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Abstract Selection

A comparison of speech discrimination with cochlear implants and tactile aids. Carney, A. E., Osberger, M. J., Carney E., Robbins, A. M., Renshaw, J., Miyamoto, R. T. Boys Town National Research Hospital, Omaha, Nebraska 68131. *Journal of the Acoustical Society of America* (1993) October, Vol. 94, pp. 2036–2049.
This study investigates patterns of speech discrimination in profoundly hearing-impaired children who have received cochlear implants or tactile aids. The change/no change procedure was used to assess speech discrimination in these children. Three groups of subjects were tested: the first group used 3M/House single-channel cochlear implants; the second group used Nucleus 22-channel cochlear implants; and the third group used two-channel Tactaid II+ vibrotactile aids. Nine contrasts were constructed that assessed discrimination of suprasegmental and segmental speech features. Subjects were presented with stimulus trials in which stimuli changed during the trial or in which stimuli remained the same. Hits, misses, false alarms, and correct rejections were tallied and d' values were calculated for individual subjects for each contrast. Results indicated that different patterns of speech discrimination are provided by the three sensory prosthetic devices. For all contrasts, mean discrimination performance with the Nucleus device was better than that observed for the other two devices, despite the shorter duration of subject experience with this cochlear implant. In addition, interactions between device and speech contrast were not observed. Examination of individual subject performance revealed that each device group had a distribution of good to poor performers. The results suggest that the change/no change procedure is able to provide information regarding speech perception through sensory prosthetic devices despite existing differences in vocabulary and language skills of subjects. Author.

Simulation of the effects of loudness recruitment and threshold elevation on the intelligibility of speech in quiet and in a background of speech. Moore, B. C., Glasberg, B. R. Department of Experimental Psychology, University of Cambridge, England. *Journal of the Acoustical Society of America* (1993) October, Vol. 94, pp. 2050–2062.
These experiments simulated the threshold elevation and loudness recruitment associated with three different types of cochlear hearing loss: Moderate flat (condition R2), severe flat (condition R3), and moderate-to-severe sloping (condition RX). This was done to allow an examination of the effects of these factors on the intelligibility of speech, in isolation from other factors that are normally associated with cochlear hearing loss, such as reduced frequency selectivity. The simulation was performed by splitting the input signal into 13 frequency bands, and processing the envelope in each band so as to create loudness sensations in a normal ear that would resemble those produced in an impaired ear with recruitment. The bands were then recombined. All tests were performed using subjects with normal hearing. For speech in quiet, simulation of hearing loss produced a reduction in the ability to understand low-level speech. However, speech at sufficiently high levels was highly intelligible in all conditions. Linear amplification according to the National Acoustic Laboratory (NAL) prescription gave high intelligibility for speech at normal conversational levels. For speech presented at a fixed input level of 65 dB SPL, against a background of a single competing talker, simulation of hearing loss produced substantial decrements in performance. The speech-to-background ratios in conditions R2 and RX had to be 11–13 dB higher than in the control condition (unprocessed stimuli) to achieve similar levels of performance. Linear amplification according to the NAL prescription improved performance markedly for the conditions simulating flat losses, but was less effective for the condition simulating a sloping loss. This indicates that threshold elevation combined with recruitment produces a loss of intelligibility for speech in the presence of a single competing talker that is only partly compensated by linear amplification of the type typically used in hearing aids.

Analysis of nasal secretions during experimental rhinovirus upper respiratory infections. Igarashi, Y., Skoner, D. P., Doyle, W. J., White, M. V., Fireman, P., Kaliner, M. A. Allergic Diseases Section, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, MD. *Journal of Allergy and Clinical Immunology,* (1993) November, Vol. 92 (5), p. 722–31 .
BACKGROUND; To determine the underlying mechanisms for rhinovirus-induced nasal secretions, nasal lavage fluids were analyzed during experimental rhinovirus infections. METHODS: Twenty patients with allergic rhinitis and 18 nonallergic control subjects were inoculated with rhinovirus type 39. Nasal lavage was performed before and on days 2 through 7 after viral inoculation, and the lavage fluids were assayed for proteins and mast cell mediators. RESULTS: The secretion of total protein and both plasma proteins (albumin and IgG) and glandular proteins (lactoferrin, lysozyme, and secretory IgA) increased after rhinovirus inoculation. Analysis of the specific protein constituents revealed that nasal secretions during the initial response to the rhinovirus infection were predominantly due to increased vascular permeability. Allergic subjects tended to have fewer symptoms and more vascular permeability than control subjects, and increased histamine secretion after rhinovirus inoculation was more frequently seen in the allergy group. CONCLUSION: Nasal secretions found early in the course of a viral upper respiratory infection are due to increased vascular permeability, whereas glandular secretions predominate later in the infection. Author.

