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## TWIN POSTNATAL DEVELOPMENT

Neonatal and Follow-up Studies on the Physical  
and Psychomotor Development  
in Children from Multiple Pregnancies

# NEWBORN TWINS

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*An analysis of the neonatal period of 277 twins was carried out and the results were compared with those of a control group. The conditions of the twins are significantly worse than those of singletons. This is due to the increased possibility of hazards of pregnancy and labor, as well as to prematurity and intrauterine malnutrition of the babies.*

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Multiple pregnancy is a difficult problem for gynecologists, pediatricians, and psychologists. The incidence of complications is markedly higher in the second twin. Immaturity and malnutrition of the fetus are of importance for the newborn and may increase perinatal mortality.

This study is based on observations of 277 twins in our Clinic between 1.01.1967 and 3.12.1971. One hundred babies from single births served as a control group.

The results were compared through the Student's *t* test ( $P < 0.05$ ).

## RESULTS

Of the babies delivered in our Institute in the above mentioned period, 1.6% were twins. The age of the mothers was generally the same as in controls, except for the age group 31-40, where the frequency of multiple pregnancy was twice as high as in controls (Table 1). This is a significant difference ( $t = 2.4$ ).

With respect to the way of delivery (Table 2) the main difference between twins and singletons lays in breech delivery. Out of 138 first and 139 second twins, respectively 28 and

Table 1. *Maternal Age*

Maternal age	Mothers of twins		Mothers of singleborns	
	N	%	N	%
20	30	10.8	15	15
21-30	187	67.6	72	72
31-40	56	20.2	10	10
40	4	1.4	3	3
Total	277	100.0	100	100

Table 2. *Ways of Delivery*

Way of delivery	Twins		Singleborns	
	N	%	N	%
Spontaneous	166	60	85	85
Forceps	5	1.8	2	2
V.E.	7	2.5	4	4
Cesarean section	16	5.8	5	5
Breech	71	25.6	4	4
Version	12	4.3	—	—
Total	277	100.0	100	100

43 were delivered by manual extraction. In the control group, instead, only 4% were born in this way ( $t = 4.5$ ).

The conditions of the newborns were judged by Apgar score (Table 3). The conditions of the second twin are significantly worse ( $t = 3.0$ ). The afterbirth conditions are greatly dependent on gestational age and way of delivery. As a whole, the babies of higher gestational age are in better conditions (Table 4). As compared to singletons, however, the conditions of twin newborns are significantly worse. The difference in the Apgar score between twins born spontaneously and by breech is also significant ( $t = 4.47$ ). The body weight of the twin is shown in Fig. 1 on an intrauterine weight chart (Naeye et al. 1966). As much as 25% of the twins were small-for-date (below 25% line).

Out of the 277 twins, 34 died in our Clinic. Hemolytic disease due to Rh-incompatibility was observed in 4 twins (2 pairs). Respiratory Distress Syndrome (RDS) and brain damage was observed in 7 twins (1 mature and 6 with low weight at birth) all delivered by breech. Twins admitted to the hospital were between 4 and 87 days, depending on their maturity and gestational age. Causes of perinatal mortality and weight at birth are indicated in Table 5.

Table 3. *The Conditions of the Newborn at Birth*

Apgar score	Twin I (%)	Twin II (%)	Control-group singletons (%)
10-8	59.1	43.3	87
7	12.6	20.0	6
6-4	17	25.9	7
3-1	11.3	10.8	—
Total	100.0	100.0	100

Table 4. *Conditions at Birth and Gestational Age*

Gestational age	Twins					Singletons				
	N	Apgar score				N	Apgar score			
		1-3	4-6	7	8-10		1-3	4-6	7	8-10
42-41	20	1	2	4	13	21	—	2	4	15
40-39	55	3	5	3	44	52	—	—	3	49
38-37	60	3	11	11	35	15	—	1	2	12
36-35	68	4	17	12	35	6	—	—	3	3
34-33	32	2	11	10	9	4	1	1	2	—
32-31	22	4	9	3	6	1	1	—	—	—
30-29	10	5	4	0	1	—	—	—	—	—
28-27	2	1	1	—	—	—	—	—	—	—
28-22	—	—	—	—	—	1	1	—	—	—
26-22	8	8	—	—	—	—	—	—	—	—
Total	277	31	60	43	143	100	3	4	14	79

Table 5. *Death Causes and Weight at Birth*

Death cause	Weight at birth				
	Up to 1000	1001-1500	1501-2000	2001-2500	Total
Immaturity	11	—	—	—	11
Atelectasis and RDS	—	6	4	—	10
Intraventricular hemorrhage	—	—	2	1	3
Congenital malformations	—	—	4	1	5
Erythroblastosis fetalis	—	1	1	—	2
Intrauterine infections	—	—	—	3	3
Total	11	7	11	5	34

## DISCUSSION

The incidence of twin births reported in our investigation is 1 : 80, i.e., similar to that reported in Great Britain and slightly lower than in the USA (1 : 86). Greater hazards to twins can be only partly attributed to the high incidence of toxemia, pregnant anemia, and hydramnios. As early as 1948 Flexner et al. emphasized the depression of placental functions in multiple pregnancy. This results into fetus malnutrition and low weight at birth. According to Guttmacher and Kohl (1958), at the end of 35 weeks of gestation, the body weight of twins is about 650 g lower than that of singletons of the same gestational age. This difference may further increase later on in pregnancy. The greatest body-weight difference was found in MZ twins.

