

Abstract Selection

Ulnar versus radial forearm flap in head and neck reconstruction: an experimental and clinical study. Sieg, P., Bierwolf, S. Department of Maxillo-Facial Surgery, Medical University of Luebeck, Klinik fuer Kiefer und Gesichtschirurgie, Universitaetsklinikum Ratzeburger Allee 160, 23538 Luebeck, Germany. Sieg@medinf.mu-luebeck.de. *Head & Neck* (2001) November, Vol. 23 (11), pp. 967–11.

BACKGROUND: To consider the pros and cons of the microvascular ulnar forearm flap compared with its radial counterpart, this study compares the use of these two flaps for head and neck reconstruction. **METHODS:** In 75 patients, 51 ulnar and 24 radial forearm flaps were used. Both groups were compared regarding flap dissection, suitability of the flap for the recipient region, complication rate, and secondary morbidity in the donor region. Furthermore, in 40 healthy volunteers, the thickness of the subcutaneous tissue layer was measured by use of ultrasonography. **RESULTS:** Flap survival rate, respectively wound healing, in the recipient region showed no differences. Clinical and experimental results demonstrated a thinner subcutaneous layer in the ulnar aspect of the forearm. Compared with its radial equivalent, closure of the ulnar donor side by skin grafting resulted in a significantly lower complication rate. **CONCLUSIONS:** The ulnar forearm flap is favoured because of the less hairy skin of the ulnar forearm region, the thinner layer of subcutaneous tissues, and the more conveniently located donor area. The ulnar forearm pedicle is long compared with alternative transplants but shorter than the radical equivalent.

Histopathology and molecular genetics of hearing loss in the human. Nadol, J. B. Jr, Merchant, S. N. Department of Otolaryngology and Laryngology, Harvard Medical School, Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston, MA 02114-3096, USA. joseph_nadol@meei.harvard.edu. *International Journal of Pediatric Otorhinolaryngology* (2001) October 19, Vol. 61 (1), pp. 1–15.

Hearing loss is among the most common disabilities of man. It has been estimated that over 70 million individuals in the world are hearing impaired with pure tone averages greater than 55 dB. A genetic etiology is thought to be responsible for over half of early onset hearing loss and at least one third of late onset hearing loss. In this review, examples of the histopathology of the inner ear in known genetic syndromes in the human will be presented in order to provide a structural basis for understanding molecular mechanisms of development and maintenance in the inner ear, and to serve the essential function of validating the applicability of animal genetic models of hearing loss to the human condition.

Prognostic factors of sudden hearing loss in children. Roman, S., Aladio, P., Paris, J., Nicollas, R., Triglia, J. M. Service d'ORL Pédiatrique, CHU Timone, 264 rue St Pierre, 13385 Cedex 15, Marseille, France. sroman@mail.ap-hm.fr. *International Journal of Pediatric Otorhinolaryngology* (2001) October 19, Vol. 61 (1), pp. 17–21.

OBJECTIVE: Sudden hearing loss in children under 15 years old is rare and its pathophysiology remains unclear. The aim of this retrospective study was to define prognostic factors of sudden hearing loss in children under 15 years old. **METHODS:** Among the patients referred to our institution during the period 1990–1999 for sudden hearing loss, 12 children were considered eligible for this study (mean age = 9.5 years old). Patients were divided into three groups according to hearing recovery and seven putative prognostic factors were analysed. **RESULTS:** Total hearing recovery (group I: 90–100 per cent) occurred in 28.5 per cent of cases, partial hearing recovery (group II: 11–89 per cent) occurred in 28.5 per cent of cases and absence of recovery (group III: 0–10 per cent) was reported in 43 per cent of cases. Factors such as age, sex, and bilaterality of hearing loss were not correlated with hearing recovery. **CONCLUSIONS:** Initial severe

hearing loss, associated vertigo and 'downward' audiometric curve were three negative prognostic factors of hearing recovery. Tinnitus has only been reported in children with partial or total hearing recovery.

Histological insight into the pathogenesis of severe laryngomalacia. Chandra, R. K., Gerber, M. E., Holinger, L. D. Department of Otolaryngology – Head and Neck Surgery, Children's Memorial Hospital, Northwestern University Medical School, Chicago, IL, USA. krchandra@aol.com. *International Journal of Pediatric Otorhinolaryngology* (2001) October 19, Vol. 61 (1), pp. 31–8.

OBJECTIVE: To correlate clinical and histological findings in patients with laryngomalacia who required surgical intervention. **METHODS:** Retrospective study of all patients undergoing supraglottoplasty by a single surgeon (MEG) for severe laryngomalacia between October, 1999 and November, 2000. **RESULTS:** Nine patients were identified, of which seven had clinical evidence of GER. Seven patients had co-existing abnormalities or delays of neuromuscular development including seizure disorder, agenesis of the corpus callosum, obstructive sleep apnea, primary aspiration, a history of apparent life-threatening events, and craniosynostosis. Varying degrees of subepithelial edema and significant dilation of the subepithelial lymphatics were noted in all specimens. Submucosal inflammation was minimal to mild, and intraepithelial inflammation was rare to absent in all sections. No submucosal gland hyperplasia was seen in the samples from any patient. Two specimens contained cuneiform cartilage, both of which were histologically characterized as fibrocartilage. **CONCLUSIONS:** In this series, the histopathology of tissue excised during the treatment of severe laryngomalacia was dominated by submucosal edema and lymphatic dilation. Further study is needed to investigate comorbidities that may contribute to the need for intervention in children with laryngomalacia.

