mole and a coexisting fetus is 1 per 22,000-100,000 pregnancies. Since 1965, nine patients with this entity have been treated at the New England Trophoblastic Disease Center (NETDC), Boston. One patient had a partial hydatidiform mole coexisting with a normal placenta and fetus. The other eight patients had twin pregnancies with a complete hydatidiform mole (CHM) and coexisting fetus. We compared the clinical outcomes in these 8 patients and 14 additional published case reports of multiple gestations composed of CHM and coexisting fetuses with a group of 71 patients with singleton CHM treated at NETDC. Twelve of the 22 patients (55%) with CHM and coexisting fetuses developed persistent gestational trophoblastic tumor, requiring chemotherapy. Five of these patients developed metastases requiring multiple cycles of chemotherapy to achieve remission. The presenting symptoms of multiple conception with CHM and coexisting fetuses were similar to those in patients with a singleton conception and complete mole. However, as compared to singleton CHM, patients having a multiple conception with CHM and coexisting fetuses were diagnosed at a later gestational age, had higher preevacuation beta-human chorionic gonadotropin levels and had a greater propensity to develop persistent tumor. These data indicate that patients with multiple conceptions consisting of CHM and coexisting fetuses are at high risk of developing persistent gestational trophoblastic tumor.

Stigter RH see **Christiaens GC**

Stoumbos VD see **Klein ML**

Strange ME see **Burton EM**

Stratmann M see **Erdmann J**

Stringer M see **Higgins CR**

Stringer MD see **Spitz L**

Sugarman ID, Malone PS: Exomphalos major, oesophageal atresia and tracheooesophageal fistula--a rare combination of major malformations. Eur J Pediatr Surg 1994 Jun;4(3):178-9 (6 ref.)

Exomphalos major, oesophageal atresia and tracheooesophageal fistula are rare but well described birth defects. Both may be associated with other anomalies but rarely have been described as occurring together. We present a neonate born both premature and with these anomalies who presented major management difficulties.

Sumethkul V, Jirasiritham S, Sura T, Chiewsilp P: Renal transplantation between identical twins: the application of reciprocal full-thickness skin grafts as a guideline for antirejection therapy. Transplant Proc 1994 Aug;26(4):2141-2

Suonio S, Huttunen M: Puerperal endometritis after abdominal twin delivery.

Acta Obstet Gynecol Scand 1994 Apr;73(4):313-5

The infectious complications of 122 consecutive abdominal twin deliveries over the period 1984-1989 were analyzed in a prospective clinical study, comparing them with 761 singleton abdominal deliveries over the period 1984-1986. The incidence of endometritis was nearly three-fold after twin deliveries and the incidence of abdominal wound infections nearly two-fold compared with singleton abdominal pregnancies (13.1/4.7% and 5.6/3.0%). The risk of amnionitis was increased ten-fold, 6 hours after rupture of the membranes in abdominal

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twin delivery, but no connection was found between amnionitis and endometritis, as in singleton abdominal deliveries. Multiple regression analysis indicated only two risk factors as regards puerperal endometritis after abdominal twin delivery: age under 25 years (odds ratio 6.9, 95% confidence limits 1.9–24.8), an association also seen in singleton abdominal deliveries, and a period of more than 6 hours from rupture of membranes to delivery (odds ratio 7.8, 95% confidence limits 2.1–28.5). Multiple pregnancy appears to be associated with an increased risk of endometritis. The etiological factors remain unknown, but a large placental bed and/or immunological factors may be implicated.

Sura T see **Sumethkul V**

Sury MR, Brown JL, Aitken K: Anaesthesia for conjoined twins during magnetic resonance imaging. Eur J Anaesthesiol 1994 Mar;11(2):139–42

Susanne C see **Hauspie RC**

T

el-Tabbakh GH, Broekhuizen FF: Spontaneous quadruplet pregnancy in a woman with a personal and family history of spontaneous twin and triplet pregnancy. A case report. J Reprod Med 1994 Feb; 39(2):134–6

Spontaneous quadruplet pregnancies are exceptional. As compared with singleton pregnancies, quadruplets are associated with a higher incidence of preterm labor, first-trimester bleeding, toxemia, anemia, stillbirths and perinatal deaths. We report a 25-year-old, black woman with a spontaneous quadruplet pregnancy. The patient had had a previous twin pregnancy and was herself a twin. The patient's mother had a history of twin and triplet pregnancies. Following the diagnosis, the patient was hospitalized and given betamethasone weekly. At 33 weeks' gestation she had spontaneous rupture of the membranes and delivered by cesarean section. The quadruplets had good Apgar scores and were discharged 5–10 weeks later in good health.