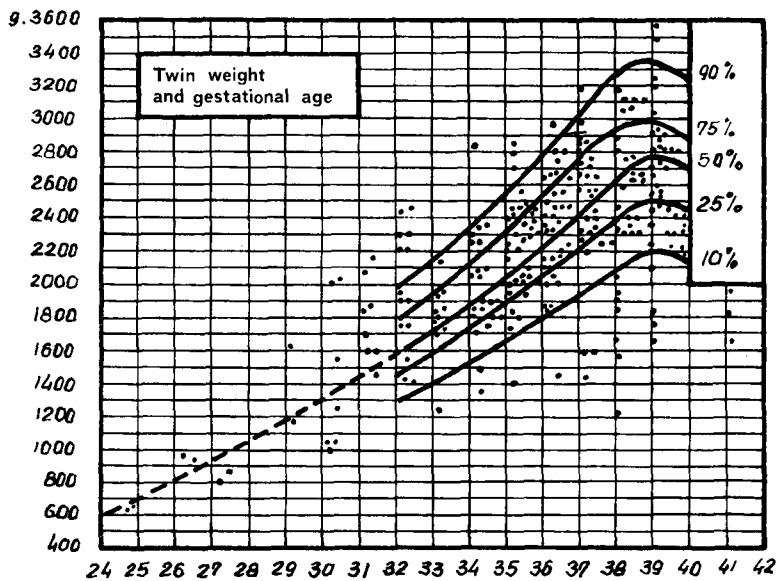


Fig. 1. Twin weight at birth and gestational age (weeks on a body-weight chart according to Naeye et al. 1966)

As Bazsö et al. (1969) pointed out on the basis of 485 examinations of twin placentae, fetus weight is a function of the sufficiency degree of the unit placenta-fetus. It is only slightly, if at all, influenced by genetic factors. This is the reason for the high ratio of small-for-date twins, that in our study reaches 25%.

Premature delivery is an additional complication of multiple pregnancy. Twin pregnancy is on the average terminated 3 weeks before single pregnancy (Guttmacher and Kohl 1958). Before-term multiple births were found to account for 75%, 53.7%, and 47%, respectively by Krasucka and Zalewska (1957), Ferguson (1964), and Klein (1964). In our data 49% of twin pregnancies terminated before 37 weeks of gestation. Assuming 2200 g as a limit of twin maturity, 115 of our twins were premature. The data of Slomko and Kuczynski (1965a) are close to ours. The prematurity percentage among twins in the period analyzed is almost five times higher than that generally observed in our Clinic (8-9.5%). Low body weight and a great number of nonspontaneous deliveries in the case of twin pregnancies are emphasized by all authors (Krasucka and Zalewska 1957, Naeye et al. 1966, Morison 1970). Intrauterine asphyxia is three times more frequent in breech deliveries than in spontaneous ones. The greater risk involved for the second twin is pointed out by several authors (Clemetson 1956, Spurway 1962, Klein 1964, Slomko and Kuczynski 1965a). It is due to circulatory troubles in the intravillous space after delivery of the first twin. The second baby is more frequently nonspontaneously delivered. This may cause RDS and intraventricular hemorrhage: hence the markedly higher mortality of the second twin. In our study it was found to be 4.2% higher. This value is consistent with those reported by Sternadel (1967d). Lower mortality in individual weight groups,

as the one described by Sternadel, is due to combined methods of treatment. No death was observed in the weight group over 2500 g. RDS plays a major role in the high mortality of twins between 1000 and 2500 g. This in turn is due to prematurity, related to the immaturity of enzymatic system.

Congenital malformations, more frequently occurring in twins (Guttmacher and Kohl 1958, Slomko and Kuczynski 1965a, Morison 1970), also increase the mortality rate. In the group examined they are three times more frequent than in the whole population in the analyzed period. They are the cause of 1/7 of the deaths.

Although the problem of MZ vs. DZ twins is not considered in this study, we found the mortality rate to be nearly twice as high in the MZ group.

In our opinion, multiple pregnancy has to be considered as a peculiar problem in neonatology and obstetrics, and as a high-risk pregnancy.