

Abstract Selection

Basic fibroblast growth factor protects auditory neurons and hair cells from glutamate neurotoxicity and noise exposure. Zhai Suo-Qiang, Wang-Da-Jun, Wang-Jia-Ling, Han Dong Yi, Yang Wei Yan. Institute of Otorhinolaryngology, General Hospital of PLA, Beijing, People's Republic of China. zhaisq@plagh.com.cn *Acta Oto-laryngologica* 2004 Mar, Vol. 124 (2), pp. 124–9, ISSN: 0001-6489. English.

OBJECTIVE: To determine the protective effects of basic fibroblast growth factor (bFGF) on cochlear neurons and hair cells in vitro and in vivo. **MATERIAL AND METHODS:** In Experiment I, cultured spiral ganglion neurons (SGNs) prepared from postnatal Day 3 mice were exposed to 20 mM glutamate for 2 h before the culture medium was replaced with fresh medium containing 0, 25, 50 or 100 ng/ml bFGF. Fourteen days later, all cultures were fixed with four per cent paraformaldehyde and stained with one per cent toluidine blue. The number of surviving SGNs was counted and the length of the neurites of the SGNs was measured. In Experiment II, in vivo studies were carried out with guinea pigs in which bFGF or normal saline was injected intramuscularly to assess possible protective effects of bFGF on cochlear hair cells and to accelerate the recovery of the auditory brainstem response (ABR). The ABRs were measured before, immediately after and two and four weeks after exposure to noise. **RESULTS:** Exposure to 20 mM glutamate for 2 h resulted in an inhibition of neurite outgrowth of SGNs and an increase in cell death. Treatment of the cultures with bFGF led to promotion of neurite outgrowth and an increase in the number of surviving SGNs. In Experiment II, significant ($p < 0.05$) differences in ABR thresholds were observed between the groups injected with bFGF and saline ($t = 2.689$) at four weeks after noise exposure. Cochleae were removed and hair cell loss analyzed in surface preparations prepared from all experimental animals. Acoustic trauma caused loss of 240 and 2160 inner hair cells in the groups injected with bFGF and saline, respectively. Similarly, more outer hair cells were lost in the normal saline injection group (99 291) than in the group treated with bFGF (70 377). **CONCLUSIONS:** Our results demonstrate that bFGF protects SGNs against glutamate neurotoxicity in vitro. In addition, treatment with bFGF protects hair cells from acoustic trauma.

Idiosyncratic compensation of the subjective visual horizontal and vertical in 60 patients after unilateral vestibular deafferentation. Hafstrom Anna, Fransson Per Anders, Karlberg Mikael, Magnusson Maans. Department of Otorhinolaryngology, Head and Neck Surgery, Lund University Hospital, Sweden. anna.hafstrom@onh.lu.se *Acta Oto-laryngologica* 2004 Mar, Vol. 124 (2), pp. 165–71 ISSN: 0001-6489. English.

OBJECTIVE: To investigate long-term compensation mechanisms of utricular function after translabyrinthine surgery for vestibular schwannoma. Correlations between the subjective visual horizontal (SVH) and subjective visual vertical (SVV) and other parameters of vestibular compensation were studied. The correlation between the SVH and SVV was also investigated to see whether these measurements are compatible for patients. **MATERIAL AND METHODS:** Sixty consecutive patients were investigated three months before and six months after surgery by means of electronystagmography and SVH and SVV tests. Tumour size was measured using MRI. **RESULTS:** The SVH and SVV increased significantly towards the ipsilesional side post-operatively. Pre-operative tilt correlated with age. Post-operative tilt correlated weakly with pre-operative caloric sensitivity and inversely with tumour size. The correlation between the SVH and SVV was high both before and after surgery ($r(s) > 0.74; p < 0.001$). **CONCLUSIONS:** The long-term compensation of static tilt perception was dependent on age and not on dynamic canal

functions. We propose an idiosyncrasy in the SVH and SVV compensation after unilateral vestibular deafferentation, incongruous with the general course of vestibular compensation. The results suggest a probable dependence on non-vestibular information, i.e. proprioception, in facilitating compensation of static vestibular deficits. The similarity between the SVH and SVV measurements confirms that either test can be used clinically for patients with vestibular lesions.