Intranasal steroids inhibit seasonal increases in ragweed-specific immunoglobulin E antibodies. Naclerio, R. M., Adkinson, N. F. Jr., Creticos, P. S., Baroody, F. M., Hamilton, R. G., Norman, P. S. Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD. *Journal of Allergy and Clinical Immunology,* (1993) November, Vol. 92 (5), p. 717–21 .
We performed two seasonal studies to evaluate the effect of continuous treatment with intranasal steroids, beginning approximately 1 week before the appearance of ragweed pollen, on the level of ragweed-specific IgE antibodies in serum. In both studies the control groups showed the anticipated rise in ragweed-specific Ig E antibodies after the ragweed season. In the first study, employing aqueous beclomethasone dipropionate (168 micrograms twice daily), no rise occurred in serum ragweed IgE after seasonal exposure and the level actually decreased in eight of 12 treated subjects. In the second study, with triamcinolone acetonide (220 micrograms twice daily), the expected rise in ragweed IgE antibody was also reduced, although less dramatically, probably as a result of the lower potency of the dose delivered. Our studies not only support the benefits of intranasal steroids in the treatment of seasonal allergic rhinitis but also suggest that specific IgE production may be down-regulated by their continuous use, which may alter the subsequent clinical course of the disease. Author.

Detection of tracheal stenosis by frequency analysis of tracheal sounds. Yonemaru, M., Kikuchi, K., Mori, M., Kawai, A., Abe, T., Kawashiro, T., Ishihara, T., Yokoyama, T. Department of Medicine, Keio University School of Medicine, Tokyo, Japan. *Journal of Applied Physiology* (1993) August, Vol. 75 (2), p. 605–12.
To develop a simple noninvasive method for detecting tracheal stenosis, tracheal sounds were analyzed using fast-Fourier transform. The subjects were all female and included 5 normal volunteers and 13 patients with tracheal stenosis mostly secondary to thyroid cancer (11 extrathoracic and 2 intrathoracic lesions). Tracheal sounds were recorded during spontaneous breathing and were digitized with an analog-to-digital converter. Pulmonary functions, including forced expiratory volume in 1 s (FEV1) expressed as percentage of vital capacity, peak expiratory flow rate (PEFR), the ratio of FEV1 to PEFR (Empey's index), and the ratio of expiratory to inspiratory flow rates at 50 per cent vital capacity, were measured. A computed tomography scan was used to obtain the tracheal minimum cross-sectional area. Whereas PEFR demonstrated a weak correlation with

the stenotic area, FEV1 per cent, Empey's index, and the ratio of expiratory to inspiratory flow rates at 50 per cent vital capacity did not. The power of the fast-Fourier transform spectrum of normal tracheal sounds decreased as the frequency increased up to 500 Hz. A small spectral peak was observed at approximately 1 kHz. Patients with significant tracheal stenosis demonstrated an increase in the peak spectral power at approximately 1 kHz and in the mean spectral power from 600 to 1,300 Hz in their tracheal sounds. In patients with extrathoracic lesions, the peak and mean spectral powers correlated well with the area of the stenosis as defined by computed tomography scan. In patients with intrathoracic lesions, abnormalities in the pulmonary functions as well as tracheal sound spectra appeared more evident despite milder stenoses. (ABSTRACT TRUNCATED AT 250 WORDS) Author.

