

Abstract Selection

Corticosteroid response and supporting cell antibody in autoimmune hearing loss. Zeitoun H, Beckman J G, Arts H A, Lansford C D, Lee D S, El Kashlan H K, Telian S A, Denny D E, Ramakrishnan A, Nair T S, Disher M J, Sataloff R T, Fisher S G, Carey T E. Department of Otolaryngology/Head and Neck Surgery, University of Michigan, Ann Arbor, USA. *Archives of Otolaryngology–Head & Neck Surgery* (2005), Vol. 131 (8), pp. 665–72, ISSN: 0886 4470.

OBJECTIVE: To determine whether antibodies to supporting cells are associated with response to corticosteroids in patients with autoimmune sensorineural hearing loss. **DESIGN:** Prospective analysis of antibodies to inner-ear antigens. **SETTING:** Collaborating otology practices in Pennsylvania, Michigan and Indiana. **PATIENTS:** Sixty-three patients with rapidly progressive unilateral or bilateral sensorineural hearing loss of unknown cause suggestive of autoimmune sensorineural hearing loss. **INTERVENTIONS:** Pretreatment audiometry, serum analysis by Western blot (WB) and immunofluorescence (IF) tests, corticosteroid therapy and follow-up audiometry. **MAIN OUTCOME MEASURES:** Antibody reactivity and audiogram changes were analysed for association with response to treatment. **RESULTS:** More than half of the patients (37/63) had antibodies both to a 68- to 72-kDa protein and to inner-ear supporting cells, 16 patients had positive results on one assay only, and 10 had negative results on both. Twenty-eight patients improved and 35 did not. The WB findings did not correlate with response. Of the WB-positive patients, 49% (21/43) improved, as did 35% (7/20) of the WB-negative patients ($p = 0.30$). In contrast, 53% (25/47) of IF-positive patients improved, compared with only 19% (3/16) in the IF-negative group ($p = 0.02$). Of those who improved, 89% (25/28) were IF-positive. **CONCLUSIONS:** The presence of antibodies to an inner-ear supporting cell antigen was significantly associated with hearing improvement after corticosteroid therapy (relative rate, 2.8). Patients with IF-positive serum were nearly three times more likely to experience improved hearing with corticosteroid treatment than those who were IF negative. Testing for antibodies to inner-ear supporting cell antigen may have value in diagnosis and treatment of patients with autoimmune sensorineural hearing loss.

Sensory gating in the human hippocampal and rhinal regions. Boutros N N, Trautner P, Rosburg T, Korzyukov O, Grunwald T, Schaller C, Elger C E, Kurthen M. Department of Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, MI, USA. Nboutros@med.wayne.edu. *Clinical Neurophysiology* (2005), August, Vol. 116 (8), pp. 1967–74, ISSN: 1388 2457.

OBJECTIVE: The objective of this work was to ascertain whether sensory gating could be demonstrated within the human medial temporal lobe. **METHODS:** Eight patients with intractable epilepsy, with depth electrodes implanted in the medial temporal lobe for pre-surgery evaluation, underwent evoked response recording to auditory paired stimuli (S1–S2). Each of the eight subjects had a diagnosis of left medial temporal lobe epilepsy (MTLE). **RESULTS:** Data from the non-focal right hippocampi revealed a large negative response on S1 (starting at about 190 ms and lasting for approximately 300 ms from stimulus onset). Rhinal region recordings revealed a positive response (starting at about 240 ms with a rapid incline, followed by a long-lasting decline). A significant attenuation of both responses to S2 stimuli was observed. **CONCLUSIONS:** Data are suggestive of an involvement of the human medial temporal lobe in the processing of simple auditory information, which occurs over

a time frame later than the neocortical auditory-evoked components. The exact role of these anatomical structures in the sensory gating process remains to be defined. **SIGNIFICANCE:** This study provides the first evidence of an activation of the rhinal cortex after simple auditory stimulation and provides new evidence that the activation of the medial temporal lobe structures occurs at a later stage than that of the neocortex.

Orbital complications of functional endoscopic sinus surgery: MR and CT findings. Bhatt M T, Schmalfluss I M, Mancuso A A. Department of Ophthalmology, University of Florida College of Medicine, Gainesville, FL, USA. tbhatti@eye.ufl.edu. *Clinical Radiology* (2005), August, Vol. 60 (8), pp. 894–904, ISSN: 0009 9260.

AIM: To describe the radiological findings of ophthalmic complications during functional endoscopic sinus surgery (FESS) and correlate them with the clinical manifestations and mechanisms of injury. **METHODS:** This was a retrospective review of the clinical and cross-sectional imaging findings of nine patients with orbital complications during FESS. **RESULTS:** The most common site of entry into the orbit during FESS was the lower medial orbital wall (7 of 9), followed by the inferior orbital wall, resulting in injury to the medial rectus (4 of 9) and, less frequently, the inferior rectus (2 of 9) or superior oblique muscles (1 of 9). Extensive scarring on imaging (3 of 9) was associated with global ocular motility dysfunction. In contrast, localized scarring (3 of 9) or extraocular muscle trauma (6 of 9) resulted in disturbance of eye movement in the direction of gaze from the injured site. **CONCLUSIONS:** Orbital magnetic resonance and computed tomography findings correlated very well with the abnormal eye movements clinically observed, and can assist in clarifying the cause of injury and guide surgical corrective management for patients suffering orbital complications from FESS. Radiologists should be familiar with the recent developments in FESS instrumentation as well as with the most commonly injured structures within the orbit.

