

Abstract Selection

Reversing click polarity may uncover auditory neuropathy in infants. Berlin, C. I., Bordelon, J., St John, P., Wilensky, D., Hurley, A., Kluka, E., Hood, L. J. LSU Medical School, Department of Otolaryngology and Biocommunication, Kresge Hearing Research Laboratory of the South, New Orleans, Louisiana, USA. *Ear and Hearing* (1998) February Vol. 19 (1), p. 37–47, ISSN: 0196-0202

OBJECTIVE: To identify patients with primary auditory neuropathies whose cochlear potentials to a 100 microsec click persist after click cessation and simulate synchronous auditory brain stem responses (ABRs) at high intensities. **DESIGN:** ABRs to condensation and rarefaction clicks, as well as Maximum Length Sequence ABRs and one transtympanic electrocochleogram (ECoChG), were collected from five infants with absent middle ear muscle reflexes and normal or near normal otoacoustic emissions. These infants failed ALGO screens, which used alternating polarity clicks, and/or failed full ABRs done elsewhere with alternating polarity clicks. **RESULTS:** When ABRs were collected in response to a single polarity pulse, they revealed robust and reproducible wave forms over 4 to 6 msec that initially were mistaken for a normal ABR by the referring agents. However, when condensation and rarefaction click data are compared, the waveforms change polarity when the stimulus is inverted. Furthermore, the waveforms fail to shift in latency as the intensity of the stimulation is reduced. Transtympanic ECoChG on one of the children revealed the same polarity reversal and fixed latency functions, confirming that they were cochlear rather than neural responses. **CONCLUSIONS:** Comparing responses with positive versus negative polarity clicks may help separate ABRs from cochlear potentials and alert clinicians to the possibility of an auditory neuropathy. Therefore, absent or abnormal ABRs in the presence of normal otoacoustic emissions need not always implicate a purely 'central disorder,' but might be consistent with dysfunction between outer hair cells and primary afferent fibers. Author.

Open earmold fittings for improving aided auditory localization for sensorineural hearing losses with good high-frequency hearing. Byrne, D., Sinclair, S., Noble, W. National Acoustic Laboratories, Chatswood, NSW. *Ear and Hearing* (1998) February, Vol. 19 (1) p. 62–71, ISSN: 0196-0202.

OBJECTIVE: We tested the hypothesis that the use of non-occluding earmolds for hearing aid fittings could optimize auditory localization in the vertical plane for people with moderate, low-frequency hearing losses and good hearing at frequencies above 4000 Hz. This benefit was expected to arise from leaving the pinna unobstructed and by optimizing hearing (unaided) for frequencies above the hearing aid's limit. **DESIGN:** Twenty-two participants had hearing losses greater than dB over the range 250 to 2000 Hz and had minimal losses (<30 dB) at 6000 Hz and 8000 Hz. Their auditory localization was tested, using a horizontal arc and a vertical arc of loudspeakers, when listening unaided and when fitted bilaterally with Behind The Ear hearing aids with three earmold types—closed (occluded), open (partly occluded), sleeve (nonoccluded). **RESULTS:** Localization of vertical plane sound sources was significantly poorer for the closed earmold condition than for unaided. The open and sleeve conditions were better than the closed condition, and, for the sleeve earmold, vertical localization was almost equal to that unaided. The capacity to benefit from using open rather than closed earmolds was related to hearing level; people with the best hearing at 4000, 6000, and 8000 Hz received the most benefit. There was limited evidence that open earmolds also can be advantageous for some aspects of horizontal plane localization. **CONCLUSIONS:** Nonoccluding earmolds optimize aided vertical localization for hearing aid users with good high-frequency hearing. The 'sleeve' earmold, so far used only in research, may be a useful clinical option. Author.

Detection of Mycobacterium tuberculosis complex in cattle by PCR using milk, lymph node aspirates, and nasal swabs. Vitale, F., Capra, G., Maxia, L., Reale, S., Vesco, G., Caracappa, S. Istituto Zooprofilattico Sperimentale Della Sicilia, Palermo, Italy. izspa@interbusiness.it *Journal of Clinical Microbiology* (1998) April, Vol. 36 (4), p. 1050–5, ISSN: 0095-1137.