Laryngeal response to passively induced hypocapnia during NREM sleep in normal adult humans. Kuna, S. T., McCarthy, M. P., Smickley, J. S. Department of Internal Medicine, University of Texas Medical Branch, Galveston 77555–0561. *Journal of Applied Physiology* (1993) September, Vol. 75 (3), p. 1088–96 .
Passively induced hypocapnia in animals activates vocal cord adductor muscles and decreases the glottic aperture. The purpose of this study was to determine if passively induced hypocapnia has similar effects in normal adult humans in stage 3/4 non-rapid-eye-movement (NREM) sleep. Hypocapnia was induced by hyperventilating the subjects with a positive-pressure ventilator via a nose mask. At hypocapnic levels below the CO2 apneic threshold, abrupt cessation of mechanical ventilation was followed by an apnea. In protocol 1, intramuscular electromyographic recordings of intrinsic laryngeal muscles were obtained in nine subjects. Activity of the posterior cricoarytenoid muscle, a vocal cord abductor, disappeared during passive hyperventilation. The muscle remained electrically silent during an apnea, but phasic inspiratory activity reappeared with the first respiratory effort. The thyroarytenoid and arytenoideus muscles, both vocal cord adductors, were electrically silent during spontaneous breathing in NREM sleep. Hypocapnia was frequently associated with activation of both adductor muscles. Once activated, the adductor muscles remained tonically active during an ensuring apnea. In protocol 2, a fiber-optic scope was advanced transnasally into the hypopharynx to determine glottic aperture size during passively induced hypocapnic apnea. In the seven subjects who achieved stable NREM sleep, the glottic aperture during an apnea was smaller than at any time throughout the respiratory cycle during spontaneous breathing just before positive-pressure ventilation. The results suggest that the decrease in glottic aperture observed during an induced hypocapnic apnea is due to suppression of the posterior cricoarytenoid muscle and/or activation of vocal cord adductor muscles. Author.

Autonomic and hemodynamic responses and interations during the Mueller maneuver in humans. Somers, V. K., Dyken, M. E., Skinner, J. L. Department of Internal Medicine, University of Iowa College of Medicine, Iowa City 52242. *Journal of the Autonomic Nervous System,* (1993) August, September, Vol. 44 (2–3), p. 253–9.
We compared the responses to a Mueller maneuver maintained for 20 s to effects of an equal period of end expiratory apnea. We measured heart rate, mean blood pressure (BP), central venous pressure (CVP), and sympathetic nerve activity (SNA) in 9 normal humans. The Mueller maneuver was accompanied by a fall in CVP from 5 +/– 1.2 to –13 +/– 3.2 mmHg (P <0.05). During the first 10 s of Mueller, BP fell from 95 +/– 4.2 to 81 +/– 5.5 mmHg and SNA fell as low as 16 +/– 6 per cent of control (P<0.05). For the 5 s prior to release SNA increased to 236 +/– 36 per cent (P<0.05), and BP began to increase. Release of the Mueller resulted in a surge in BP to 104 +/– 5.8 mmHg and suppression of SNA to 61 +/– 48 per cent (P<0.05). By contrast, there was no fall in BP or CVP during apnea and SNA increased to 188 +/– 24 per cent for the first 5 s. Between 16 and 20 s of apnea SNA was 231 +/– 52 per cent and BP increased from 92 +/– 3.1 to 96 +/– 3.6 mmHg (P<0.05). Release of apnea resulted in a surge in BP to 105 +/– 3.0 mmHg and suppression of SNA to 30 +/– 12 per cent (P<0.05). Oscillations in BP and SNA during the Mueller maneuver may contribute to similar oscillations, and hence cardiovascular consequences, in patients with sleep apnea. Author.

Presence of respiratory syncytial virus genomic sequences in middle ear fluid and its relationship to expression of cytokines and cell adhesion molecules. Okamoto, Y., Kudo, K., Ishikawa, K., Ito, E., Togawa, K., Saito, I., Moro, I., Patel, J. A., Ogra, P. L. Department of Otolaryngology, Akita University School of Medicine, Japan. *Journal of Infectious Diseases* (1993) November, Vol. 168 (5), p. 1277–81.
The presence of respiratory syncytial virus (RSV) and several cytokines and cell adhesion molecules in middle ear effusions and mucosal tissues was evaluated using polymerase chain reaction. RSV genomic sequences were detected in 23 (52.7 per cent) of 44 middle ear effusions tested. The sequences were detectable at an even higher rate (82.4 per cent) in effusions of children in whom infectious virus was detected in the nasopharynx. All samples with the RSV genome contained the mRNA for interleukin-1 beta and -6 and tumor necrosis factor-alpha. The messages for these cytokines, together with intercellular adhesion molecule-1, endothelial leukocyte adhesion molecule-1, and vascular cell adhesion molecule-1, were detected in human middle ear mucosal organ cultures infected in vitro with RSV. Our results suggest that the enhanced synthesis of proinflammatory cytokines and cell adhesion molecules in the middle ear infected with RSV may contribute to the inflammatory processes in otitis media. Author.