Mastoidectomy for acute otomastoiditis: our experience. Migirov L, Kronenberg J. Department of Otolaryngology–Head and Neck Surgery, Sheba Medical Center, Tel Aviv, Israel. smigirov@leumit.co.il. *Ear Nose & Throat Journal* (2005), April, Vol. 84 (4), pp. 219–22, ISSN: 0145 5613.

We conducted a retrospective study of 53 mastoidectomies in 51 patients with acute otomastoiditis. In 26 cases (49.1%) surgery had been performed within 48 hours of the development of symptoms. The most common complication of acute otomastoiditis was subperiosteal abscess, which occurred in 37 cases (69.8%). Intracranial complications were seen in six cases (11.3%). The most common pathogens isolated from the subperiosteal abscesses, the mastoid cavity and intracranial collections were streptococcus sp. and *Staphylococcus aureus*. In 14 cases (26.4%) conservative treatment failed to cure acute otomastoiditis; such cases should raise suspicion of a subperiosteal abscess, an underlying cholesteatoma or an infection caused by gram-negative bacteria. Upon hospital admission patients should receive antibiotics that are effective against both gram-positive and gram-negative organisms. Patients with intracranial complications or facial nerve paralysis may require a combination of two or more antibiotics. Long-term follow up is highly recommended.

Whiplash following rear end collisions: a prospective cohort study. Pobereskin L H. Department of Neurosurgery,

Derriford Hospital, Plymouth, UK. louis.pobereskin@phnt.swest.nhs.uk. *Journal of Neurology, Neurosurgery and Psychiatry* (2005), August, Vol. 76 (8), pp. 1146–51, ISSN: 0022 3050. **OBJECTIVE:** The purpose of this study was to investigate the factors which predict neck pain initially and at one year following a rear end collision. **METHODS:** All people who reported a rear end collision to the Devon and Cornwall constabulary were identified and formed the basis of the cohort. People were excluded if they were under 18 years of age or had suffered a head injury. The main outcome measures were neck pain lasting for more than a week after the accident and neck pain for at least one day a week at one year. Logistic regression was used to investigate associations between demographic and accident-related variables and outcomes. **RESULTS:** A total of 1147 people reported rear end collisions to the police during the study period and 503 (44%) agreed to take part in the study. Of the respondents 78% had neck pain lasting for more than a week and 52% still had pain at one year. Age (odds ratio, 95% confidence interval: 0.957, 0.942–0.972) and prior history of neck pain (8.32, 2.89–23.89) were the most important predictors of early neck pain. The most important predictors of pain at one year were the initial neck visual analogue scale (VAS) score (1.03, 1.01–1.05) and the presence of an ongoing compensation claim (4.09, 1.62–10.32). There was only weak evidence that measures of the severity of the impact were associated with outcomes. **CONCLUSION:** Demographic variables and the presence of a compensation suit showed the strongest correlation with acute and chronic neck pain following rear end collisions.

Use and abuse of cotton buds. Hobson J C, Lavy J A. Royal National Throat Nose & Ear Hospital, London, UK. jchobson@doctors.org.uk. *Journal of the Royal Society of Medicine* (2005), August, Vol. 98 (8), pp. 360–1, ISSN: 0141 0768. Ear injuries caused by cotton buds are commonly seen in ear, nose and throat (ENT) practice. We asked 1000 patients attending an ENT referral clinic whether they used cotton buds to clean the ear canal. Of the 325 who responded, 171 said they did. The frequency of use was no higher in those with ear complaints than in those with nose and other complaints. 15–20% of respondents disagreed with the statements that cotton buds can cause infections, wax impaction or perforations. On the evidence of this survey, manufacturers' warnings need to be fortified.

Nasopharyngeal carcinoma. Wei W L, Sham J S T. Department of Surgery, University of Hong Kong Medical Centre, Queen Mary Hospital, Hong Kong SAR, China. hrmswwi@hkucc.hku.hk. *Lancet* (2005), June 11–17, Vol. 365 (9476), pp. 2041–54, 177 refs, ISSN: 1474 547X.

Incidence of nasopharyngeal carcinoma has remained high in endemic regions. Diagnosing the disease in the early stages requires a high index of clinical acumen and, although most cross-sectional imaging investigations show the tumour with precision, confirmation is dependent on histology. Epstein–Barr virus (EBV)-encoded RNA signal is present in all nasopharyngeal carcinoma cells, and early diagnosis of the disease is possible through the detection of raised antibodies against EBV. The quantity of EBV DNA detected in blood indicates the stage and prognosis of the disease. Radiotherapy with concomitant chemotherapy has increased survival, and improved techniques (such as intensity-modulated radiotherapy), early detection of recurrence and application of appropriate surgical salvage procedures have contributed to improved therapeutic results. Screening of high-risk individuals in endemic regions, together with developments in gene therapy and immunotherapy, might further improve outcome.