Screening for auditory neuropathy in a school for hearing impaired children. Lee, J. S., McPherson, B., Yuen, K. C., Wong, L. L. Department of Speech and Hearing Sciences, University of Hong Kong, 5F, Prince Philip Dental Hospital, 34 Hospital Road, Hong Kong, China. *International Journal of Pediatric Otorhinolaryngology* (2001) October 19, Vol. 61 (1), pp. 39–46.

OBJECTIVE: Hearing loss in children may be due to a wide variety of pathologies. Recently, use of otoacoustic emission technology has led to identification of auditory neuropathy as a distinct hearing disorder. Children with auditory neuropathy require audiological and educational management that may differ from that required by other hearing impaired students. For this reason, screening for auditory neuropathy may be appropriate for children attending schools for the hearing impaired. The study investigated the utility of using otoacoustic emission measures for school screening of hearing impaired children. **METHODS:** In this study, 81 children aged six to 12 years who attended one school for the deaf were screened for indications of auditory neuropathy. Children found to have consistent otoacoustic emissions were given a full diagnostic audiological test battery. **RESULTS:** Two children had transient otoacoustic emission results indicating normal outer hair cell function in one or both ears. A follow-up diagnostic assessment for the two positive cases was strongly suggestive of auditory neuropathy. **CONCLUSIONS:** There is a need for routine auditory neuropathy screening at schools for hearing impaired children.

Communication development in young deaf children: review of the video analysis method. Tait, M., Lutman, M. E., Nikolopoulos, T. P. Nottingham Paediatric Cochlear Implant Programme, 113 The Ropewalk, NG1 6HA, Nottingham, UK. npcip@mail.qmcuh-tr.trent.nhs.uk. *International Journal of Pediatric Otorhinolaryngology* (2001) November 1, Vol. 61 (2), pp. 105–12.

It is widely recognized that preverbal communication skills

underpin development of spoken language. This historical review outlines the establishment of a quantitative methodology for assessing preverbal communication skills in children with hearing aids and cochlear implants. The method is shown to be reliable and free from observer bias. The review also summarises findings from a series of cross-sectional and longitudinal observational studies utilising the methodology. Profoundly deaf young children, either with cochlear implants or successful users of hearing aids, show similar patterns of preverbal communication development that contrast with those of unsuccessful hearing-aid users. Preverbal measures obtained 12 months after implantation are predictive of late performance on speech perception tasks. Moreover, there is a significant association between the preverbal measure of 'autonomy' obtained before implantation and later speech perception performance. This latter finding has important theoretical implications for understanding of language development and suggests that intervention that promotes autonomy in adult-child interaction may lead to improved outcomes. Such intervention could be commenced as soon as deafness is discovered.

The site of the hearing loss in Refsum's disease. Oysu, C., Aslan, I., Basaran, B., Baserer, N. Department of Otolaryngology, Taksim State Hospital for Education and Research, Istanbul, Turkey. coysu@doruk.net.tr. *International Journal of Pediatric Otorhinolaryngology* (2001) November 1, Vol. 61 (2), pp. 129–34.

Refsum's disease is a disorder of lipid metabolism with pigmentary retinopathy, demyelinating neuropathy, ataxia, and hearing loss. Previous histological studies have located the site of hearing impairment in the inner ear, but it has never been confirmed audiologically in the literature. In this reported case of Refsum's disease, despite hearing loss and absence of response in ABR, robust otoacoustic emissions were measured. Together with these and other audiological findings, we conclude that our case might be the first reported case of Refsum's disease with auditory neuropathy. The site of the hearing abnormality in Refsum's disease may be 'post-outer hair cells' in some cases as in the current case. Because of their limited benefits and risk of noise-induced damage to outer hair cells, the use of hearing aids before opportunistic emission measurements should be considered cautiously in Refsum's disease.

A comparison of cortisporin and ciprofloxacin otic drops as prophylaxis against post-tympanostomy otorrhea. Morpeth, J. F., Bent, J. P., Watson, T. Medical College of Georgia, Department of Surgery/Division of Otolaryngology, Augusta, GA, USA. *International Journal of Pediatric Otorhinolaryngology* (2001) November 1, Vol. 61 (2), pp. 99–104.