Tamura M see **So BH**

Tanamura A see **Ohno Y**

Tanigawara S see **Okamura K**

Taslimi MM: Entwined amniotic band and umbilical cords in a diamniotic twin gestation. J Tenn Med Assoc 1994 Jan;87(1):5–6

Taylor E see **McNeil TF**

Tee CS see **Loh SF**

Teng RJ, Jou HJ, Ho MM: Intrauterine growth of twins in Taiwan. Acta Paediatr Sin 1994 Jul-Aug; 35(4):266–72

During the period between January 1, 1980 and December 31, 1991, there was a total of 21,348 live born neonates delivered in our hospital. Among them, there were 368 pairs of twins and 18 sets of triplets. The incidences of twin and triplet pregnancy were 1.76% (one pair in every 57.8 live deliveries) and 0.086% (one set in every 1,164 live deliveries), respectively. The mode of gestational age for all twins in this study was 36.6 +/- 3.2 weeks (36.6 +/- 3.6 weeks for vaginal delivery and 36.7 +/- 2.8 weeks for cesarean section, respectively). Among twins delivered by cesarean section, the birth weight of the first born twin was significantly heavier than the second born twin; however, this difference was not observed for those twins delivered vaginally. Also, the birth weight between male and female was not significantly different. However, for those twin pairs of different sexes, the birth weight for the male twin was significantly heavier than the female co-twin. In those cases the mean birth weight increased steadily as the gestational age increased and plateaued at about the 40th week. Compared to the intrauterine growth curve of the Chinese singleton, the difference started from the 33rd gestational week and reached a significant level at about the 37th gestational week. This may indicate the incipient of the placental insufficiency for multiple pregnancies. The intrauterine growth curve for twin pregnancies may serve as guide for studying the mortality and morbidity of twins in the future.

Terai T see **Yoshikawa T**

Tercanli S see **Holzgreve W**

Thapar A, Petrill SA, Thompson LA: The heritability of memory in the Western Reserve Twin Project. Behav Genet 1994 Mar;24(2):155–60

The heritability of memory ability was examined using 137 monozygotic and 127 same-sex dizygotic twin pairs from the Western Reserve Twin Project. Memory was assessed by eight measures drawn from the following batteries: the Wechsler Intelligence Scale for Children--Revised, the Colorado Test of Specific Cognitive Abilities, and the Cognitive Abilities Test. The results indicate that phenotypic correlations are generally low across these memory measures and heritability varies as a function of memory measure. These findings suggest that the heritability of memory varies as a function of the memory measure employed. Therefore, future studies investigating heritability estimates of memory should use a multimeasure battery to study this construct.

Théau D see **Tremblay JP**

Theile U, Kessler S: [Effect of heredity and environment in immune diseases. Presentation of twin data] Med Klin 1994 Jun 15;89(6):312–8 (52 ref.) (Eng. Abstr.) **(Ger)**

BACKGROUND: The study of twins is an important and informative tool in the investigation of the influence of genetic and environmental factors on the pathogenesis of familial traits. MATERIAL: Seven diseases were analysed by carrying out an intensive study of the literature to search for concordance of monozygotic and dizygotic twins. Apart from single case studies, large unselected series have been reported, some of which show considerable differences in concordance rates. Data from twins were collected for myasthenia gravis, systemic lupus erythematosus, rheumatoid arthritis and type 1 diabetes mellitus, Crohn's disease and, for comparative purposes, also type 2 diabetes mellitus. RESULTS: On the basis of the above-mentioned calculated concordance rates, differences in the influence of genetic factors were established, which may be of importance for the genetic counselling of affected families. These findings based on twins also confirm the multifactorial inheritance model.