Stereotactic radiosurgery, microsurgery, and expectant management of acoustic neuroma: basis for informed consent. Wackym P A. Department of Otolaryngology and Communication Sciences, Medical College of Wisconsin Milwaukee, Milwaukee, WI, USA. wackym@mcw.edu. *Otolaryngologic Clinics of North America* (2005) August, Vol. 38 (4), pp. 653–70, 36 refs, ISSN: 0030 6665.

There is diversity in the techniques and instrumentation used to perform stereotactic radiosurgery. The field continues to evolve rapidly and improvements are being made in accuracy, effective radiation dose, and parameters necessary to maximize patient outcome. Stereotactic radiosurgery, like any other treatment modality, has advantages and disadvantages that must be discussed with a patient who has an acoustic neuroma or other skull base tumor. An informed decision to pursue observation, microsurgery, stereotactic radiosurgery or a combination of these methods must be made, and it remains the responsibility of the surgeon to provide a balanced view of the relative advantages and disadvantages of each method.

Endoscopic transnasal transsphenoidal pituitary surgery – comparison with the traditional sublabial transeptal approach. Har E I G. State University of New York Downstate Medical Center, Brooklyn, NY, USA. *Otolaryngologic Clinics of North America* (2005), August, Vol. 38 (4), pp. 723–35, 21 refs, ISSN: 0030 6665.

The technique of endoscopic transnasal, nontranseptal, transsphenoidal pituitary surgery is gaining increasing popularity. Many pituitary surgical teams consider it the procedure of choice. It provides a rapid and safe approach to the sella turcica. Within the sella turcica, the endoscopes give the surgeon the ability to inspect around the corner and to remove residual tumor. The procedure avoids the complications related to the sublabial transeptal approach. Hospital stay is shorter.

Prevalence of pus in radiologically diseased sinuses in patients undergoing surgery for chronic rhinosinusitis. Robinson S, Der Haroutian V, Grove D, Rees G, Wormald P J. Department of Surgery–Otolaryngology, Head and Neck Surgery, University of Adelaide, Adelaide, South Australia, Australia. *Otolaryngology Head And Neck Surgery* (2005), August, Vol. 133 (2), pp. 181–4, ISSN: 0194 5998.

OBJECTIVE: To establish the prevalence of pus in radiologically diseased sinuses in patients undergoing sinus surgery and to correlate this with the bacterial load in the sinuses. **STUDY DESIGN AND SETTING:** A prospective study performed on adult patients with the diagnosis of chronic sinusitis undergoing endoscopic sinus surgery at an Adelaide group of academic hospitals. In 45 consecutive and unselected patients a radiologically diseased sinus was surgically opened and a specially designed suction aspirator was placed into the sinus under endoscopic control. These aspirates were Gram-stained and cultured to quantify the polymorphonuclear neutrophil count, bacterial flora and bacterial colony count. The CT scans of all patients were graded by using the Lund–Mackay scoring system. **RESULTS:** A variety of bacteria, most commonly staphylococci, were cultured from a radiologically diseased sinus in 88% of patients. There was no correlation between the bacterial colony count and presence of pus, and only 11% of patients had microscopic evidence of inflammation in sinus aspirates. There was no correlation between the Lund–Mackay CT score and the presence of pus in the sinus. **CONCLUSIONS:** The majority of patients undergoing surgery for chronic sinusitis did not have a purulent exudate and there was no correlation with the bacterial load. The usefulness of antibiotics in the treatment of chronic rhinosinusitis, in the absence of macroscopic pus, is questionable.

Penicillin reduces eustachian tube gland tissue changes in acute otitis media. Andersen H, Thomsen J, Caye T P. Department of Oto-rhino-laryngology, Head and Neck Surgery, Gentofte University Hospital of Copenhagen, Copenhagen, Denmark. *Otolaryngology Head and Neck Surgery* (2005), August, Vol. 133 (2), pp. 206–10, ISSN: 0194 5998.

OBJECTIVE: The volume of the mucous paratubal glands and the number of the mucus-producing goblet cells in the middle ear and eustachian tube (ET) are increased after experimental acute otitis media (AOM). The present investigation examines a potential effect of penicillin on the changes in goblet cell density and gland structures of the ET

during and after AOM. **STUDY DESIGN:** Middle ear inoculation of *Streptococcus pneumoniae* in 50 rats. Two days later, 25 rats were given penicillin V as one daily dose for five days. Twenty-five rats received no treatment. Five animals from each group were sacrificed on days 4, 8, 16, 90 and 180. The ET was dissected and decalcified, followed by paraffin embedding, serial transverse sectioning and PAS/alcian blue staining. The goblet cell density and the paratubal gland composition and volume were determined in every 20th section using a light microscope. **RESULTS:** Penicillin reduced the increase in goblet cell density from day eight and through six months, whereas the increase of the paratubal mucous gland volume was unaffected by treatment. **CONCLUSION:** We conclude that penicillin reduces the increase of ET goblet cell density during and after acute otitis media, whereas the paratubal gland volume remains unaffected. An increased mucosal secretory capacity and indicated excessive secretion of mucus may contribute to the deteriorated ET function found after AOM and thus predispose, sustain or aggravate middle ear disease. This may be prevented by penicillin treatment.