Myringotomy and tube insertion, a common pediatric surgical procedure, is frequently complicated by purulent otorrhea. Many otolaryngologists routinely use topical antibiotics as prophylaxis against post-tympanostomy otorrhea. The aminoglycosides (neomycin sulfate, tobramycin and gentamicin) contained in commonly used topical antibiotics as well as components of the solutions have been shown to be ototoxic in animal studies. Although little reported evidence of ototoxicity in humans exists, sporadic reports of sensorineural hearing loss linked to topical antibiotic use do exist, and the potential for sensorineural hearing loss must be considered. The purpose of this study is to compare the rate of post-tympanostomy otorrhea in a double-blinded randomized trial using either topical Ciprofloxacin, with no reported ototoxicity, or Cortisporin as prophylaxis. One hundred patients (200 ears) between ages seven months and 11 years with a diagnosis of recurrent otitis media or chronic otitis media undergoing tympanostomy tube insertion were randomized into two equal groups. Three drops of either drop A or B were placed into each ear at the time of tube insertion and then three times daily for three days. Patients were examined at three weeks and details of otorrhea were obtained. The rate of otorrhea was analysed using chi-square. The overall rate of otorrhea was 39 ears (19.5 per cent), 17 (17 per cent) ears for the Cortisporin group and 22 (22 per cent) for the Ciprofloxacin group. The difference in rate of otorrhea was not statistically significant ($p = 0.372$, 95 per cent confidence interval equals -six to 16 per cent). Our data suggest that topical Cortisporin offers no benefit over Ciprofloxacin for post-operative otorrhea prophylaxis. Therefore we recommend topical quinolone prophylaxis, which should eliminate concerns about ototoxicity, without sacrificing efficacy.

Paediatric coblation tonsillectomy. Temple, R. H., Timms, M. S. Department of Otolaryngology, Blackburn Royal Infirmary, Blackburn, Lancashire BB2 3LR, UK. r.temple@talk21.com. *International Journal of Pediatric Otorhinolaryngology* (2001) December 1, Vol. 61 (3), pp. 195–8.

OBJECTIVE: Tonsillectomy has been described using a number of techniques. Recently Coblation Technology has been used to remove tonsils with anecdotal evidence of a reduction in post-operative morbidity. In this study we aim to see if there is any difference in post-operative pain, tonsillar fossae healing and return to a normal diet performing tonsillectomy, using tissue coblation compared with standard bipolar dissection. **METHODS:** A double blind randomized control trial to compare the technique of tissue coblation with standard bipolar dissection to remove tonsils in 38 children on the waiting list for tonsillectomy, with a history of chronic tonsillitis or obstructive tonsils. **RESULTS:** A significant reduction in post-operative pain was found in the children whose tonsils were removed by tissue coblation ($P0.0001$). More rapid healing of the tonsillar fossae was found in the coblation group. Children who had their tonsils removed by coblation were found to return to their normal diet far sooner than those who underwent bipolar dissection. There were no episodes of primary or secondary haemorrhage in either group. **CONCLUSIONS:** This new technique using tissue coblation for tonsil removal offers significant advantages in the post-operative period, with rapid return to a normal diet and a drastic reduction in analgesic requirements following the surgery.

Potential role of intensity-modulated radiotherapy in the treatment of tumours of the maxillary sinus. Adams, E. J., Nutting, C. M., Convery, D. J., Cosgrove, V. P., Henk, J. M., Dearnaley, D. P., Webb, S. Joint Department of Physics, Institute of Cancer Research and the Royal Marsden NHS Trust, Sutton, Surrey, UK. eliza@icr.ac.uk. *International Journal of Radiation Oncology, Biology, Physics* (2001) November 1, Vol. 51 (3), pp. 579–88.

PURPOSE: To assess three-dimensional conformal radiotherapy (3D-CRT) and intensity-modulated radiotherapy (IMRT) techniques to see whether doses to critical structures could be reduced while maintaining planning target volume (PTV) coverage in patients receiving conventional radiotherapy (RT) for carcinoma of the maxillary sinus because of the risk of radiation-induced complications, particularly visual loss. **METHODS AND MATERIALS:** Six patients who had recently received conventional RT for carcinoma of the maxillary sinus were studied. Conventional RT, 3D-CRT, and step-and-shoot IMRT plans were prepared using the same two-field arrangement. The effect of reducing the number of segments in the IMRT beams was investigated. **RESULTS:** 3D-CRT and IMRT reduced the brain and ipsilateral parotid gland doses compared with the conventional plans. IMRT reduced doses to both optic nerves; for the contralateral optic nerve, 15-segment IMRT plans delivered an average maximal dose of 56.4 Gy (range 53.9–59.3) compared with 65.7 Gy (range 65.3–65.9) and 64.2 Gy (range 61.4–65.6) for conventional RT and 3D-CRT, respectively. IMRT also gave improved PTV homogeneity and improved coverage, with an average of 8.5 per cent (range 7.0–11.7 per cent) of the volume receiving 95 per cent of the prescription dose (64 Gy) compared with 14.7 per cent (range 14.1–15.9 per cent) and 15.1 per cent (range 14.4–16.1 per cent) with conventional RT and 3D-CRT, respectively. Little difference was found between the 15 and seven-segment plans, but five segments resulted in a reduced minimal PTV dose. **CONCLUSIONS:** IMRT offers significant advantages over conventional RT and 3D-CRT techniques for treatment of maxillary sinus tumours. Good results can be obtained from seven segments per beam without compromising the PTV coverage. This number of segments is practical for implementation in a busy RT department.