Thériault G see **Oppert JM**

Thirsk JE see **Fenton TR**

Thomine E see **Kanold J**

Thompson LA see **Thapar A**

Thomson W see **Jawaheer D**

Thorpe JW, Mumford CJ, Compston DA, Kendall BE, MacManus DG, McDonald WI, Miller DH: British Isles survey of multiple sclerosis in twins: MRI. J Neurol Neurosurg Psychiatry 1994 Apr; 57(4):491–6

64/105 subjects who have a twin with multiple sclerosis included in a study of clinical concordance also underwent MRI of the brain. 8/23 monozygotic and 1/41 dizygotic co-twins from this subgroup were clinically concordant of whom 8/9 had MRI

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appearances typical of multiple sclerosis. Of the 48 clinically discordant twins aged less than 60, abnormalities on MRI were detected in 6/15 (40%) monozygotic and 13/33 (39%) dizygotic twins compared with 7/37 (19%) healthy age-matched controls. Abnormalities on MRI typical of multiple sclerosis (defined by the Fazekas criteria) were, however, present in only 2/15 (13%) monozygotic and 3/33 (9%) dizygotic twins and 0/37 controls. These results suggest that about 10% of monozygotic and dizygotic twins have "subclinical multiple sclerosis". It is likely that most of the MRI abnormalities seen in clinically discordant twins, however, represent incidental pathology.

Tío Guillamón MD see **Sanchís Calvo A**

Tokita A, Kelly PJ, Nguyen TV, Qi JC, Morrison NA, Risteli L, Risteli J, Sambrook PN, Eisman JA: Genetic influences on type I collagen synthesis and degradation: further evidence for genetic regulation of bone turnover. J Clin Endocrinol Metab 1994 Jun; 78(6):1461-6

Circulating osteocalcin, a marker of bone formation, is under strong genetic influence, and this effect is related to the genetic influence on bone density. To examine genetic influences on bone turnover further, other markers of bone formation (serum carboxyterminal propeptide of type I procollagen, PICP), bone resorption (serum pyridinoline cross-linked carboxyterminal telopeptide of type I collagen, ICTP), and nonosseous connective tissue synthesis (serum aminoterminal propeptide of type III procollagen, PIIINP) were studied in 82 female twin pairs: 42 monozygotic (MZ) and 40 dizygotic (DZ) twin pairs (mean age, MZ; 48.4 yr; DZ; 45.6 yr). The intraclass correlation coefficients of MZ twin pairs, rMZ, for serum PICP (0.78) and serum ICTP (0.68) were significantly greater than the corresponding rDZ (0.31 and 0.36, respectively), but a genetic effect on serum PIIINP was not demonstrable. Within DZ twin pair differences in serum PICP predicted differences in lumbar spine bone density ($r = -0.37$); higher serum PICP levels indicating the twin with the lower lumbar spine bone density. Also within pair differences in serum ICTP and PICP predicted differences in bone density at the lumbar spine independent of serum osteocalcin. These data indicate that both synthesis and degradation of type I collagen are genetically determined and that this phenomenon is related to the genetic regulation of bone density.

Tomoda Y see **Ohno Y**

Too LL see **Chen SC**

Torrey EF see **Cantor-Graae E**

Torrey EF see **Goldberg TE**

Torrey EF see **McNeil TF**

Tracy RP see **Reed T**

Tranebjaerg L see **Jørgensen FS**

Travill C see **Dubrey S**

Tremblay A see **Oppert JM**

Tremblay JP, Bouchard JP, Malouin F, Théau D, Cottrell F, Collin H, Rouche A, Gilgenkrantz S, Abbadi N, Tremblay M, et al: Myoblast transplantation between monozygotic twin girl carriers of Duchenne muscular dystrophy. Neuromuscul Disord 1993 Sep-Nov;3(5-6):583-92