Bilateral congenital vocal cord paralysis: a 16-year institutional review. Miyamoto R C, Parikh S R, Gellad W, Licameli G R. Department of Otolaryngology and Communication Disorders, Children's Hospital Boston, Harvard Medical School, Boston, Massachusetts, USA. rcmiyamo@iupui.edu. *Otolaryngology Head and Neck Surgery* (2005), August, Vol. 133 (2), pp. 241–5, ISSN: 0194 5998.

OBJECTIVE: To review the management and outcome of bilateral congenital true vocal cord paralysis in 22 patients treated over a 16-year period and to review the role of tracheostomy in these patients. **DESIGN:** Retrospective chart review. **SETTING:** Pediatric tertiary hospital. **PATIENTS:** Twenty-two pediatric patients diagnosed with bilateral congenital true vocal cord paralysis. **INTERVENTIONS:** Flexible or rigid diagnostic evaluation, tracheostomy and vocal cord lateralization procedures. **MAIN OUTCOMES MEASURES:** Vocal cord recovery and decannulation. **RESULTS:** With a mean follow up of 50 months, 15 of 22 patients (68%) with bilateral vocal cord paralysis required tracheostomy for airway securement. Of the 15 tracheotomized patients, 10 were successfully decannulated (eight had a spontaneous recovery, whereas two required lateralization procedures). Eleven of these patients with tracheostomy had comorbid factors, including neurologic abnormalities (midbrain/brainstem dysgenesis, Arnold–Chiari malformation, global hypotonia and developmental delay). Of the seven patients not requiring tracheostomy, six recovered vocal cord function (86%). **CONCLUSION:** In our series of 22 patients with bilateral vocal cord paralysis, 14 had spontaneous recovery of function. Patients managed with tracheostomy were noted to have a high incidence of comorbid factors. In this series, recovery rates were found to be higher in nontracheostomized patients than in tracheostomized patients. Patients can be carefully selected for observation versus tracheostomy at the time of diagnosis based on underlying medical conditions.

Intratympanic steroid injection for treatment of idiopathic sudden hearing loss. Slattery W H, Fisher L M, Iqbal Z, Friedman R A, Liu N. House Ear Clinic, House Ear Institute, Los Angeles, California, USA. wslattery@hei.org. *Otolaryngology Head and Neck Surgery* (2005), August, Vol. 133 (2), pp. 251–9, ISSN: 0194 5998.

OBJECTIVE: To conduct a clinical trial of intratympanic steroid injection for idiopathic sudden sensorineural hearing loss in subjects who failed oral steroid therapy. **STUDY DESIGN AND SETTING:** Open-label methylprednisolone injection clinical trial in a tertiary neurotologic referral center. Twenty subjects (14 males, six females) received four injections within a two-week period (four days apart). Hearing, dizziness and tinnitus were evaluated before and after treatment. **RESULTS:** There were no serious unexpected adverse events and two types of expected adverse events (tympanic membrane perforation and nausea after injection). No increases in dizziness or tinnitus lasting longer than 24 hours were observed after injections. One of 20 (5%) improved to near-normal hearing. In addition, there was statistically significant

improvement in four-frequency pure-tone average and speech discrimination score at one month after treatment. **CONCLUSION:** Four intratympanic injections of methylprednisolone improved pure-tone average or speech discrimination scores for a subset of sudden hearing loss subjects that failed to benefit from oral steroids. **SIGNIFICANCE:** A clinical trial of intratympanic injections for idiopathic sudden hearing loss was successfully completed and promising results were found.

Spectrum of middle and inner ear abnormalities in infants with congenital heart defects. Ulualp S O, Wright C G, Roland P S. Department of Otolaryngology–Head and Neck Surgery, University of Texas Southwestern Medical Center, Dallas, TX, USA. *Otolaryngology Head and Neck Surgery* (2005), August, Vol. 133 (2), pp. 260–8, ISSN: 0194 5998.

OBJECTIVE: To evaluate temporal bone histopathology in infants with congenital heart defects (CHD). **STUDY DESIGN AND SETTING:** A retrospective review of our temporal bone collection was conducted to identify temporal bones acquired from infants with CHD. Subjects were divided into nonsyndromic and syndromic CHD groups. The presence of temporal bone abnormalities and the incidence of abnormalities that may result in hearing impairment were determined. **RESULTS:** Thirty-eight temporal bones obtained from 16 infants with nonsyndromic CHD and four with syndromic CHD were evaluated. Nonsyndromic CHD cases had abnormalities such as a mesenchymal remnant, malformed stapes, persistent stapedia artery, shallow round window, dehiscence facial nerve canal, short cochlea, stria basophilic deposits, deformity of the spiral ligament, bulging Reissner's membrane, hypoplastic lateral semicircular canal and cupular deposits. Syndromic CHD cases had abnormalities including narrow round window niche, facial canal dehiscence, stria basophilic deposits and cysts, and outer hair cell loss. Middle and inner ear abnormalities that may impair hearing were observed in six subjects with nonsyndromic CHD and in one subject with syndromic CHD. **CONCLUSIONS:** A wide variety of temporal bone defects were documented in infants with CHD. Congenital middle and inner ear abnormalities should be anticipated in the hearing assessment and otologic surgery of infants with CHD.