The PCR technique was applied to the diagnosis of tuberculosis in live cattle, and both skin-test-negative and skin-test-positive animals were studied. DNA was taken from various sources including specimens of lymph node aspirates, milk, and nasal swabs. After slaughter and visual inspection, tissues such as lymph nodes, lungs, and udders from tuberculin reactors were tested by the same technique. Specific oligonucleotide primers internal to the IS6110 insertion element were used to amplify a 580-bp fragment. A 182-bp fragment was obtained by designating a nested PCR from the first amplification product. This fragment was cloned and sequenced, and after being labelled it was employed in dot blot hybridization. A total of 100 cattle were tested, and PCR analysis was performed using nasal swab, milk, and lymph node aspirate. Sixty skin-test-positive cows were also tested to detect mycobacterial DNA in tissue samples from lymph nodes, lungs, and udders, and the infection was confirmed in all of the animals. Using PCR analysis of tissue samples from slaughtered animals as a 'gold standard' we calculated 100 per cent values for sensitivity, specificity, and positive and negative predictive values for milk and lymph node aspirate samples. The respective values for nasal swab samples were 58, 100, 100, and 28 per cent. The respective values for all of the samples were 74, 100, 100, and 35 per cent, while for visual inspection the values were 81, 100, 100, and 58 per cent, respectively. PCR analysis of specimens of lymph node aspirates, milk, and nasal swabs from skin-test-negative animals showed that 52 per cent of these skin test results were false negatives. These animals, not being removed from the farms, represent a potential source of further infection. Author.

Treatment of rhinocerebral mucormycosis with intravenous interstitial, and cerebrospinal fluid administration of amphotericin B: case report. Adler, D. E., Milhorat, T. H., Miller, J. I. Department of Neurosurgery, State University of New York, Health Science Center at Brooklyn, 11203, USA. *Neurosurgery* (1998) March, Vol. 42 (3), p. 644–8; discussion 648–9, ISSN: 0148-396X.

IMPORTANCE: Rhinocerebral mucormycosis is extremely difficult to treat. Approximately 70 per cent of patients are poorly controlled diabetics, and many of the remainder are immunocompromised as a consequence of cytotoxic drugs, burn injuries, or end-stage renal disease. Despite standard treatment consisting of surgical debridement and the intravenous administration of amphotericin B, rhinocerebral mucormycosis is usually a fatal disease. **CLINICAL PRESENTATION:** We describe the case of a 16-year-old male patient with juvenile onset diabetes mellitus who presented with fever, right-sided hemiparesis, and dysarthria. Axial view computed tomography revealed abscess formation in the left basal ganglia and frontal lobe, which was proven by stereotactic biopsy to contain *Rhizopus oryzae*. **INTERVENTION:** Intravenous administration of amphotericin B (30–280 mg/dose) was begun on the day of admission. On hospital Day 20, after the occurrence of frank abscess formation, the lesion was aggressively debrided. Despite these therapies, there was neurological deterioration characterized by the development of hemiplegia and aphasia. Sequential computed tomographic scans enhanced with contrast medium demonstrated progressively enlarging lesions. Ommaya reservoirs were placed into the abscess cavity and the frontal horn of the contralateral lateral ventricle. The patient was then treated with intracavitary/interstitial injections of amphotericin B during the course of 80 days and three doses of intraventricular amphotericin B. Clinical and radiographic

improvement was achieved after treatment. Two years after the initial diagnosis, magnetic resonance imaging of the brain showed no evidence of disease and an examination revealed a neurologically intact and fully functional patient. **CONCLUSION:** We concluded that with an infection as morbid as rhinocerebral mucormycosis, it is advisable to use surgical debridement and all available routes for delivering amphotericin B to infected cerebral parenchyma, which include intravenous, intracavitary/interstitial, and cerebrospinal fluid perfusion pathways. Author.

Health effects of passive smoking. 4. Parental smoking, middle ear disease and adenotonsillectomy in children. Strachan, D. P., Cook, D. G. Department of Public Health Sciences, St George's Hospital Medical School, London, UK. *Thorax* (1998) January, Vol. 53 (1), p. 50–6, ISSN: 0040–6376 51 Refs.