Monozygotic twin girls, both carriers of Duchenne muscular dystrophy, only one a severe symptomatic carrier and the other asymptomatic due to opposite lyonization, were studied. Myoblast clones were obtained from a muscle biopsy of the asymptomatic carrier. PCR amplification showed that most (94%) of these clones produced normal dystrophin mRNA. Roughly 704 million myoblasts were produced from 119 clones. These myoblasts were transplanted into the extensor carpi radialis (ECR) and in the biceps of one arm of the manifesting carrier while the other arm acted as the control. The strength of the patient was evaluated in a series of pre- and post-tests and a biopsy was obtained about 1 yr after the transplantation. The myoblast injections produced a significant force gain (12%-31%) in wrist extension but no force gain for elbow flexion. Muscle biopsies on the injected and control muscles obtained 1 yr after the injections showed only a small increase in the number of dystrophin positive fibers and the presence of numerous small type II fibers. The small beneficial effect of this transplantation cannot be attributed to immune problems, the donor and the recipient being identical twins, but may be due to a low level of spontaneous muscle regeneration.

Tremblay M see **Tremblay JP**

Trippi D see **Olivieri I**

Tron P see **Kanold J**

Truett KR, Eaves LJ, Walters EE, Heath AC, Hewitt JK, Meyer JM, Silberg J, Neale MC, Martin NG, Kendler KS: A model system for analysis of family resemblance in extended kinships of twins. Behav Genet 1994 Jan;24(1):35-49

The "Virginia 30,000" comprise 29,698 subjects from the extended kinships of 5670 twin pairs. Over 80 unique correlations between relatives can be derived from these kinships, comprised of monozygotic (MZ) and dizygotic (DZ) twins and their spouses, parents, siblings, and children. This paper describes the first application of a fairly general model for family resemblance to data from the Virginia 30,000. The model assesses the contributions of additive and dominant genetic effects in the presence of vertical cultural inheritance, phenotypic assortative mating, shared twin and sibling environments, and within-family environment. The genetic and environmental effects can be dependent on sex. Assortment and cultural inheritance may be based either on the phenotype as measured or on a latent trait of which the measured phenotype is an unreliable index. The model was applied to church attendance data from this study. The results show that the contributions of genes, vertical cultural inheritance, and genotype-environment covariance are all important, but their contributions are significantly heterogeneous over sexes. Phenotypic assortative mating has a major impact on family resemblance in church attendance.

Truett KR see **Prescott CA**

Trupin L see **Chen SE**

Trupin S see **Chen SE**

Tsaur GT see **Lien YR**

Tsuno T see **Furuoka H**

Tuaillon J see **Abossolo T**

Tului L see **Brambati B**

Tun RY, Smith MD, Lo SS, Rook GA, Lydyard P, Leslie RD: Antibodies to heat shock protein 65 kD in type 1 diabetes mellitus. Diabet Med 1994 Jan-Feb;11(1):66-70

To determine whether antibodies to mycobacterial heat shock protein of 65 kD molecular weight (hsp 65) could be important in the pathogenesis of Type 1 diabetes we tested patients before and at diagnosis of diabetes, as well as patients with rheumatoid arthritis. Using ELISA, increased hsp 65 antibodies were detected in 2 of 8 pre-diabetic twins, 1 of 13 newly diagnosed untreated diabetic patients and 3 of 10 rheumatoid arthritis patients. Levels of hsp 65 antibodies in pre-diabetic twins, median (range), 0.25 (0.104-1.904) and newly diagnosed diabetic patients (mean +/- SD) (0.299 +/- 0.220), did not

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differ significantly either from each other or from their control subjects (0.134 +/- 0.123). In contrast, levels of hsp 65 antibodies in rheumatoid patients (0.59 +/- 0.42) were significantly higher than in their control subjects (0.21 +/- 0.18; p = 0.02). Of twins studied prospectively before diagnosis, at diagnosis but before insulin treatment, and soon after diagnosis, three of four had hsp 65 antibodies at some stage. We conclude that serological immunity to mycobacterial hsp 65 can occur in Type 1 diabetes, but it is neither a characteristic nor a specific feature of the disease.