Diagnosis and management of lateral semicircular canal benign paroxysmal positional vertigo. White J A, Coale K D, Catalano P J, Oas J G. The Cleveland Clinic Foundation, Cleveland, Ohio, USA. whitej3@ccf.org. *Otolaryngology Head and Neck Surgery* (2005), August, Vol. 133 (2), pp. 278–84, ISSN: 0194 5998.

OBJECTIVE: Describe the diagnosis, treatment and outcome of a group of 20 patients with lateral semicircular canal benign paroxysmal positional vertigo (LSC-BPPV). **STUDY DESIGN AND SETTING:** Retrospective review of 20 patients with LSC-BPPV (10 with geotropic and 10 with apogeotropic nystagmus) presenting to a tertiary balance center. Diagnosis was confirmed with infrared nystagmography in Dix–Hallpike positioning tests and supine positional tests. Patients were treated with one or more particle repositioning maneuvers. **RESULTS:** Addition of supine positional nystagmus tests to Dix–Hallpike positioning testing improves sensitivity in the diagnosis of LSC-BPPV. Treatment outcomes in the apogeotropic LSC-BPPV group were poorer than the geotropic LSC-BPPV group. **SIGNIFICANCE:** Adding supine positional testing to routine vestibular diagnostic testing will increase the identification of LSC-BPPV. Apogeotropic LSC-BPPV is more challenging to treat.

Dexamethasone inner ear perfusion by intratympanic injection in unilateral Meniere's disease: a two-year prospective, placebo-controlled, double-blind, randomized trial. Garduno A M A, Couthino De Toledo H, Hinojosa G R, Pane P C, Rios Castaneda L C. Department of Neurotology, National Institute of Neurology and Neurosurgery, Mexico City, Mexico. mgardu@avantel.net. *Otolaryngology Head and Neck Surgery* (2005), August, Vol. 133 (2), pp. 285–94, ISSN: 0194 5998.

OBJECTIVE: To investigate the efficacy of dexamethasone inner ear perfusion by intratympanic injection in hearing

loss, tinnitus, aural fullness and vertigo in the treatment of unilateral Meniere's disease and compare it with the control group. **STUDY DESIGN AND SETTING:** A prospective, randomized, double-blind study with 2-year follow-up comparing changes secondary to dexamethasone inner ear perfusion versus placebo consisting of saline solution. **PATIENTS:** Twenty-two patients having definite Meniere's disease as outlined by the 1995 American Academy of Otolaryngology–Head and Neck Surgery Committee on Hearing and Equilibrium. All the patients were older than 18 years of age and were not receiving any other form of treatment with steroids for their Meniere's disease. **METHOD:** Five consecutive daily intratympanic injections of dexamethasone or placebo to the involved ear. **RESULTS:** In the dexamethasone group at 2-year follow-up, complete control of vertigo (class A) was achieved in 9 of 11 patients (82%) and substantial control of vertigo (class B) in the remaining 2 patients (18%). In the control group only 7 of 11 patients (64%) finished the 2-year follow-up because in the other 4 patients (36%) we had to give another treatment for the continuing vertigo and thus they were classified as failure (class F). From the 7 patients who finished the follow-up of 2 years in the control group, 4 patients (57%) achieved class A, 2 patients (29%) achieved class C and 1 patient (14%) class F. **CONCLUSIONS:** Dexamethasone (4 mg/ml) inner-ear perfusion in a group of patients with unilateral Meniere's disease (Shea's stage III) showed 82% of complete control of vertigo over placebo (57%). There was also a subjective improvement in tinnitus (48%), hearing loss (35%), and aural fullness (48%) in the dexamethasone group compared with 20%, 10% and 20% respectively in the control group.

Sensorineural hearing loss, early greying, and essential tremor: a new hereditary syndrome? Karmody C S, Blevins N H, Lalwani A K. Department of Otorhinolaryngology–Head and Neck Surgery, Tufts University School of Medicine, Boston, MA, USA. *Otolaryngology Head and Neck Surgery* (2005), July, Vol. 133 (1), pp. 94–9, ISSN: 0194 5998.

OBJECTIVE: To present a syndrome composed of sensorineural hearing loss, early greying of scalp hair, and adult-onset essential tremor. **STUDY DESIGN:** Retrospective chart review. **SETTING:** Tertiary care academic hospital. **RESULTS:** Three individuals were seen with this triad, each with family members with similar features. Our patients were a 65-year-old man and two women in their 40s. Two noted hearing loss in adulthood, one as a child. All had complete greying in their 20s. The women developed essential tremor in their 20s and the man in his 50s. All individuals had blue eyes without heterochromia. Additional evaluation failed to further categorize these patients. Each had two or more immediate family members with a combination of these findings. Molecular genetic testing suggested this was not a variant of Waardenburg syndrome. **CONCLUSION:** We believe this represents a previously unreported hereditary syndrome. **SIGNIFICANCE:** This new syndrome should be considered in the context of other syndromes involving hearing, pigmentation and movement.