Exchange dynamics of nitric oxide in the human nose. Chambers, D. C., Carpenter, D. A., Ayres, J. G. Department of Respiratory Medicine, Birmingham Heartlands Hospital, Birmingham B9 5SS, United Kingdom. *Journal of Applied Physiology* (2001) November, Vol. 91 (5), pp. 1924–30.

Nasal nitric oxide (NO) exchange dynamics are poorly understood but potentially are of importance, inasmuch as they may provide insight into the NO-related physiology of the bronchial tree. In healthy human volunteers, NO output was assessed by isolating the nasal cavity through elevation of the soft palate and application of tight-fitting nasal olives. Mean NO output was 334

nl/min and was a positive function of gas flow. With the use of a mathematical model and the introduction of nonzero concentrations of NO, the diffusing capacity for NO in the nose (DNO) and the mucosal NO concentration (Cw) were determined. DNO ranged from 0.52 to 2.98×10^{-3} nl \times s⁻¹ \times ppb⁻¹ and Cw from 1,236 to 8,947 ppb. Cw declined with luminal hypoxia, particularly at oxygen tensions 10 per cent. Measurement of nasal DNO and Cw is easy using this method, and the range of intersubject values of Cw raises the possibility of interindividual differences in NO-dependent nasal physiology.

Hearing restoration with auditory brainstem implants after radio-surgery for neurofibromatosis type 2. Kalamarides, M., Grayeli, A. B., Bouccara, D., Dahan, E. A., Sollmann, W. P., Sterkers, O., Rey, A. Department of Neurosurgery and Otolaryngology, Hôpital Beaujon, Faculté Xavier Bichat, Université Paris 7, France. michel.kalamarides@bjn.ap-hop-paris.fr. *Journal of Neurosurgery* (2001) December, Vol. 95 (6), pp. 1028–33.

The auditory brainstem implant (ABI) is designed to restore useful auditory sensations in patients with neurofibromatosis Type 2 (NF2). The implantation is usually performed at the time of tumour removal in patients who do not undergo radiation treatment. The authors evaluated the performance of ABIs in three patients with NF2 in whom vestibular schwannoma continued to grow after radiation treatment. These three patients with NF2 received a 21-channel ABI; a translabyrinthine approach was used for both the tumour removal and the ABI placement. The interval between radiosurgery and the tumour removal plus device implantation ranged from two to 11 years. In all cases, the tumour was growing and the patients presented with total deafness. The mean number of active electrodes in these three patients was equivalent to the average results reported in other patients who received ABIs. The patients in this study used the ABI regularly for everyday life and obtained useful levels of environmental sound recognition. It is concluded that hearing function can be rehabilitated using ABIs in patients with NF2, even if radiosurgery fails to control the tumour growth.

Vasoactive treatment for hearing preservation in acoustic neuroma surgery. Strauss, C., Bischoff, B., Neu, M., Berg, M., Fahlbusch, R., Romstock, J. Department of Neurosurgery, University of Erlangen-Nuremberg, Erlangen, Germany. christian.strauss@neurochir.med.uni-erlangen.de. *Journal of Neurosurgery* (2001) November, Vol. 95 (5), pp. 771–7.

OBJECT: Delayed hearing loss following surgery for acoustic neuroma indicates anatomical and functional preservation of the cochlear nerve and implies that a pathophysiological mechanism is initiated during surgery and continues thereafter. Intraoperative brainstem auditory evoked potentials (BAEPs) typically demonstrate gradual reversible loss of components in these patients. METHODS: Based on this BAEP pattern, a consecutive series of 41 patients with unilateral acoustic neuromas was recruited into a prospective randomized study to investigate hearing outcomes following the natural postoperative course and recuperation after vasoactive medication. Both groups were comparable in patient age, tumour size, and preoperative hearing level. Twenty patients did not receive postoperative medical treatment. In 70 per cent of these patients anacusis was documented and in 30 per cent hearing was preserved. Twenty-one patients were treated with hydroxyethyl starch and nimodipine for an average of nine days. In 66.6 per cent of these patients hearing was preserved and in 33.3 per cent anacusis occurred. CONCLUSIONS: These results are statistically significant (P 0.05, $\chi^2 = 5.51$) and provide evidence that these surgically treated patients suffer from a disturbed microcirculation that causes delayed hearing loss following removal of acoustic neuromas.

Firefighters' hearing: a comparison with population databases from the International Standards Organization. Kales, S. N., Freyman, R. L., Hill, J. M., Polyhronopoulos, G. N., Aldrich, J. M., Christiani, D. C. Cambridge Health Alliance, Cambridge, MA, USA. stefokali@aol.com. *Journal of Occupational and Environmental Medicine* (2001) July, Vol. 43 (7), pp. 650–6.