Genetic heterogeneity of Usher syndrome type II. Pieke, Dahl, S., Kimberling, W. J., Gorin, M. B., Weston, M. D., Furman, J. M., Pikus, A., Moller, C. Genetics Department, Boys Town National Research Hospital, Omaha, NE. *Journal of Medical Genetics* (1993) October, Vol. 30 (10), p. 843–8.
Usher syndrome is an autosomal recessive disorder characterised by retinitis pigmentosa and congenital sensorineural hearing loss. A gene for Usher syndrome type II (USH2) has been localised to chromosome 1q32–q41. DNA from a family with four of seven sibs affected with clinical characteristics of Usher syndrome type II was genotyped using markers spanning the 1q32–1q41 region. These included D1S70 and D1S81, which are believed to flank USH2. Genotypic results and subsequent linkage analysis indicated nonlinkage of this family to these markers. The A test analysis for heterogeneity with this family and 32 other Usher type II families was statistically significant at P<0.05. Further clinical evaluation of this family was done in light of the linkage results to determine if any phenotypic characteristics would allow for clinical identification of the unlinked type. No clear phenotypic differences were observed; however, this unlinked family may represent a previously unreported subtype of Usher type II characterised by a milder form of retinitis pigmentosa and mild vestibular abnormalities. Heterogeneity of Usher syndrome type II complicates efforts to isolate and clone Usher syndrome genes using linkage analysis and limits the use of DNA markers in early detection of Usher type II. Author.

Airway abnormalities in Jarcho-Levin syndrome: a report of two cases. Schulman, M., Gonzalez, M. T., Bye, M. R. Department of Pediatrics, Albert Einstein College of Medicine, Bronx, New York. *Journal of Medical Genetics* (1993) October, Vol. 30 (10), P. 875–6 .
Two infants with the Jarcho-Levin syndrome of vertebral anomalies underwent flexible fibre optic bronchoscopy. Central airway abnormalities not amenable to surgical correction were found in both patients. These abnormalities may contribute significantly to the respiratory failure seen in affected infants, and should be considered when evaluating continuing medical support. Author.

Relationship between occupation and episodes of headache that match cervical origin pain patterns. Grimmer, K. Menzies Centre for Population Research, Hobart, Australia. *Journal of Occupational Medicine* (1993) September, Vol. 35 (9), p. 929–35.
The relationship between headache that matches cervical origin pain patterns, occupation, gender, age, and hours of work is examined in a randomly sampled, never-injured population. Although gender was established as a significant factor in the association between occupation and headache, age and hours of work were shown to have no effect. Women working in managerial and professional occupations had a significantly higher risk of cervical origin headache when compared with women working in either clerical or blue collar occupations. A similar association for men was not noted. Author.

Metastatic tumors to postextraction sites. Hirshberg, A., Leibovich, P., Horowitz, I., Buchner, A. Maurice and Gabriela Goldschleger School of Dental Medicine, Tel Aviv University, Israel. *British Journal of Oral and Maxillofacial Surgery* (1993) December, Vol. 51 (12), p. 1334–7.
Review of the literature revealed 55 cases where tooth extraction preceded the discovery of metastases. The lung and breast were the

most common sources of the metastasis, and the mandibular premolar area was the most common site. A soft tissue mass extruding from a recent extraction wound, and accompanied by pain, were the main symptoms in most patients. The mean time from discovery of the metastasis to death ws 3.8 months. Tooth extraction appears to serve as a promoting factor in the metastatic process. A case of metastatic transitional cell carcinoma of the urinary bladder involving the area of a recently extracted mandibular third molar is reported. Author.

Augmentation of the maxillary sinus floor with autogenous bone for the placement of endosseous implants: a preliminary report. Raghoebar, G. M., Brouwer, T. J., Reintsema, H., Van-Oort, R. P. Department of Oral and Maxillofacial Surgery, University Hospital Groningen, The Netherlands. *British Journal of Oral and Maxillofacial Surgery* (1993) November, Vol. 51 (11), p. 1198–203; discussion 1203–5.