Efficacy of the KTP laser in the treatment of middle ear cholesteatoma. Hamilton J W. Department of Otolaryngology, Gloucestershire Hospitals Trust, Gloucester, UK. john.hamilton@dial.pipex.com. *Otology & Neurotology* (2005), March, Vol. 26 (2), pp. 135–9, ISSN: 1531 7129.

OBJECTIVE: To evaluate whether ancillary use of the KTP (potassium titanyl phosphate) laser can diminish the rate of residual disease in intact canal wall cholesteatoma surgery. **STUDY DESIGN:** Prospective controlled parallel group study. **SETTING:** Two neighboring district general hospitals, one with a KTP laser and one without. **PATIENTS:** All patients undergoing staged intact canal wall surgery for cholesteatoma. **INTERVENTION:** Staged intact canal wall surgery for cholesteatoma. **MAIN OUTCOME MEASURE:** Presence or absence of residual disease at the second stage operation, performed at least 12 months after the first operation. **RESULTS:** Thirty-three patients underwent treatment without and 36 underwent treatment with the laser. Ten patients without laser treatment had residual disease,

whereas one patient had residual disease after laser treatment ($p = 0.003$). After adjustment using logistic regression, treatment still has a significant effect on outcome ($p = 0.013$). The number needed to treat is four. **DISCUSSION:** Ancillary use of the KTP laser in cholesteatoma surgery is a treatment that significantly improves complete removal of disease.

Pathology and pathophysiology of idiopathic sudden sensorineural hearing loss. Merchant S N, Adams J C, Nadol J B Jr. Otopathology Laboratory, Department of Otolaryngology, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, Massachusetts, USA. SaumiLmerchant@meei.harvard.edu. *Otology & Neurotology* (2005), March, Vol. 26 (2), pp. 151–60, ISSN: 1531 7129.

BACKGROUND: The cause and pathogenesis of idiopathic sudden sensorineural hearing loss remain unknown. Proposed theories include vascular occlusion, membrane breaks, and viral cochleitis. **AIMS:** To describe the temporal bone histopathology in 17 ears (aged 45–94 yr) with idiopathic sudden sensorineural hearing loss in our temporal bone collection and to discuss the implications of the histopathologic findings with respect to the pathophysiology of idiopathic sudden sensorineural hearing loss. **METHODS:** Standard light microscopy using hematoxylin and eosin-stained sections was used to assess the otologic abnormalities. **RESULTS:** Hearing had recovered in two ears and no histologic correlates were found for the hearing loss in both ears. In the remaining 15 ears, the predominant abnormalities were as follows: (1) loss of hair cells and supporting cells of the organ of Corti (with or without atrophy of the tectorial membrane, stria vascularis, spiral limbus, and cochlear neurons) (13 ears); (2) loss of the tectorial membrane, supporting cells, and stria vascularis (1 ear); and (3) loss of cochlear neurons only (1 ear). Evidence of a possible vascular cause for the idiopathic sudden sensorineural hearing loss was observed in only 1 ear. No membrane breaks were observed in any ear. Only 1 of the 17 temporal bones was acquired acutely during idiopathic sudden sensorineural hearing loss, and this ear did not demonstrate any leukocytic invasion, hypervascularity, or hemorrhage within the labyrinth, as might be expected with a viral cochleitis. **DISCUSSION:** The temporal bone findings do not support the concept of membrane breaks, perilymphatic fistulae, or vascular occlusion as common causes for idiopathic sudden sensorineural hearing loss. The findings in our one case, acquired acutely during idiopathic sudden sensorineural hearing loss, as well as other clinical and experimental observations do not strongly support the theory of viral cochleitis. **CONCLUSION:** We put forth the hypothesis that idiopathic sudden sensorineural hearing loss may be the result of pathologic activation of cellular stress pathways involving nuclear factor-kappaB within the cochlea.

Autoimmune-mediated sympathetic hearing loss: a case report. ten Cate W J F, Bachor E. Department of Otorhinolaryngology, University of Essen, Essen, Germany. wouter-jan.tencate@middlemore.co.nz. *Otology & Neurotology* (2005), March, Vol. 26 (2), pp. 161–5, ISSN: 1531-7129.