We investigated firefighters' hearing relative to general population data to adjust for age-expected hearing loss. For five groups of male firefighters with increasing mean ages, we compared their hearing thresholds at the 50th and 90th percentiles with normative and age- and sex-matched hearing data from the International

Standards Organization (databases A and B). At the 50th percentile, from a mean age of 28 to a mean age of 53 years, relative to databases A and B, the firefighters lost an excess of 19 to 23 dB, 20 to 23 dB, and 16 to 19 dB at 3000, 4000, and 6000 Hz, respectively. At the 90th percentile, from a mean age of 28 to a mean age of 53 years, relative to databases A and B, the firefighters lost an excess of 12 to 20 dB, 38 to 44 dB, 41 to 45 dB, and 22 to 28 dB at 2000, 3000, 4000, and 6000 Hz, respectively. The results are consistent with accelerated hearing loss in excess of age-expected loss among the firefighters, especially at or above the 90th percentile. Grant ID: ES0002, Acronym: ES, Agency: NIEHS. Grant ID: ES05957, Acronym: ES, Agency: NIEHS. Grant ID: 0H00156, Acronym: OH, Agency: NIOSH. Grant ID: 0H03729, Acronym: OH, Agency: NIOSH.

Early proactive management of vestibular schwannomas in neurofibromatosis type 2. Brackmann, D. E., Fayad, J. N., Slattery, W. H. 4rd, Friedman, R. A., Day, J. D., Hitselberger, W. E., Owens, R. M. House Ear Clinic and House Ear Institute, Los Angeles, California 90057, USA. *Neurosurgery* (2001) August, Vol. 49 (2), pp. 274–80; discussion 280–3.

OBJECTIVE: The treatment of patients with neurofibromatosis type 2 has always been challenging for neurosurgeons and neurootologists. Guidelines for appropriate management of this devastating disease are controversial. METHODS: A retrospective study of 28 patients with neurofibromatosis Type 2 who underwent 40 middle fossa craniotomies for excision of their acoustic tumours is reported. Eleven patients underwent bilateral procedures. The study focused on hearing preservation and facial nerve results for this group of patients. The 16 male patients and 12 female patients ranged in age (at the time of surgery) from 10 to 70 years, with a mean age of 22.6 years. The mean tumour size was 1.1 cm (range, 0.5–3.2 cm), and the majority of tumours were less than 1.5 cm. RESULTS: Measurable hearing was preserved in 28 ears (70 per cent), with 42.5 per cent being within 15 dB pure-tone average and 15 per cent speech discrimination score of preoperative levels. In 55 per cent of cases there was no change in the hearing class, as defined by the American Academy of Otolaryngology – Head and Neck Surgery. Of the 11 hearing bilaterally. After one-year follow-up periods (mean, 12.8 mo), 87.5 per cent of patients exhibited normal facial nerve function (House-Brackmann Grade I). CONCLUSION: Early surgical intervention to treat acoustic tumours among patients with neurofibromatosis Type 2 is a feasible treatment strategy, with high rates of hearing and facial nerve function preservation.

Diving after stapedectomy: clinical experience and recommendations. House, J. W., Toh, E. H., Perez, A. Clinical Studies Department, House Ear Clinic and Institute, 2100 West Third Street, Los Angeles, CA 90057, USA. *Otolaryngology – Head and Neck Surgery* (2001) October, Vol. 125 (4), pp. 356–60.

OBJECTIVES: Much controversy exists concerning the risk of inner ear barotrauma after stapes surgery in scuba and sky divers. Uniform consensus has not been established regarding poststapedectomy barorestrictions. The purpose of this study was (1) to determine the prevalence of adverse auditory and/or vestibular sequelae in patients after stapedectomy related to scuba and sky diving, and (2) to offer recommendations on barometric exposure after stapes surgery. STUDY DESIGN: Survey questionnaires were mailed to 2222 patients who had undergone stapedectomies at a single tertiary otologic referral center between 1987 and 1998. Two hundred eight of the initial 917 respondents (22.7 per cent) had snorkeled, scuba, or sky dived after stapes surgery, and 140 of these responded to a second questionnaire detailing dive protocols, otologic symptoms, and their relationship to the diving activities. Of the 140, 28 had scuba or sky dived. Their survey data were analysed and their medical records were reviewed. RESULTS: Four of the 22 scuba divers (18.1 per cent) experienced otologic symptoms at the time of diving. These included otalgia on descent (3/22; 13.6 per cent), tinnitus (1/22; 4.5 per cent) and transient vertigo on initial submersion (1/22; 4.5 per cent). One patient had sudden sensorineural hearing loss and vertigo develop three months after scuba diving, which he related to noise exposure. He was subsequently found to have a perilymph fistula, which was successfully repaired. Of the nine patients who sky dived, two patients (22.2 per cent) reported otologic symptoms during the dive. No significant diving-related long-term effects indicative of labyrinthine injury were seen in any of the 28

patients. **CONCLUSIONS:** Stapedectomy does not appear to increase the risk of inner ear barotrauma in scuba and sky divers. These activities may be pursued with relative safety after stapes surgery, provided adequate eustachian tube function has been established.