Placement of endosseous implants in the atrophic maxilla is often restricted because of lack of supporting bone. In this article, experience with augmentation of the maxillary sinus floor with autogenous bone grafts to enable insertion of endosseous implants is described. The technique is aimed at providing a cortical layer on top of the graft to ensure a reliable seal of the maxillary sinus and to achieve optimal stability of the bone graft in case of simultaneously placement of dental implants. The procedure was used in 25 patients, using iliac crest grafts (22 patients, 86 implants), symphyseal bone grafts (two patients, six implants), or a maxillary tuberosity bone graft (one patient, one implant). Ninety-three Branemark implants (Nobelpharma, Gotenburg, Sweden) were inserted in 47 grafted maxillary sinuses. The mean follow-up was 16 months (range, 6 to 36 months). No inflammation of the bone grafts nor of the maxillary sinus occurred. The sinus membrane was perforated accidentally in eight cases during the surgical procedure. Five implants (5.4 per cent), all inserted in iliac crest grafts, were lost during the healing period. The patients received implant supported overdentures (16 patients) or bone-anchored bridges (nine patients). From this preliminary study it is concluded that augmentation of the maxillary sinus floor with bone grafts for the insertion of endosseous implants is a promising solution for patients with atrophic maxillae and functional problems with their partial or full dentures. Author.

Timing and dosage of postoperative radiotherapy for squamous cell carcinoma of the upper aerodigestive tract. Ampil, F. L., Buechter, K. J., Bairnsfather, L. E., Shockley, W. W. Department of Radiology, Louisiana State University School of Medicine in Shreveport. *British Journal of Oral and Maxillofacial Surgery* (1993) November, Vol. 51 (11), p. 1194–7.

Seventy patients who received postoperative irradiation (PI) after curative surgery for stage III or IV squamous cell carcinoma of the upper aerodigestive tract were studied retrospectively to compare the rate of local and regional recurrence (LRR) and the effect of total dose on LRR rate in patients irradiated timely (n = 40) with those who were not (n = 30). Overall, the LRR rate was higher when PI was delayed than when timely (37 per cent vs 20 per cent). No advantage resulted from increasing total dose when PI was delayed; the LRR rate in the primary site and upper neck was 18 per cent with less than 60 Gy and was 26 per cent with 60 Gy or more; the LRR rate in the lower neck was 13 per cent with 50 Gy or less and was 14 per cent with more than 50 Gy. These data seem to corroborate the findings of other investigators regarding the importance of initiating timely PI, but not the observation that a pronounced delay is not detrimental provided higher tumoricidal doses are used. Author.

Relation of infant feeding practices, cigarette smoke exposure, and group child care to the onset and duration of otitis media with effusion in the first two years of life. Owen, M. J., Baldwin, C. D., Swank, P. R., Pannu, A. K., Johnson, D. L. Howie, V. M. Department of Pediatrics, University of Texas Medical Branch, Galveston 77555–0319. *Journal of Pediatrics* (1993) November, Vol. 123 (5), P: 702–11.

The relation of infant feeding practices, cigarette smoke exposure, and group child care to the onset and duration of otitis media with effusion (OME) was evaluated in a cohort of 698 healthy infants prospectively monitored by tympanometry in the home every 2 to 4 weeks until 2 years of age. Except for an experimental group of children who were offered early tube placement, the study children received conventional care from their personal physician or clinic. We used LISREL, a structural equation modeling procedure (computer software), to explore associations between environmental variables and OME onset and duration while controlling for interrelations among the variables. Supine feeding position and early initiation of group child care were associated with earlier onset of OME. Shorter duration of breast-feeding, increased packs of cigarettes smoked per day in the home, and increased hours per week in group child care were associated with an increase in the amount of time with OME during one or more of the age blocks studied (birth to 6, 6 to 12, 12 to 18, and 12 to 24 months). For a decrease in the amount of time with OME during the first 2 years of life, prolonged breast-feeding and upright feeding position should be encouraged, and cigarette smoke exposure should be minimized. Limiting early child care in large groups might also be advisable. Author.

Congenital cytomegalovirus infection and neonatal auditory screening. Hicks, T., Fowler, K., Richardson, M., Dahle, A., Adams, L., Pass, R. Department of Pediatrics, University of Alabama at Birmingham 35233. *Journal of Pediatrics* (1993) November, Vol. 123 (5), p. 779–82.