BACKGROUND: A systematic quantitative review was conducted of evidence relating parental smoking to acute otitis media, recurrent otitis media, middle ear effusion, and adenotonsillectomy and/or tonsillectomy. **METHODS:** Forty five relevant publications were identified after consideration of 692 articles selected by electronic search of the Embase and Medline databases using keywords relevant to passive smoking in children. The search was completed in April 1997 and identified 13 studies of acute otitis media, nine of recurrent otitis media, five of middle ear effusion, nine of glue ear surgery, and four of adenotonsillectomy. A quantitative meta-analysis was possible for all outcomes except acute otitis media, using random effects modelling where appropriate to pool odds ratios from each study. **RESULTS:** Evidence for middle ear disease is remarkably consistent, with pooled odds ratios if either parent smoked of 1.48 (95 per cent CI 1.08 to 2.04) for recurrent otitis media, 1.38 (1.23 to 1.55) for middle ear effusion, and 1.21 (0.95 to 1.53) for outpatient or inpatient referral for glue ear. Odds ratios for acute otitis media are in the range 1.0 to 1.6. No single study simultaneously addresses selection bias, information bias and confounding, but where these have been investigated or excluded in the design or analysis, the associations with parental smoking persist virtually unchanged. Large French and British studies are inconsistent with regard to the association of parental smoking and tonsillectomy. **CONCLUSIONS:** There is likely to be a causal relationship between parental smoking and both acute and chronic middle ear disease in children. Author.

Growth inhibition of fibroblasts from nasal polyps and normal skin by lysine acetylsalicylate. Bruzzese, N., Sica, G., Iacopino, F., Paludetti, G., Schiavino, D., Nucera, E., Scarano, E., Patriarca, G. Institute of Histology and Embryology, Catholic University of the Sacred Heart, Rome, Italy. *Allergy* (1998) April, Vol. 53 (4), p. 431–4, ISSN: 0105–4538.

Some authors have shown that lysine acetylsalicylate (LAS) may help prevent nasal polyp relapses. As some anti-inflammatory drugs have been found to regulate cell growth, we investigated the antiproliferative effect of LAS on fibroblasts derived from nasal polyps. Moreover, we studied the effect of LAS on the growth of fibroblasts derived from normal skin to determine whether the response was similar to that obtained in the above-mentioned cells. Fibroblasts were obtained from tissue samples of nasal polyps from two aspirin-tolerant and two aspirin-intolerant patients, and from the normal skin of a healthy donor. The cells were treated with LAS (20–2000 microg/ml of culture medium). Cell growth and viability were evaluated after 3 and 6 days of culture. LAS had a growth-inhibitory effect on cells independently of their derivation. A reduction in cell growth was seen at the concentrations of LAS tested, which correspond to those used in the local treatment of nasal polyposis. Author.

The radial forearm osteocutaneous 'sandwich' free flap for reconstruction of the bilateral subtotal maxillectomy defect. Cordeiro, P. G., Bacilio, N., Schantz, S., Spiro, R. Division of Plastic & Reconstructive Surgery, Memorial Sloan-Kettering Cancer Center, New York, NY 10021, USA. *Annals of Plastic Surgery* (1998) April, Vol. 40 (4), p. 397–402, ISSN: 0148–7043.

Complex resections of the maxilla produce a three-dimensional defect that can be difficult to reconstruct using autogenous tissue without utilizing a free tissue transfer. The osteocutaneous flaps that have been described for reconstruction of this area have been the scapula, iliac crest, and fibula, which are often hampered by their bulkiness and less than ideal intraoral lining. The bilateral

subtotal maxillectomy defect is particularly difficult to reconstruct because it requires restoration of the bony framework of the midface as well as the restoration of the palatal and nasal lining. We present a new technique for reconstruction of this type of defect using the osteocutaneous radial forearm free flap. Two patients with bilateral subtotal maxillectomy defects, in whom the entire hard palate and maxillary arch were resected, underwent primary reconstruction. The bone from the osteocutaneous flap was osteotomized and contoured to recreate the maxillary arch. The large skin island was folded around the bone, as in a sandwich, and used to replace the palatal and nasal lining. This sandwiched osteocutaneous flap allowed for secure fitting of a dental prosthesis and the future possibility of osteointegrated implants. Long-term stability of the bone without retrusion was achieved with an excellent functional and aesthetic outcome. The radial forearm osteocutaneous free flap is ideal for the reconstruction of the maxillary infrastructure in that (1) it provides bone and thin, pliable skin in the correct proportions; (2) the described 'sandwich' technique restores an excellent functional and aesthetic state; and (3) dental rehabilitation can be further improved by using either a prosthesis or osteointegrated implants. Author.