Tun RY, Peakman M, Alviggi L, Hussain MJ, Lo SS, Shattock M, Pyke DA, Bottazzo GF, Vergani D, Leslie RD: Importance of persistent cellular and humoral immune changes before diabetes develops: prospective study of identical twins. BMJ 1994 Apr 23;308(6936):1063-8

OBJECTIVES--To determine the pattern of cellular and humoral immune changes associated with insulin dependent diabetes before diabetes develops. DESIGN--Prospective study over 10 years of 25 non-diabetic identical twins of patients with insulin dependent diabetes. The non-diabetic twins were followed up either till they developed diabetes or to the end of the study. SETTING--Teaching hospital. SUBJECTS--25 non-diabetic identical cotwins of patients with diabetes; 46 controls of the same sex and similar age tested over the same period. Of the 25 twins (total follow up 144 patient years), 10 developed diabetes (prediabetic twins); the remainder were followed up for a mean of 7.7 years. MAIN OUTCOME MEASURES--Results of glucose tolerance tests or fasting blood glucose concentrations at each sample point. Measurements of activated T lymphocytes, expressing the HLA-DR antigen, islet cell antibodies, and insulin autoantibodies in samples. RESULTS--All 10 prediabetic twins had both cellular and humoral changes initially and in most samples before diabetes was diagnosed (activated T lymphocytes in 39/40, islet cell antibodies in 45/47, and insulin autoantibodies to islet cells and insulin were detected infrequently (in 8/54, 6/69, and 0/69 samples, respectively). The combination of cellular and humoral (islet cell antibodies or insulin autoantibodies) immune changes were detected in all 10 of the prediabetic twins but in only one of the 15 non-diabetic twins ($P < 0.001$). The positive predictive value in this cohort of increased percentages of activated T cells and the presence of antibodies to islet cells or insulin on two consecutive occasions was 100%. CONCLUSION--Most of the twins had cellular or humoral immune changes at some stage. A combination of cellular and humoral immune changes and their tendency to persist is highly predictive of insulin dependent diabetes and distinguishes twins who develop diabetes from those who do not.

Tur R see **Balasch J**

Tyler JW, Dowling PM, Spano JS, McKnight AL, Wolfe DF: Severe prepartum ketosis in an obese beef cow [published erratum appears in J Am Vet Med Assoc 1994 Aug 15;205(4):536]
J Am Vet Med Assoc 1994 May 15;204(10):1665-7

A beef cow was examined to find the cause of decreasing appetite of 2 weeks' duration. The cow was obese (body condition score, 8 of 9), and multiple fetuses were identified on palpation per rectum. Urinalysis revealed > 160 mg of ketones/dl. Abnormal serum biochemical data included high concentrations of bilirubin, creatinine, sodium, and chloride; low concentrations of total CO2 and calcium; and high activity of aspartate transaminase. Treatment included administration of dextrose solution, i.v.; propylene glycol, PO; and insulin, i.v. and SC. The cow's appetite improved gradually over 8 days of treatment. Concentration of ketone bodies in urine decreased to trace amounts by day 4. The cow was discharged on day 10 and gave birth to twins 4 days after discharge (duration of gestation, 279 days). The clinical history of this cow differed from the history of other cattle with ketosis, but mimicked pregnancy toxemia in ewes. Multiple fetuses have not been implicated as a predisposing factor in severe prepartum ketosis of cows.

U

Uehara S see **Okamura K**
Ullmann S see **Burkhardt D**
Utermann G see **Selby JV**

V

Vabres P, Amoric JC, De Prost Y: [Congenital cutaneous aplasia in the surviving monozygotic twin] Ann Dermatol Venereol 1993;120(11):769-71 **(Fre)**
Vaidya A see **Birmole B**
Vaidya M see **Birmole B**
Valdueza JM see **Puchner MJ**
van Cauwenberghe N see **Lauweryns I**
van der Meulen JH see **Brandenburg H**
van Dongen PW see **Walraven GE**
Van Doornen LJ see **Boomsma DI**

van Linthoudt D, Revel M: Similar radiologic lesions of localized Scheuermann's disease of the lumbar spine in twin sisters. Spine 1994 Apr 15;19(8):987-9

SUMMARY OF BACKGROUND DATA. Hereditary and mechanical factors are considered to be the principal etiologic factors of Scheuermann's disease. OBJECTIVES. The authors report identical twins presenting similar lesions of localized lumbar osteochondrosis, which were worse in the one twin that practiced strenuous sports activities. CONCLUSIONS. These observations suggest, at least in some of these patients, a basic role for genetic factors in the occurrence of the disease and an influence of mechanical strain on its severity.