Proton pump inhibitor resistance in the treatment of laryngopharyngeal reflux. Amin, M. R., Postma, G. N., Johnson, P., Digges, N., Koufman, J. A. Department of Otolaryngology, MCP/Hahnemann School of Medicine, Two Logan Square, Philadelphia, PA 19103, USA. mamin@drexel.edu. *Otolaryngology – Head and Neck Surgery* (2001) October, Vol. 125 (4), pp. 374–8.

OBJECTIVE: To describe the occurrence of relative proton pump inhibitor (PPI) drug resistance in the treatment of laryngopharyngeal reflux (LPR). **STUDY DESIGN AND SETTING:** A retrospective review was performed for 1053 consecutive adults undergoing double-probe (simultaneous esophageal and pharyngeal) pH testing in our laboratory. Two hundred five patients who had pH studies performed while taking at least a daily dose of PPI therapy were identified; 167 qualified for further analysis. The pH data was reviewed for the presence of abnormalities in either esophageal or pharyngeal acid exposure to evaluate drug efficacy. **RESULTS:** Forty-four per cent (74/167) of the study patients demonstrated abnormal levels of acid exposure. Results were further analysed to compare failure rates based on different dosage regimens. Patients on once daily doses of PPI failed at a rate of 56 per cent, with lower failure rates for higher-dose regimens. **CONCLUSIONS:** A significant number of LPR patients on PPI therapy demonstrate relative drug resistance.

Determination of the 'incidental' Lund score for the staging of chronic rhinosinusitis. Ashraf, N., Bhattacharyya, N. Division of Otolaryngology, Brigham and Women's Hospital, Boston, MA 02115, USA. *Otolaryngology – Head and Neck Surgery* (2001) November, Vol. 125 (5), pp. 483–6.

OBJECTIVE: Determine normative values for the Lund score for computed tomographic (CT) scans of the paranasal sinuses. **METHODS:** Patients undergoing CT of the paranasal sinus region for nonsinusitis causes were evaluated and staged according to the Lund-MacKay system. Complete and near complete Lund scores were computed from these scans and the frequencies of incidental paranasal abnormalities were tabulated. **RESULTS:** A total of 199 patients who underwent CT scans of the internal auditory canals, pituitary, or orbits demonstrated adequate visualization of the paranasal sinuses. In 91 patients, the imaging was sufficient to compute a complete Lund score with a mean of 4.26 (95 per cent CI, 3.43 to 5.10). In 130 patients, all sinuses were adequately imaged except for the ostiomeatal complex. For this near complete group, the mean prorated Lund score was 4.26 (95 per cent CI, 3.55 to 4.97). Both of these scores differed significantly from an expected score of zero (P 0.001). **CONCLUSIONS:** The Lund score in the general population is not zero. A Lund score ranging from zero to five may be considered within an incidentally 'normal' range, and should be factored into clinical decision-making.

The role of Helicobacter pylori infection in the cause of squamous cell carcinoma of the larynx. Aygenc, E., Selcuk, A., Celikkanat, S., Ozbek, C., Ozdem, C. Ankara Numune Hospital, 2nd Otorhinolaryngology – Head and Neck Surgery Department, Izmir, Turkey. eygenc@turk.net. *Otolaryngology – Head and Neck Surgery* (2001) November, Vol. 125 (5), pp. 520–1.

OBJECTIVE: Helicobacter pylori can cause chronic infection that has been linked to the development of both benign and malignant disease of the aerodigestive tract. The purpose of this study was to determine the link between H pylori infection and squamous cell carcinoma of the larynx (SCCL). **METHODS:** We estimated the presence of IgG antibodies against H pylori antigens by using ELISA technique in the sera of 26 patients with SCCL and 32 matched controls without carcinoma of the larynx. **RESULTS:** The incidence of seropositivity of patients with SCCL was 73.07 per cent and of controls was 40.62 per cent. These data support an etiologic role for H pylori infection on development of SCCL ($\chi^2 = 4.85$, P 0.05). **CONCLUSION:** H pylori infection of the upper aerodigestive tract might result in mucosal disruption, allowing for subsequent transformation by known carcinogens such as tobacco and alcohol.

Hearing preservation in patients with vestibular schwannomas with sudden sensorineural hearing loss. Friedman, R. A., Kesser, B. W., Slattery, W. H. 3rd, Brackmann, D. E., Hitselberger, W. E. House Ear Clinic and House Ear Institute, the Piedmont Ear, Nose and Throat Associates, Los Angeles, CA 90057, USA. rfriedman@hei.org. *Otolaryngology – Head and Neck Surgery* (2001) November, Vol. 125 (5), pp. 544–51.