Facial palsy following trauma to the external ear: 3 case reports. Vogel, E., Jones, B. M. Plastic Surgery Unit, Wellington Hospital, London, UK. *British Journal of Plastic Surgery* (1997) December, Vol. 50 (8), p. 646–8, ISSN: 0007–1226.

We report two children and a young adult who developed unilateral facial palsy shortly after injury to the external ear. In two instances the paralysis followed a prominent ear correction and in the other a laceration to the concha. The trauma-triggered facial palsy was most likely idiopathic although the anatomy of the facial nerve near the ear leads one to speculate on a possible pathway of a virally induced palsy (Bell's palsy). Each patient recovered over a period of 6 months. Author.

T1/T2 glottic cancer managed by external beam radiotherapy: the influence of pretreatment hemoglobin on local control. Warde, P., O'Sullivan, B., Bristow, R. G., Panzarella, T., Keane, T. J., Gullane, P. J., Witterick, I. P., Payne, D., Liu, F. L. F., McLean, M., Waldron, J., Cummings, B. J. Department of Radiation Oncology, Princess Margaret Hospital, University of Toronto, Ontario, Canada. *International Journal of Radiation, Oncology, Biology and Physics* (1998) May 1, Vol. 41 (2), p. 347–53, ISSN: 0360–3016.

PURPOSE: Pretreatment hemoglobin (Hb) level has been reported to be an important prognostic factor for local control and survival in various malignancies. However, in many settings, the adverse effect of a low Hb may be related to more advanced disease. The purpose of this analysis was to assess the influence of pretreatment Hb on local control in a large series of patients with a localized cancer (T1/T2 glottic cancer, AJCC 1992) treated in a standard fashion. **MATERIALS AND METHODS:** Between January 1981 and December 1989, 735 patients (median age 63; 657 males, 78 females) with T1/T2 glottic cancer were treated with radiation therapy (RT). The standard RT prescription was 50 Gy in 20 fractions over a 4 weeks (97 per cent of patients). Factors studied for prognostic importance for local failure included pretreatment Hb, age, sex, T category, anterior commissure involvement, subglottic extension, and tumor bulk (presence of visible tumor vs. subclinical disease). **RESULTS:** With a median follow-up of 6.8 years (range 0.2–14.3), 131 patients have locally relapsed for an actuarial 5-year relapse-free rate of 81.7 per cent. The 5-year actuarial survival was 75.8 per cent. The mean pretreatment hemoglobin level was 14.8 g/dl and was similar in all prognostic categories. On multivariate analysis, using the Cox proportional hazards model, pretreatment Hb predicted for local failure after RT. The hazard ratio (HR) for relapse was calculated for various Hb levels. For example, the HR for a Hb of 12 g/dl vs. a Hb of 15 g/dl was 1.8 (95 per cent confidence interval 1.2–2.5). Previously established factors, including gender, T category, subglottic extension, as well as tumor bulk, were also prognostically important for local control. **CONCLUSIONS:** This analysis, in a large number of similarly treated patients, indicates that pretreatment Hb is an independent prognostic factor for local control in patients with T1/T2 carcinoma of the glottis treated with RT. The underlying biology of this observation needs to be explored, and using this information, it may be possible to develop strategies to improve treatment outcome. Author.

Repositioning accuracy: comparison of a noninvasive head holder with thermoplastic mask for fractionated radiotherapy and a case report. Sweeney, R., Bale, R., Vogege, M., Nevinny-Stickel, M., Bluhm, A., Auer, T., Hessenberger, G., Lukas, P. Department of Radiotherapy-Radiooncology, University Hospital Innsbruck, Austria. *International Journal of Radiology, Oncology, Biology and Physics* (1998) May 1, Vol. 41 (2), p. 475–83, ISSN: 0360–3016. **PURPOSE:** To compare accuracy, clinical feasibility, and subjective patient impression between a noninvasive head holder (Vogege Bale Hohner (VBH); Wellhoefer Dosimetry, Schwarzenbruck, Germany) developed at the University of Innsbruck and the thermoplastic mask fixation system for use in fractionated external radiotherapy. We present a case report of an actual patient fixated in the VBH head holder during radiation therapy. **MATERIALS AND METHODS:** The VBH head holder consists of an individualized vacuum dental cast connected to a head plate via two hydraulic arms allowing noninvasive, reproducible head fixation of even uncooperative patients. Accuracy was tested and compared with that of the thermoplastic mask using the Phillips EasyGuide navigation system on five volunteers. Specific external registration points served as landmarks and their positions were compared after each repositioning. System and operator inaccuracy were also taken into account. The times taken for production and repositioning of the respective fixation devices were compared, and subjective impressions were noted. **RESULTS:** Mean VBH head holder repositioning accuracy was 1.02 mm while that of the thermoplastic mask for 3.05 mm. Sixty-nine per cent of mask repositionings showed a deviation > 2 mm and 41 per cent > 3 mm (as opposed to 8 per cent and 1 per cent respectively for the VBH head holder). Those points located farthest away from the respective plane of fixation showed the largest deviations. Both production and repositioning times were similar between the systems; depending upon the patient, the VBH head holder was generally better tolerated than the mask system. **CONCLUSION:** Due to its significantly better repositioning accuracy compared to that of the thermoplastic mask, the VBH head holder is especially suited for external radiation requiring precise repositioning due to critical tissues in immediate surrounding of the area to be irradiated. Author.