Vannier JP see **Kanold J**
Vanrell JA see **Balasch J**
van Roosmalen J see **Walraven GE**
Vavra N see **Eppel W**
Veersema S see **Braat DD**
Vergani D see **Peakman M**
Vergani D see **Tun RY**

Verma RS, Conte RA, Mathews T, Luke S: Monozygotic twinning in a female with triple X[47,XXX]. Gynecol Obstet Invest 1994; 37(4):279-80

We report a successful twin pregnancy in a woman with secondary amenorrhea who is genotypically 47,XXX. Cytogenetic markers suggested that they are apparently monozygotic twins.

Verteletskiĭ VV see **Ivashkin VT**

Vieland VJ: A cautionary note regarding the interpretation of heritabilities [letter; comment] Psychol Med 1994 Feb;24(1):259-60

Vieregge P see **Holthoff VA**

Viken RJ, Rose RJ, Kaprio J, Koskenvuo M: A developmental genetic analysis of adult personality: extraversion and neuroticism from 18 to 59 years of age. J Pers Soc Psychol 1994 Apr;66(4):722-30

Developmental genetic analyses were conducted on

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Extraversion (E) and Neuroticism (N) scale scores from nearly 15,000 male and female Finnish twins, ages 18–53 at baseline, who were tested on 2 occasions, 6 years apart. Significant genetic effects on both traits were found, at all ages, in men and women, on each measurement occasion. For E, heritability was invariant across sex but decreased from late adolescence to the late 20s, with a smaller additional decrease at about 50 years of age. Heritability for N also decreased from late adolescence to late 20s and remained stable thereafter. For all ages after the early 20s, heritability of N was significantly higher among women. Means for E and N were sex-dependent and, apparently, influenced by cohort and time of assessment, as well as by age. There was little evidence of new genetic contributions to individual differences after age 30; in contrast, significant new environmental effects emerged at every age.

Voland E, Gabler S: Differential twin mortality indicates a correlation between age and parental effort in humans. Naturwissenschaften 1994 May; 81(5):224–5

Voland E see **Gabler S**

von Ballestrem CL see **Rühle W**

W

Wada Y see **Furuoka H**

Wagner R see **Holthoff VA**

Wagner SL, Peskind ER, Nochlin D, Provow S, Farrow JS, Pandian MR, Cleveland M, Ito RK, Farlow MR: Decreased levels of soluble amyloid beta-protein precursor are associated with Alzheimer's disease in concordant and discordant monozygous twin pairs. Ann Neurol 1994 Aug;36(2):215–20

We conducted immunochemical measurements of soluble amyloid beta-protein precursor (beta PP) in cerebrospinal fluid (CSF) from three monozygous twin pairs. Two of the twin pairs are discordant for Alzheimer's disease and one pair showed concordance for Alzheimer's disease, which was confirmed neuropathologically. All affected individuals displayed substantially lower levels of soluble beta PP in CSF compared with the unaffected individuals. There were no differences in total protein levels in CSF samples from the affected twins compared with those of the unaffected twins. These studies suggest that decreased soluble beta PP in CSF may reflect neuropathological processes in Alzheimer's disease involving beta PP.

Wald NJ, Densem JW: Maternal serum free beta-human chorionic gonadotrophin levels in twin pregnancies: implications for screening for Down's syndrome. Prenat Diagn 1994 Apr;14(4):319–20

Free beta-human chorionic gonadotrophin values are, on average, 1.90 times greater in twin pregnancies than in singleton pregnancies [95 per cent confidence interval (CI) 1.69–2.13]. This information can be used in screening for Down's syndrome, so that twin pregnancies can be interpreted in addition to singleton pregnancies.