Auditory screening of newborn infants has been recommended on the basis of the presence of risk criteria, including congenital infection. We assessed the ability of risk criteria-based neonatal auditory brain stem response to identify infants with hearing loss resulting from congenital cytomegalovirus (CMV) infection. Data from 6½ years of risk criteria-based neonatal auditory screening were compared with the results of screening of all newborn infants for congenital CMV infection. Infants with congenital CMV infection received follow-up hearing evaluations. Congenital CMV infection was found in 167 (1.3 per cent) of 12,371 infants; 134 had follow-up hearing evaluations, and 14 (10.4 per cent) had confirmed sensorineural hearing loss. The rate of sensorineural hearing loss resulting from congenital CMV infection was 14 per 12,371 infants, of 1.1 per 1000 live births; the rate of bilateral loss > or = 50 dB was 0.6 per 1000. Although 2036 infants received auditory screening because of risk criteria, only 34 (20 per cent) of 167 infants with congenital CMV infection were included. Only 2 (14 per cent) of 14 children with sensorineural hearing loss caused by CMV were identified by risk criteria-based screening. We conclude that congenital CMV infection is an important cause of hearing impairment. Neonatal auditory screening based on the presence of risk criteria will fail to identify the majority of cases of sensorineural hearing loss caused by congenital CMV infection. Author.

Bacterial polysaccharide immune globulin for prophylaxis of acute otitis media in high-risk children (see comments). Shurin, P. A., Rehmus, J. M., Johnson, C. E., Marchant, C. D., Carlin, S. A., Super, D. M., Van-Hare, G. F., Jones, P. K., Ambrosino, D. M., Siber, G. R. Department of Pediatrics, Columbia University College of Physicians and Surgeons, New York, New York. *Journal of Pediatrics* (1993) November, Vol. 123 (5), p. 801–10.

We evaluated the prevention of recurrences of acute otitis media (AOM) by bacterial polysaccharide immune globulin (BPIG), a hyperimmune human immune globulin prepared by immunizing donors with bacterial polysaccharide vaccines. We used a randomized, stratified, double-blind, placebo-controlled design. Children < or = 24 months of age with 1 to 3 prior episodes of AOM received BPIG, 0.5 ml/kg, or saline placebo intramuscularly at entry and 30 days later. During the 120-day follow-up period, AOM was diagnosed by using clinical criteria and was confirmed with tympanocentesis and culture of the middle ear exudates. Eighty-eight episodes of AOM were observed in 76 patients who completed the study. The incidence of AOM during the entire 120-day study period was similar in BPIG and placebo recipients. Pneumococcal AOM was significantly less frequent in BPIG recipients (0.21 episode per patient) than in placebo recipients (0.45 episode per patient; P = 0.05). Time spent free of AOM was significantly prolonged in recpients of BPIG, in comparison with placebo recipients (51 vs 35 days; P = 0.034). This study demonstrated that circulating antibody, even without stimulation of specific local immunity, may prevent infection of the middle ear. The use of immune globulin preparations for longer periods or at a higher dosage might decrease the incidence of recurrent AOM in otitis-prone children, and deserves further evaluation. Author.

DNA diagnosis of neurofibromatosis 2. Altered coding sequence of the merlin tumor suppressor in an extended pedigree. MacCollin, M., Mohney, T., Trofatter, J., Wertelecki, W., Ramesh, V., Gusella, J. Molecular Neurogenetics Unit, Massachusetts General Hospital, Charlestown 02129. *JAMA* (1993) November, Vol. 270 (19), p. 2316–20.

OBJECTIVE: To define the DNA mutation causing neurofibromatosis 2 (NF2), a severe genetic disorder involving the development of multiple nervous system tumors in adulthood, in a large, well-studied NF2 pedigree previously used to chromosomally map and to isolate the disease gene. DESIGN: Single-strand conformational polymorphism (SSCP) and DNA sequence analysis of the NF2 gene amplified from affected and unaffected family members. PARTICIPANTS: Affected, unaffected, and at-risk members of a large pedigree segregating NF2, an autosomal dominant disorder caused by inactivation of the merlin tumor suppressor encoded in chromosome band 22q12. RESULTS: A DNA alteration in the merlin coding sequence caused a shift on SSCP gels that was characteristic of the disease chromosome in this NF2 pedigree, being transmitted with the disorder, present only in affected members of the pedigree, absent in unaffected members of the family, and absent from 158 unrelated individuals. The alteration caused substitution of a tyrosine for an asparagine at position 220 of the merlin protein, in a region highly conserved in closely related members of the family of cytoskeletal-associated proteins. The DNA change could also be detected by restriction enzyme digestion with Rsa 1. CONCLUSION: Current practice dictates screening of all those "at risk" for NF2 with magnetic resonance imaging, but the frequency and duration of screening are problematic because of the variable course of the disease. The identification of a DNA alteration in the NF2 gene will permit predictive molecular testing of individuals at risk in this specific family, sparing the expense and emotional burden of protracted screening programs. This information, by providing diagnostic certainty, should also reduce psychological and financial burdens and improve medical care for affected family members. A similar approach to defining the underlying lesion and developing a predictive test is applicable in any documented NF2 family. Author.