Nasal congestion secondary to allergic rhinitis as a cause of sleep disturbance and daytime fatigue and the response to topical nasal corticosteroids. Craig, T. J., Teets, S., Lehman, E. B., Chinchilli, V. M., Zwillich, C. Allergy Clinic, Division of Medicine, Penn State University, Hershey, USA. *Journal of Allergy and Clinical Immunology* (1998) May, Vol. 101 (5), p. 633–7, ISSN: 0091–6749. **BACKGROUND:** Allergic rhinitis (AR) is a frequent disease affecting up to 20 per cent of the population. AR causes a hypersensitivity reaction, which results in inflamed nasal mucosa and nasal congestion. Negative pressure generated during inspiration in the nasal airway secondary to nasal congestion may lead to nasal collapse, airway obstruction, and an increased number of sleep microarousals. Sleep disturbances and microarousals can detrimentally affect daytime energy levels, mood, and daytime function. It is unknown whether treatment directed to reduce congestion may reduce these microarousals, sleep problems, and, consequently, associated daytime fatigue. **OBJECTIVE:** We sought to determine whether reducing nasal congestion with nasal steroids will reduce sleep complaints and daytime sleepiness. **METHOD:** We enrolled 20 subjects in a double-blind, placebo-controlled study using Balaam/s Design. Patients were treated with topical nasal corticosteroids or placebo. Subjective data were collected by use of a daily diary, which focused on nasal symptoms, and daytime sleepiness. **RESULTS:** The results demonstrated that nasal congestion and subjective sleep improved significantly in the topical corticosteroid-treated subjects but not in the placebo group. Sleepiness improved, but not significantly ($p=0.08$). **CONCLUSION:** Often, people with perennial allergies may attribute their daytime fatigue to causes such as the side effects of medications, when in fact, the fatigue may be a result of nasal congestion and associated sleep fragmentation. Decreasing nasal congestion with nasal steroids may improve sleep, daytime fatigue, and the quality of life of patients with AR. Author.

A surgical approach to extensive tumors in the pterygopalatine fossa extending into the maxillary sinus. Jian, X. C., Chen, X. Q., Wang, C. X. Department of Oral and Maxillofacial Surgery, Xiang

Ya Hospital, Hunan Medical University, Changsha, People's Republic of China. *Journal of Oral & Maxillofacial Surgery* (1998) May, Vol. 56 (5), p. 578–84, ISSN: 0278–2391.

PURPOSE: This article describes a surgical approach to extensive tumors in the pterygopalatine fossa extending into the maxillary sinus. **TECHNIQUE:** The Barbosa approach was modified by adding a lateral incision in the mandibular gingivobuccal fold from the canine tooth to the retromolar area. **RESULTS:** This technique allowed a large, inferiorly based flap to be raised, which includes the parotid gland. The masseter and temporalis muscles was divided horizontally, and the ascending ramus of the mandible was osteotomized between the mandibular angle and the sigmoid notch and reflected to expose the tumor in the pterygopalatine fossa and maxillary sinus. **CONCLUSION:** This technique is especially useful to tumors in the pterygopalatine fossa extending into the maxillary sinus. Authors.