BACKGROUND: Damage to one inner ear is occasionally followed by contralateral sensorineural hearing loss. This has been defined as sympathetic hearing loss. **HYPOTHESIS:** It is hypothesized that autoimmunity can play a role in the pathogenesis of sympathetic hearing loss. **METHODS:** A male patient who developed right-sided sympathetic hearing loss at 20 years of age, 11 years after deafness of the left ear caused by a temporal bone fracture, is described. The patient's serum was analysed for the presence of autoantibodies against inner ear tissues by immunocytochemistry and Western blotting using rat inner ear tissues. The patient's serum was tested specifically for antibodies against heat shock protein 70 by immunodot blot. The presence of autoantibodies known to play a role in systemic autoimmune disease was also examined. **RESULTS:** Immunocytochemistry on rat temporal bone sections demonstrated autoantibodies in the patient's serum specifically targeted against cochlear outer hair cells. No reactivity of the patient's serum was observed with control tissues, including kidney, brain, and liver. Western blotting using homogenized rat cochlear tissues

showed that the patient's serum reacted with a 25- and 27-kDa protein. No reactivity was observed with heat shock protein 70 in the immunodot blot analysis. The patient's serum did not contain autoantibodies against antinuclear antibodies, double-stranded DNA, antineutrophil cytoplasmic antibodies, basement membrane, reticulin, intestinal mucosa, muscle, collagen, or mitochondria. **CONCLUSION:** Observations indicate that this patient suffered sympathetic hearing loss caused by organospecific autoimmunity directed to cochlear outer hair cells.

The inhibitory effect of intravenous lidocaine infusion on tinnitus after translabyrinthine removal of vestibular schwannoma: a double-blind, placebo-controlled, crossover study. Baguley D M, Jones S, Wilkins I, Axon P R, Moffat D A. Department of Neuro-Otology, Addenbrooke's Hospital, Cambridge, UK. dmb29@cam.ac.uk. *Otology & Neurotology* (2005), March, Vol. 26 (2), pp. 169–76, ISSN: 1531 7129.

OBJECTIVE: Intravenous infusion of lidocaine has previously been demonstrated to have a transient inhibitory effect on tinnitus in 60% of individuals. The site of action has variously been proposed as the cochlea, the cochlea nerve, and the central auditory pathways. To determine whether a central site of action exists, this study investigated the effect of intravenous infusion of lidocaine in individuals with tinnitus who had previously undergone translabyrinthine excision of a vestibular schwannoma, which involves division of the cochlear nerve. **STUDY DESIGN:** Double-blind, placebo-controlled, crossover study. **SETTING:** University hospital. **PATIENTS:** Patients who had undergone translabyrinthine removal of a unilateral, sporadic, and histologically proven vestibular schwannoma in the last decade and who had reported postoperative tinnitus at follow-up were identified from a departmental database. Sixteen patients participated (12 men and 4 women). The mean age (\pm standard deviation) of the patients was 58 ± 8.6 years, and the mean time since operation was 24.3 ± 7.3 months. **INTERVENTION:** Solutions of 2% lidocaine hydrochloride and 0.9% sodium chloride were prepared in identical randomized vials. The volume required for 1.5 ml/kg body weight lidocaine was calculated, and this volume was given over 5 minutes for either vial. Blood pressure, pulse oximetry, and cardiac monitoring were set up and performed throughout the infusions. All investigators were blinded. **OUTCOME MEASURES:** Patient-completed visual analogue scale measures of tinnitus intensity, pitch, and distress, performed before infusion, 5 minutes after infusion onset, and 20 minutes after infusion onset. **RESULTS:** A significant difference (Wilcoxon signed-rank test, $p < 0.05$) between placebo and lidocaine infusion conditions was demonstrated for change in visual analogue scale estimates (preinfusion versus 5 min postinfusion) of tinnitus loudness ($p = 0.036$), pitch ($p = 0.026$), and distress ($p = 0.04$). No significant difference between placebo and lidocaine infusion conditions was demonstrated for change in visual analogue scale estimates (preinfusion versus 20 min postinfusion) of tinnitus loudness ($p = 0.066$), pitch ($p = 0.173$), and distress ($p = 0.058$). The indication is of a short-lasting inhibitory effect on tinnitus of lidocaine infusion compared with saline placebo in patients who have undergone translabyrinthine excision of a vestibular schwannoma. **CONCLUSION:** Intravenous infusion of lidocaine has a statistically significant inhibitory effect on tinnitus in patients who have previously undergone translabyrinthine removal of a vestibular schwannoma. The site of action of lidocaine in this instance must be in the central auditory pathway, as the cochlear and vestibular nerves are sectioned during surgery, and this finding has important implications for the task of identifying other agents that will have a similar tinnitus-inhibiting effect.

Quality-of-life benefit from cochlear implantation in the elderly. Vermeire K, Brokx J P L, Wuyts F L, Cochet E, Hofkens A, Van de Heyning P H. Department of Otorhinolaryngology & Communication Disorders, University Hospital of Antwerp, Antwerp, Belgium. katrien.vermeire@uza.be. *Otology & Neurotology* (2005), March, Vol. 26 (2), pp. 188–95, ISSN: 1531 7129.