OBJECTIVE: We evaluated hearing outcomes in patients with sudden hearing loss and vestibular schwannoma who underwent a hearing preservation operation for tumour resection in an effort to determine whether a history of sudden sensorineural hearing loss has an impact on subsequent hearing preservation surgery. **METHODS:** Retrospective chart review of 45 patients operated between 1990 and 1998. Patients were divided into 'Recovery' (n = 22) and 'No Recovery' (n = 23) groups based on preoperative hearing recovery. Hearing preservation was assessed using the AAO-HNS hearing classification system. **RESULTS:** Measurable hearing was preserved in 73 per cent of patients, with 47 per cent having good postoperative hearing loss (45 per cent Classes A–B). There was also no difference in postoperative hearing between the 'Recovery' and 'No Recovery' groups. **CONCLUSIONS:** Patients with sudden hearing loss and vestibular schwannoma have the same chance of hearing preservation after tumour removal as those with progressive loss. Preoperative recovery of hearing is not predictive of hearing the mechanism of sudden hearing loss in patients with vestibular schwannoma.

Age-related tonotopic map plasticity in the central auditory pathways. Harrison, R. V. Department of Otolaryngology, The Hospital for Sick Children, and University of Toronto, Canada. rvh@sickkids.on.ca. *Scandinavian Audiology, Supplementum* (2001) (53), pp. 8–14.

Inner hair cell lesions to the basal turn of the cochlea effectively result in a partial deafferentation of the auditory system. At the level of the midbrain (central nucleus of inferior colliculus) cochleotopic maps, based on single unit response characteristic frequency, are changed after such deafferentation. When a cochlear lesion is induced in a neonatal animal (chinchilla), the reorganization of the frequency map is more extensive than that resulting from similar deafferentation in the adult subject. Neonatal cochlear lesions result in an over-representation of sound frequencies corresponding to the border of the cochlear lesion, while similar lesions in the adult do not. The results suggest that significant plasticity exists in the auditory midbrain during early post natal development (even in a precocious species, such as chinchilla); however, this plasticity is largely lost in the mature animal. A conceptual model for the frequency map re-wiring is presented.

WHO activities for prevention of deafness and hearing impairment in children. Smith, A. W. Prevention of Blindness and Deafness, World Health Organization, Geneva, Switzerland. *Scandinavian Audiology, Supplementum* (2001) (53), pp. 93–100.

This paper gives an overview of WHO activities in the global campaign for the prevention of deafness and hearing impairment, focusing particularly on children. It discusses the size of the problem and the causes and consequences of deafness and hearing impairment. It emphasizes the inadequate state of our knowledge of this subject in developing countries and the importance of collecting valid data. It describes the public health route to prevention of deafness and hearing impairment, especially through primary ear and hearing care, and outlines the World Health Organization's aims and activities for prevention of deafness and hearing impairment.

Adductor spasmodic dysphonia and botulinum toxin treatment: the effect on well-being. Langeveld, T. V., Luteijn, F., van Rossum, M., Drost, H. A., de Jong, R. J. Department of Otorhinolaryngology – Head and Neck Surgery, Leiden University Medical Centre, The Netherlands. *Annals of Otology, Rhinology and Laryngology* (2001) October, Vol. 110 (10), pp. 941–5.

Adductor spasmodic dysphonia (AdSD) is a controversial and enigmatic voice disorder. It is generally accepted that it has a neurologic, although undetermined, cause, and it is accompanied by much psychological and physical distress. In this prospective study, standardized psychometric tests were used to assess the personality characteristics and psychological and somatic well-being of 46 patients with AdSD. Moreover, the effect of botulinum

toxin (Botox) treatment on their well-being was evaluated. No significant differences could be detected between patients and a representative norm group concerning seven personality characteristics. Nevertheless, before treatment, there were significantly more psychological and somatic complaints. After establishment of a normal to near-normal voice with Botox injections, these complaints were reduced to normal levels – a finding suggesting these phenomena to be secondary to the voice disorder. These findings, and the normal personality characteristics, do not support a psychogenic cause of AdSD.

Vocal fold paresis of Charcot-Marie-Tooth disease. Sulica, L., Blitzer, A., Lovelace, R. E., Kaufmann, P. Department of Otolaryngology, Beth Israel Medical Center, New York, New York 10003, USA. *The Annals of Otolaryngology, Rhinology, and Laryngology* (2001) November, Vol. 110 (11), pp. 1072–6.