Waller NG: A DeFries and Fulker regression model for genetic nonadditivity. Behav Genet 1994 Mar; 24(2):149–53

Parameter estimates from the DeFries and Fulker [(DF) Behav. Genet. 15:462–473, 1985] regression method can be greater than unity or less than zero. This occurs when the monozygotic correlation is greater than twice the dizygotic correlation. Sensible values can be obtained in these cases by fitting a constrained DF model that estimates genetic and nonshared environmental variance components only. In this article I demonstrate that the original Df model yields positively biased heritability estimates and negatively biased estimates of shared environmentality when data are significantly influenced by genetic nonadditivity. The magnitude of the bias is algebraically expressed. I then describe a simple regression equation that provides unbiased estimates of the standardized additive and dominance genetic variance components. Results of a study of 6 million twin pairs from the Monte Carlo Twin Registry demonstrate that the DF additive and dominance genetic parameter estimates are virtually identical to those obtained by maximum-likelihood procedures. Finally, I derive the expectations for the constrained DF model and show that the genetic parameter estimates from this model are negatively biased estimates of broad-sense heritability.

Walraven GE, Mkanje RJ, van Roosmalen J, van Dongen PW, Dolmans WM: Comparison of perinatal outcome in rural Tanzania as obtained from a prospective community-based survey and hospital data. Trop Geogr Med 1994;46(1):11–3

The objective of this study was to measure perinatal mortality rate (PMR), percentage of low birth weight (LBW) and twinning rate, as obtained from a prospective community-based survey and hospital data. The community survey was performed in five villages in North-western Tanzania recruiting 447 pregnant women, while the study in the local District Hospital included 3,056 hospital deliveries. PMR was 68/1,000 in the community survey and 96/1,000 births in hospital. Stillbirths accounted for 81% of perinatal mortality in hospital as compared to 41% in the community-based survey. Percentages of LBW were 9.9 and 14.6 and twinning rates were 14/1,000 and 39/1,000 births in the community study and hospital, respectively. Perinatal mortality, low birth weight and twinning rates in hospital were higher than in the community survey. Estimations of perinatal outcome in hospital cannot be extrapolated to the community concerned.

Walters EE see **Neale MC**

Walters EE see **Truett KR**

Wang CX see **Lu HL**

Wapner RJ see **Evans MI**

Watanabe K see **Okumura A**

Waters GD see **Cragan JD**

Watson RM, Scheel JN, Petri M, Kan JS, Provost TT, Ratrie H 3rd, Callan NA: Neonatal lupus erythematosus. Report of serological and immunogenetic studies in twins discordant for congenital heart block. Br J Dermatol 1994 Mar; 130(3):342–8

Autoantibody, HLA studies and C4 phenotypes were performed on twins discordant for isolated congenital heart block. Serum from the mother and cord blood from the infants revealed Ro(SSA) and La(SSB) antibodies in all three sera. No significant difference in Ro(SSA) antibody titre was noted in the cord blood of either twin when compared with maternal titres, as detected by a sensitive ELISA assay. The infants' mother was HLA-DR3 positive. Both infants had identical HLA and C4 phenotypes. Immunoblot analysis revealed that sera from both mother and infants reacted with the 52-kDa Ro(SSA) macromolecule. Quantitative cord blood IgM levels were not elevated in either twin. This study indicates that placental transfer of anti-Ro(SSA) or anti-La(SSB) alone to the fetus is not sufficient for the expression of congenital complete heart block. We conclude from this experiment of Nature that there must be a second

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event determining which infant develops complete heart block, but this is unknown at present.