OBJECTIVE: To compare the audiologic results of geriatric patients receiving cochlear implants with younger age groups and to evaluate the quality of life after cochlear implantation in the geriatric population by means of validated quality-of-life questionnaires. **STUDY DESIGN:** Cross-sectional study involving 89 postlingually deafened cochlear implant subjects. **SETTING:** Tertiary referral center. **PATIENTS:** A total of 89 postlingually deafened patients were included in the study, among which were 25 patients who were aged 70 years or older. **INTERVENTIONS:** All patients received a cochlear implant. Subjects were implanted with either the Laura, Nucleus 24, or Med-el Combi 40+ cochlear implant systems implementing the SPEAK, ACE, CIS, or CIS+ coding strategies. **MEAN OUTCOME MEASURES:** Speech recognition was determined by means of phonetically balanced monosyllabic word lists. The Hearing Handicap Inventory for Adults, the Glasgow Benefit Inventory, and the scale for the prediction of hearing disability in sensorineural hearing loss were used to quantify the quality of life. **RESULTS:** Mean audiologic performance for the three groups increased significantly after implantation ($p < 0.001$). Postoperative audiologic performance of the geriatric population led to useful hearing, but these scores were significantly lower than for the younger age groups ($p = 0.002$). However, the quality-of-life outcomes for the geriatric group were similar to those of the younger age groups ($p = 0.411$ for the Hearing Handicap Inventory for Adults; $p = 0.886$ for the Glasgow Benefit Inventory). **CONCLUSION:** The results of this study prove that cochlear implantation in the elderly provides improvements in quality of life and speech understanding, similar to those for younger adult cochlear implant recipients.

The effects of mass loading the ossicles with a floating mass transducer on middle ear transfer function. Needham A J, Jiang D, Bibas A, Jeronimidis G, O'Connor A F. Department of Otolaryngology, Guy's and St Thomas Hospitals, London, UK. *Otology & Neurotology* (2005), March, Vol. 26 (2), pp. 218–24, ISSN: 1531 7129.

HYPOTHESIS: The aim of this study was to measure the mass loading effect of an active middle-ear implant (the Vibrant Soundbridge) in cadaver temporal bones. **BACKGROUND:** Implantable middle ear hearing devices such as Vibrant Soundbridge have been used as an alternative to conventional hearing aids for the rehabilitation of sensorineural hearing loss. Other than the obvious disadvantage of requiring middle ear surgery, it also applies a direct weight on the ossicular chain which, in turn, may have an impact on residual hearing. Previous studies have shown that applying a mass directly on the ossicular chain has a damping effect on its response to sound. However, little has been done to investigate the magnitude and the frequency characteristics of the mass loading effect in devices such as the Vibrant Soundbridge. **METHODS:** Five fresh cadaver temporal bones were used. The stapes displacement was measured using laser Doppler vibrometry before and after the placement of a Vibrant Soundbridge floating mass transducer. The effects of mass and attachment site were compared with the unloaded response. Measurements were obtained at frequencies between 0.1 and 10 kHz and at acoustic input levels of 100 dB sound pressure level. Each temporal bone acted as its own control. **RESULTS:** Placement of the floating mass transducer caused a reduction of the stapes displacement. There were variations between the bones. The change of the stapes displacement varied from 0 dB to 28 dB. The effect was more prominent at frequencies above 1,000 Hz. Placing the floating mass transducer close to the incudostapedial joint reduced the mass loading effect. **CONCLUSION:** The floating mass transducer produces a measurable reduction of the stapes displacement in the temporal bone model. The effect is more prominent at high frequencies.

Ferromagnetic movements of middle ear implants and stapes prostheses in a 3-T magnetic resonance field. Fritsch M H, Gutt J J. Department of Otolaryngology–Head and Neck Surgery, Indiana University School of Medicine, Indianapolis,

Indiana, USA. Mfritsch@iupui.edu. *Otology & Neurotology* (2005), March, Vol. 26 (2), pp. 225–30, ISSN: 1531 7129.

HYPOTHESIS: A 3-T magnetic resonance field may cause motion or displacement of middle ear implants not seen in studies with 1.5-T magnets. **BACKGROUND:** Previous publications have described the safety limitations of some otologic implants in 1.5-T magnetic resonance fields. Several company-wide recalls of implants were issued. No studies to date have been reported for otologic implants within a 3-T magnetic resonance field, nor have there been comparisons with a 1.5-T field strength. **METHODS:** Eighteen commonly used middle ear implants and prostheses were selected. In Part 1, the prostheses were placed in Petri dishes and exposed to a 3-T magnetic resonance field. In Part 2, the particular prostheses that showed movement in Part 1 were placed into their intended use positions within temporal bone laboratory specimens and exposed to a 3-T field. Both parts were repeated in a 1.5-T field. **RESULTS:** In Part 1, three prostheses moved dra-

matically from their start positions when exposed to the 3-T magnetic resonance field. In Part 2, the three particular prostheses that showed movement in Part 1 showed no gross displacement or movement from their start positions within the temporal bone laboratory specimens. No implants moved in the 1.5-T field in either Part 1 or Part 2. **CONCLUSION:** Certain stapes prostheses move dramatically in Petri dishes in 3-T fields. When placed into temporal bone laboratory specimens, the same prostheses show no signs of movement from the surgical site in a 3-T field, and it appears that the surgical position holds the implants firmly in place. Results of published 1.5-T field studies should not be used directly for safety recommendations in a 3-T magnetic resonance. Heat, voltage induction, and vibration during exposure to the magnetic resonance fields should be considered as additional possible safety issues. Preference should be given to platinum and titanium implants in manufacturing processes and surgical selection.

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