Change induced by radiation therapy in FDG uptake in normal and malignant structures of the head and neck: quantitation with PET. Chaiken, L., Hoh, C. K., Choi, Y., Lufkin, R., Anzai, Y., Juillard, G., Maddahi, J., Phelps, M. E., Hawkins, R. A. Department of Radiological Sciences, Laboratory of Biomedical and Environmental Sciences, Los Angeles, California. *Journal of Radiology* (1993) December, Vol. 189 (3), p. 807–12.

PURPOSE: To quantitate the changes induced in uptake of the glucose analog 2-(fluorine-18) fluoro-2-deoxy-D-glucose (FDG) in normal structures in the head and neck and compare these to the change in uptake in malignant structures in patients with head and neck tumors undergoing radiation therapy. MATERIALS AND METHODS: Eleven patients with biopsy-confirmed squamous cell carcinoma of the head and neck were studied before, during, and after a 6-week course of radiation therapy with positron emission tomography (PET)-FDG imaging. A ratio of FDG uptake in the structure compared with that in the cerebellum (termed metabolic ratio) within and outside of the field of radiation was determined in the adenoids; lingual and palatine tonsils; parotid, submandibular, and sublingual glands; and nasal turbinates, soft palate, and gingiva. RESULTS: The average metabolic ratio in the tonsils, nasal turbinates, soft palate, and gingiva did not change significantly with treatment. CONCLUSION: FDG uptake in normal structures does not change with radiation therapy. This fact is in marked contrast to the FDG uptake in squamous cell carcinomas in the head and neck, which decrease dramatically with treatment ($P < .005$). Author.

Factors affecting distribution of airflow in a human tracheobronchial cast. Institute of Environmental Medicine, New York University Medical Center, New York. *Respiration Physiology* (1993) September, Vol. 93 (3), p. 261–78.

Air velocity was measured at end airways of hollow replicate casts of the human tracheobronchial tree in order to determine the flow distribution within casts extending to 3mm diameter airways. Measurements were made by hot-wire anemometry for constant inspiratory flow rates of 7.5, 15, 30 and 60 L. min-1. Average flow distribution among the lung lobes was as follows: right upper, 18.5 per cent; right middle, 9.2 per cent; right lower, 32.3 per cent; left upper, 15.7 per cent; and left lower, 24.3 per cent. An empirical model derived from the experimental flow distribution data demonstrated the effect of various morphometric parameters of the hollow cast on the distribution of airflow. Airway cross-sectional area, branching angle and total path-length were found to have the greatest influence. As the tracheal flow rate decreased from 60 to 7.5 L.min-1, the influence of branching angle was reduced, while total path-length became more influential. These results provide evidence for the transition of flow regimes within the TB tree within normal physiological flow ranges. Author.

Osteomyelitis of the jaw in patients infected with the human immunodeficiency virus. Edelstein, H., Chirurgi, V. A., Hybarger, C. P. Kaiser Permanente Medical Center, San Rafael, California 94903. *Southern Medical Journal* (1993) November, Vol. 86 (11), p. 1215–8.

Eight patients with osteomyelitis of the jaw were identified at two county hospitals over a 4-year period. Three patients (37.5 per cent) were found to be HIV-seropositive, including two patients not previously known to be HIV-seropositive. Signs and symptoms of infection were similar in both groups of patients, and commonly included fever, pain, and swelling. Radiographs showed specific findings of osteomyelitis in one of three HIV-seropositive patients and four of four seronegative patients with chronic jaw infection. HIV-seropositive patients appeared to have a worse clinical outcome than their seronegative counterparts. We conclude that osteomyelitis of the jaw may be the presenting manifestation of HIV infection, and that careful attention and close follow-up should be applied to such patients because of their poor overall clinical response. Author.