Watters J see **Macdonald RR**

Weinberger DR see **Goldberg TE**

Weinraub Z see **Caspi E**

Weissman A, Achiron R, Lipitz S, Blickstein I, Mashiach S: The first-trimester growth-discordant twin: an ominous prenatal finding.
Obstet Gynecol 1994 Jul;84(1):110–4 (20 ref.)
OBJECTIVE: To evaluate the clinical significance and the natural course of discordant twin growth found during the first trimester of pregnancy. METHODS: This was a retrospective survey between 1992–1993 of women presenting to the ultrasonographic unit with twin pregnancies in which considerable interfetal size variation was noted in the first trimester. Discordant embryonal growth was defined as a difference in crown-rump length corresponding to 5 or more days in the estimated gestational age. Only cases that presented with continued viability of both twins were reviewed. Cases were thoroughly followed by ultrasound examinations throughout pregnancy. Neonatal records provided the outcome data. RESULTS: Five cases with first-trimester discordant twin growth were identified. All had complications of major congenital anomalies in the smaller twin, ie, diaphragmatic hernia, ventriculomegaly, schizencephaly, critical aortic atresia, and sacral agenesis. CONCLUSIONS: The first-trimester growth-discordant twin is at increased risk for congenital anomalies. Meticulous sonographic search for congenital anomalies is indicated when inter-twin size variation is evident in the first trimester.

Weissman MM: Family genetic studies of panic disorder. J Psychiatr Res 1993;27 Suppl 1:69–78 (50 ref.)
A review of family and twin studies using specified diagnostic criteria shows the highly familial nature of panic disorder and suggests evidence for a genetic etiology. The population-based lifetime rates of panic disorder cross-nationally range between 1.2/100 and 2.4/100, whereas, the lifetime rates in first-degree relatives of panic probands range between 7.7/100 and 20.5/100. There is evidence from family and twin studies for the separation of panic disorder and generalized anxiety disorder. While there is a substantial comorbidity in individuals between panic disorder and major depression, these two disorders are separate conditions which are independently and specifically transmitted within families. The mode of transmission of panic disorder remains unclear. The high lifetime rates of panic disorder, strong evidence for vertical transmission, and the potential biological markers have increased interest in the application of modern linkage techniques. Several genetic linkage studies of panic disorder are ongoing.

Welsh KA see **Breitner JC**

Wiedermann CJ see **Antretter H**

Wienhard K see **Holthoff VA**

Williams DL see **Kaplan MM**

Wisnieski JJ, Emancipator SN, Korman NJ, Lass JH, Zaim TM, McFadden ER: Hypocomplementemic urticarial vasculitis syndrome in identical twins.
Arthritis Rheum 1994 Jul;37(7):1105–11
Hypocomplementemic urticarial vasculitis syndrome (HUVS) is a syndrome of recurrent urticarial vasculitis, arthralgia/arthritis, and hypocomplementemia. Angioedema, ocular inflammation, glomerulonephritis, and obstructive lung disease are other clinical findings. Although the etiology of HUVS is unknown, its resemblance to systemic lupus erythematosus (SLE) suggests a similar pathogenesis. SLE is known to occur in identical twins. This is the first report of a pair of identical twins with HUVS. Concordance for HUVS in identical twins suggests that the pathogenesis of the disease involves abnormal genetic immunoregulation.

Witter FR see **Luke B**

Wladimiroff JW see **Brandenburg H**

Wolfe DF see **Tyler JW**

Woods JR Jr see **Shah YG**

Woods JR Jr see **Sherer DM**

Wu FQ see **Lu HL**

Y

Yajima A see **Okamura K**

Yamada K see **Ooki S**

Yamamoto M see **Yoshikawa T**

Yoshikawa T, Yamamoto M, Inaba S, Nagai T, Terai T: [Sarcoidosis in identical twins]
Nippon Kyobu Shikkan Gakkai Zasshi 1994 Jun; 32(6):610–5 (13 ref.) (Eng. Abstr.) **(Jpn)**
Identical twin sisters who developed sarcoidosis at an interval of one year are reported. Case 1. (elder sister) A 22-year-old female was admitted to our hospital for examination of cervical lymph node swelling. Her chest roentgenogram showed bilateral hilar lymphadenopathy and the diagnosis was confirmed histologically by scalene node biopsy. Case 2. (younger sister) In 1987, at age 23, a routine chest roentgenogram showed bilateral hilar lymphadenopathy and the diagnosis was confirmed histologically by transbronchial lung biopsy. The occurrence of sarcoidosis in identical twins suggests that a genetic factor might be involved in the pathogenesis.

Z

Zaim TM see **Wisnieski JJ**

Zehethofer K see **Antretter H**

Zeller J see **Parmentier L**

Zhang D see **Selby JV**