Assessing occupational hearing loss: beyond noise exposures. Morata, T. C. National Institute for Occupational Safety and Health, Division of Biomedical and Behavioural Science, Cincinnati, Oh, USA. thais.morata@niwl.se. *Scandinavian Audiology Supplement* (1998) Vol. 48, p. 111–6, ISSN: 0107–8593 33 Refs. In recent years, findings that exposure to industrial chemicals may affect hearing and interact with noise brought to light a risk that had not been given substantial attention previously. The need for research becomes clear when the magnitude of the population of workers exposed to noise and chemicals and the number of potentially hazardous chemicals found in work environments are taken into consideration. The need for research in this area is further heightened by the fact that there are no guidelines or standards for combined exposures of chemical and physical agents. The present paper reviews the effects of combined exposures to chemicals and noise on hearing and examines study designs, hearing assessment alternatives, and strategies for the analysis of combined effects. Author.

Interaction of noise-induced hearing loss and presbycusis. Mills, J. H., Dubno, J. R., Boettcher, F. A. Department of Otolaryngology and Communicative Sciences, Medical University of South Carolina, Charleston, USA. millsjh@musc.edu. *Scandinavian Audiology Supplement* (1998) Vol. 48, p. 117–22, ISSN: 0107–8593. A medical-legal and scientific topic of longstanding interest is the interaction between presbycusis and noise-induced permanent threshold shift (NIPTS). Current medical-legal practices as well as international standard, ISO 1999 International Organization for Standards: Acoustics: Determination of Occupational Noise Exposure and Estimation of Noise-Induced Hearing Impairment. ISO 1999. Geneva, International for Standards, 1990 assume that NIPTS and hearing loss caused by the aging process add in dB. Results of laboratory studies with animals are inconsistent in their support of the 'additivity assumption'. When intense, short-duration exposures are used, the predictions of the combined effects of noise and age are too large. The additivity model appears to be supported with long-duration exposures, but we question the accuracy of such predictions. The animal studies reviewed here suggest that the allocation of hearing loss in an older individual into a noise component and an aging component is much more complex than 'additivity in dB'. Author.

The specific problems of noise in military life. Dancer, A., Buck, K., Parmentier, G., Hamery, P. French-German Research Institute of Saint-Louis, France. *Scandinavian Audiology Supplement* (1998) Vol. 48, p. 123–30, ISSN–0107–8593.

In military life, noise has unusual characteristics and constitutes a serious hazard for hearing. Hearing impairments due to the exposure to weapon noises represent an important prejudice for the health of many soldiers. A special attention is given to (i) the 'critical level', (ii) the frequency localization of the threshold shifts, (iii) the actual influence of the protective reflexes of the ear, (iv) the existence of delayed threshold shifts following impulse noise exposures, and (v) the interest of the medical treatment of the acoustic trauma. Damage risk criteria for weapon noises are compared: criteria using the (A-weighted) isoenergy principle represent the best present solution ($LA_{eq} = 85$ dB). Specific problems related to the use of hearing protection are also discussed. Author.

Audiological management of noise induced hearing loss. Arslan, E., Orzan, E. Department of Audiology and Phoniatrics, University of Padova, Italy. *Scandinavian Audiology Supplement* (1998) Vol. 48, p. 131–45, ISSN: 0107–8593 21 Refs.

Noise-induced hearing loss (NIHL) has no specific of exclusive audiological signs. The disorder is identified on the strength of a high probability conclusion and as a result of an exclusion process. Because of frequent legal purposes, audiometrical data measured and analyzed have furthermore to be as accurate and reliable as possible. The paper outlines the whole procedure involved in the audiological assessment of noise-induced hearing loss considering different stages for: suspicion and identification, hearing threshold measurement, etiological and differential diagnosis, apportionment. Author.

Perineural spread of head and neck tumors: how accurate is MR imaging? Nemzek, W. R., Hecht, S., Gandour-Edwards, R., Donald, P., McKennan, K. Department of Radiology, University of California Davis Medical Center, Sacramento 95817, USA. *American Journal of Neuro-Radiology* (1998) April, Vol. 19 (4), p. 701–6, ISSN: 0195–6108.

PURPOSE: Our aim was to determine the precision of MR imaging evaluation of perineural spread of head and neck tumors. **METHODS:** Nineteen patients had complete extirpation of head and neck tumors (10 squamous cell carcinomas, four adenoid cystic carcinomas, one poorly differentiated carcinoma, one salivary duct carcinoma, one mucoepidermoid carcinoma, one chordoma, and one meningioma) with histological confirmation of perineural spread. Findings at presurgical contrast-enhanced MR imaging were compared with findings at pathologic examination. **RESULTS:** The sensitivity of MR imaging for detection of perineural spread was 95 per cent; however, the sensitivity for mapping the entire extent of perineural spread fell to 63 per cent. **CONCLUSION:** MR imaging may fail to depict microscopic foci of perineural tumor infiltration, leading to underestimation of the extent of perineural spread. Nevertheless, with careful analysis of foraminal architecture and MR enhancement patterns, one can reliably identify the presence if not the extent of perineural spread. Author.