No cohesive overview of vocal fold abnormalities associated with Charcot-Marie-Tooth disease (CMT) has been presented in the literature. This study examines a patient in depth and compares the findings with those of published reports to characterize the features of vocal fold paresis in CMT. The affected patient was investigated with nerve conduction testing, laryngeal electromyography, endoscopy, and laryngeal sensory testing. Ten published cases were reviewed for similarities and differences. Vocal fold paresis has been observed in 11 CMT patients ranging in age from eight to 80 years. Two cases have occurred in the context of CMT type 1, and nine in CMT type 2. Seven of the 11 cases (64 per cent) were clearly bilateral; only two of the seven cases (29 per cent) required tracheotomy, and both were in children. The electromyographic findings were typical of reinnervation. Sensory findings were present, but did not represent significant disability in the one patient so studied. We conclude that CMT does not spare the cranial nerves, as has been previously thought. Furthermore, vocal fold paresis is not restricted to CMT type 2 and should not be considered a hallmark of that category. The available evidence suggests that the neural deficit evolves gradually, may exhibit partial recovery, and often escapes notice for a time. Vocal fold abnormalities are most often bilateral. Because the deficit is generally well tolerated in adults, many cases have probably been overlooked, and no conclusion regarding incidence is possible. Nevertheless, the potential for airway compromise exists, especially in children. Respiratory complaints of CMT patients should be thoroughly investigated.

High-speed digital imaging of the medial surface of the vocal folds. Berry, D. A., Montequin, D. W., Tayama, N. Department of Biomedical Engineering, The University of Iowa, Iowa City 52242, USA. daberry@ucla.edu. *The Journal of the Acoustical Society of America* (2001) November, Vol. 110 (5 Pt 1), pp. 2539–47.

High-speed digital imaging of the medial surface of the vocal folds was performed in excised canine larynx experiments. Building on the excised larynx investigations of Baer (Ph.D. dissertation, MIT, Boston, MA (1975)) and hemilarynx investigations of Jiang and Titze (*Laryngoscope* 103, 872–882 (1993)), nine vocal fold fleshpoints were tracked simultaneously along the medial surface of one coronal plane of the left vocal fold using a Kodak EktaPro 4540 high-speed digital imaging system. By imaging from two distinct views, 3D reconstructions of fleshpoint trajectories were

performed with a sampling frequency of 4.5 kHz and a spatial resolution of approximately 0.08 mm. Quantitative results were derived from a typical example of periodic chestlike vibrations. Furthermore, these data were decomposed into empirical eigenfunctions, the building blocks of vocal fold vibration, illuminating basic mechanisms of self-sustained oscillation. Previously, such mechanisms have only been explored theoretically using computer models of vocal fold vibration (Berry *et al.*, *Journal of the Acoustic Society of America* 95, 3595–604 (1994)). Similar to the theoretical studies, two eigenfunctions captured 98 per cent of the variance of the data. Because this investigation utilized high-speed technology, the methodology may also be used to examine complex, aperiodic vibrations. Thus, this technique allows mechanisms of regular and irregular vocal fold vibration to be explored using direct observations of vibrating tissues in the laboratory. Grant ID: R29 DC03072, Acronym: DC, Agency: NIDCD.

National differences in incidence of acute mastoiditis: relationship to prescribing patterns of antibiotics for acute otitis media? Van Zuijlen, D. A., Schilder, A. G., Van Balen, F. A., Hoes, A. W. Department of Otorhinolaryngology, University Medical Center Utrecht, The Netherlands. *The Pediatric Infectious Disease Journal* (2001) February, Vol. 20 (2), pp. 140–4.

BACKGROUND: Operating on the principle that most acute otitis media (AOM) episodes resolve without antibiotics, doctors in the Netherlands usually means AOM in children with initial observation. Prescription of antibiotics is limited to children with a complicated course of AOM and those categorized as high risk. Consequently only 31 per cent of patients with AOM receives antibiotics, compared with >90 per cent in most other countries. **OBJECTIVE:** To substantiate the suggestion that this restrictive use of antibiotics leads to a higher incidence of acute mastoiditis. **METHODS:** A comparative study across several European countries, Canada, Australia and the United States was performed in the period 1991 to 1998. The incidence rate of acute mastoiditis was defined as the total number of patients age 14 years and younger discharged from all hospitals with the primary diagnosis of acute mastoiditis, during a specified period (usually five years), divided by the number of person years (py) in that same age range and period. The latter was calculated by totalling the midyear population estimate of children age 14 years and younger of each year. The 95 per cent confidence intervals and incidence rate ratios were calculated to compare the observed rates. **RESULTS:** The incidence rate of acute mastoiditis in the Netherlands, with a low antibiotic prescription rate for AOM, was 3.8/100,000 py; in Norway and Denmark, with high prescription rates, the incidence rate was comparable at 3.5/100,000 py and 4.2/100,000 py, respectively. In all other countries with very high prescription rates, incidence rates were considerably lower, ranging from 1.2 to 2.0/100,000 py. The incidence rate in the Netherlands was about twice that in the United States (rate ratio, 0.5). **CONCLUSION:** The incidence rate of acute mastoiditis in the Netherlands is higher than in many countries with higher antibiotic prescription rates. Although the potential benefits of restricted use of antibiotics (i.e. cost reduction, fewer side effects from antibiotics and less antimicrobial resistance) are beyond dispute, such strategy may be associated with a somewhat higher incidence of acute mastoiditis.