Interactions between the middle ear and the inner ear: bacterial products. Hellstrom, S., Eriksson, P. O., Yoon, Y. J., Johansson, U. Department of Otorhinolaryngology, University of Umea, Sweden. *Annals of the New York Academy of Sciences* (1997) December 29, Vol. 830, p. 110–9, ISSN: 0077–8923 33 Refs.

The round-window membrane (RWM) is extremely thin and is the only soft-tissue barrier between the middle ear and the inner ear. Under inflammatory conditions of the middle ear the various layers of the triple-layered RWM undergo characteristic changes parallel to the changes of the middle-ear mucosa. Several studies report that bacterial products, exo- and endotoxins, from bacteria invading the middle ear may result in profound inflammatory changes in the inner ear, followed by severe damage to the inner-ear function. The present review, in which we summarized experimental and clinical observations, on bacterial products in interactions between the middle and inner ear, focused on: 1. Bacteria and bacterial products in an inflamed middle ear that may influence inner-ear function. 2. RWM structure and RWM permeability under the influence of bacteria and bacterial products. 3. Morphological and functional inner-ear effects of bacterial infection of the middle ear, and the possible mechanisms involved. 4. Future studies to be directed in this field. Author.

Immune-mediated sensorineural hearing loss with or without endolymphatic hydrops: a clinical and experimental approach. Veldman, J. E. Department of Otorhinolaryngology, University Hospital Utrecht, The Netherlands. *Annals of the New York Academy of Sciences* (1997) December 29, Vol. 830, p. 179–86, ISSN: 0077–8923.

Since 1979, when McCabe first described a pattern of bilateral sensorineural hearing loss (SNHL) characterized by a rapid progression over days to weeks, the postulated autoimmune basis of this disease remains unknown. Various attempts have been made to develop the best assays that will clinically confirm the diagnosis and will help identify those patients who may respond to immunosuppressive therapy. The Western blot assay has now been widely applied by different research groups. It has been suggested

that antibody to the 69-kD protein is most closely associated with this disorder. Recent analyses suggest that the protein of interest is probably a heatshock protein (hsp 70) with this molecular weight. This disease pattern of rapidly progressive bilateral SNHL presents itself clinically as a different disease than endolymphatic hydrops with fluctuating SNHL, and it is most often associated with vertigo and roaring tinnitus. Meniere's disease may be also immune-mediated, but lacks an autoimmune basis. Its etiopathogenesis is different. A critical review of our own Western blot analyses from patients with either idiopathic rapidly progressive SNHL (N=33), sudden deafness (N=53), or other SNHL forms (N=71) is presented. Immunosuppressive treatment responses were evaluated. A new concept of immune-mediated endolymphatic hydrops was also further developed on the basis of recent experimental data and earlier clinical observations in order to focus on another aspect of this most intriguing inner-ear disease. Author.

The microbial ecology and immunology of the adenoid: implications for otitis media. Bernstein, J. M., Reddy, M. S., Scannapieco, F. A., Faden, H. S., Ballou, M. Department of Otolaryngology, School of Medicine and Biomedical Sciences, State University of New York at Buffalo 14222, USA. *Annals of the New York Academy of Sciences* (1997) December 29, Vol. 830, p. 19–31, ISSN: 0077–8923 17 Refs.

The nasopharyngeal tonsil, or adenoid, is a major inductive site for the synthesis of J-chain-positive B cells that may migrate to other area of the upper respiratory tract, such as the nasal mucosa, the parotid gland, the lacrimal gland, and the middle ear during inflammation. The production of secretory IgA by both the nasopharyngeal tonsil and the nasal mucosa plays a major role in local immune protection against bacterial and viruses. The release of cytokines from Th1 and Th2 lymphocytes must be appropriate for B cells to produce IgA. The factors or mechanisms responsible for this are not, at present, known, but it appears that there is a difference in the profiles of cytokine secretion by Th1 and Th2 lymphocytes in the adenoids in both otitis-prone, as well as nonotitis-prone children. We have suggested that if this specific immune system does not protect the host from invasion by potential pathogens, there are other modalities of therapy to protect the nasopharynx from colonization with pathogenic bacteria or viruses. These include the production of specific antibodies against bacterial surface proteins that have been identified as mucin-binding proteins. Alteration of the microbial flora with commensal organisms such as viridans streptococci can be utilized. These alpha-hemolytic streptococci probably function by producing an acid environment that prevents colonization of organisms such as nontypeable H. influenzae. Finally, the induction of specific SIgA by conserved outer membrane protein antigens of potential pathogens may be another strategy in the prevention of colonization of potential bacterial pathogens in the nasopharynx. Author.

Human autoantibodies and monoclonal antibody KHRI-3 bind to a phylogenetically conserved inner-ear-supporting cell antigen. Disher, M. J., Ramakrishnan, A., Nair, T. S., Miller, J. M., Telian, S. A., Arts, H. A., Sataloff, R. T., Altschuler, R. A., Raphael, Y., Carey, T. E. Department of Otolaryngology–Head and Neck Surgery, University of Michigan, Kresge Hearing Research Institute, Ann Arbor 48109-0506, USA. *Annals of the New York Academy of Sciences* (1997) December 29, Vol. 830, p. 253–65, ISSN: 0077–8923.

Autoimmunity is thought to be one cause of sensorineural hearing loss (SNHL). Sera from patients with rapidly progressive hearing loss have been shown to contain antibodies to a 68-kD protein in heterologous inner-ear tissue. Using guinea pig inner-ear tissue as the antigenic substrate and either Western blot or immunofluorescence (IF) or both, we tested sera from 74 patients suspected to have autoimmune hearing loss for inner-ear antibodies. Sera from 73 patients were tested by Western blot, and sera from 36 were tested by IF. Thirty-seven of 73 (51 per cent) had antibody to a 68–70-kD protein by Western blot. Sera positive by IF stained supporting cells with a staining pattern like that previously observed with the KHRI-3 monoclonal antibody. There was concordance between Western blot and IF assays. Of 36 patients tested by both assays, 29/31 (94 per cent) that were positive in Western blot were also positive by IF, three were negative by both tests, and two each were positive by one assay but negative by the

other. Absorption of patient sera with human inner-ear tissue removed antibody reactivity to the guinea pig supporting cells, indicating that the antigen detected by the autoantibody is also present in the human inner ear. Absorption with an equal volume of white or red blood cells from the tissue donor did not remove the antibody reactivity to inner ear, showing that the absorption by inner-ear tissue is specific. Sera from three patients positive in both assays also stained a 68-70-kD inner-ear protein immunoprecipitated by the KHRI-3-monoclonal antibody, indicating that the monoclonal and human antibodies recognize the same antigen. The results support the hypothesis that patients with autoimmune sensorineural hearing loss produce autoantibodies to an inner-ear supporting cell antigen that is phylogenetically conserved and defined by the murine monoclonal antibody KHRI-3. Since KHRI-3 can induce hearing loss after infusion into the inner ear, it is likely that autoantibodies with the same antigenic target are also pathogenic in humans. Author.

Induction of an inner-ear-specific autoreactive T-cell line for the diagnostic evaluation of an autoimmune disease of the inner ear. Gloddek, B., Gloddek, J., Arnold, W. Department of Otolaryngology-Head & Neck Surgery, Klinikum rechts der Isar der

Technischen Universität München, Germany. *Annals of the New York Academy Sciences* (1997) December 29, Vol. 830, p. 266-76, ISSN: 0077-8923.

Different patterns of sensorineural hearing loss with a potential improvement in auditory function following immunosuppressive therapy might be caused by an isolated autoimmune disease of the inner ear. Because of the lack of well-defined detection methods to identify autoimmune processes within the inner ear and the fact that the human inner ear is one of the few organs of the body not amenable to diagnostic biopsy, there has been great interest in developing animal models. Previous studies found evidence that this entity might be cellular mediated. By heterologous immunization of inbred Lewis rats with inner-ear tissue, an autoreactive inner-ear-specific T-cell line was established. After passive transfer of these cells, a labyrinthitis was induced in recipient animals. The experimental design can serve as an animal model for a cellular-mediated autoimmune disease of the inner ear. Further studies have to split the cochlear proteins and to identify the protein with the strongest autoimmunological potency. After biotechnical production of this protein, a clinical test to diagnose an autoimmune disease of the inner ear in man should be possible. Author.