Selective vestibular ablation by intratympanic gentamicin in patients with unilateral active Ménière's disease: a prospective, double-blind, placebo-controlled, randomized clinical trial. Stokroos Robert, Kingma Herman. Department of Otorhinolaryngology/Head and Neck Surgery, University Hospital Maastricht, The Netherlands. rsto@skno.azm.nl *Acta Oto-laryngologica* 2004 Mar, Vol. 124 (2), pp. 172–5 ISSN: 0001-6489. English.

OBJECTIVE: To establish the efficacy of intratympanic gentamicin treatment in patients with unilateral Ménière's disease. **MATERIAL AND METHODS:** This was a prospective, double-blind, randomized clinical trial of intratympanic gentamicin versus intratympanic buffer solution (placebo) in patients with established active Ménière's disease in the affected ear. Outcome measures included the number of vertiginous spells, degree of sensorineural hearing loss, labyrinthine function and labyrinthine asymmetry. **RESULTS:** Topical gentamicin provided a significant reduction in the number of vertiginous spells, although a 'placebo effect' was also observed. Sensorineural hearing loss did not occur in the gentamicin group, although some deterioration occurred in the placebo group. **CONCLUSIONS:** Intratympanic gentamicin is a safe and efficient treatment for the vertiginous spells associated with Ménière's disease. When applied early in the course of the disease, it may prevent some of the sensorineural hearing deterioration associated with it.

Pilot study of a device for measuring instrument forces during endoscopic sinus surgery. White Paul S, Nassif Ramez, Saleh Hesham, Drew Timothy. University Department of Otolaryngology, Ninewells Hospital and Medical School, Dundee, UK. paulw@tuht.scot.nhs.uk *Acta Oto-laryngologica* 2004 Mar, Vol. 124 (2), pp. 176–8, ISSN: 0001-6489. English.

ESS is a form of minimal access surgery that includes different tasks and manoeuvres requiring sophisticated psychomotor coordination with varying levels of force application. The avoidance of complications is partially dependent upon reducing surgical force application when operating against vital barriers such as the skull base and the medial orbital wall. The study of the surgical forces in endoscopic sinus surgery offers the potential for surgeons to identify the appropriate application of the instrument forces and torques necessary to conduct safe surgery. We have developed Sinoforce, a sinus surgery force-measuring instrument, which comprises modified Blakesley forceps fitted with specialized force sensors. The instrument produces a real-time visual display of the various forces applied by the surgeon to the forceps during endoscopic ethmoidectomy. A pilot study was conducted using four cadaveric head specimens. We measured the force needed to break through the different parts of the ethmoidal bony labyrinth and skull base. Comparable forces were needed to break through the ethmoidal bulla and uncinate process. However, a force of > 2 kg, exceeding the forceps calibration, was needed to break through the different parts of the skull base. In this article we describe the new forceps, present our preliminary results and explore the potential benefits of this new instrument.

Parapharyngeal angiolipoma causing obstructive sleep apnoea syndrome. Albid Isam, Benitez Pedro, Berenguer Juan, Bernal Sprekelsen Manuel, Mullol Joaquim. Rhinology Unit, Department of Otorhinolaryngology, Hospital Clinic, Barcelona, Spain. 32874iao@comb.es *Acta Oto-laryngologica* 2004 Mar, Vol. 124 (2), pp. 210–2, ISSN: 0001-6489. English.

Obstructive sleep apnoea syndrome (OSAS) is the cessation of airflow with the continuance of respiratory effort during sleep. OSAS associated with a neck mass is extremely rare. Angiolipoma is a rare, benign, fatty tumour composed of mature lipocytes and multiple areas containing angiomatous elements. The treatment for an angiolipoma is surgical excision. We report the case of a 47-year-old male who presented with a history of loud snoring associated with sleep apnoea. A polysomnographic study demonstrated an apnoea-hypopnoea index of 72/h. CT showed a 3.5 x 3 x 8 cm³ hypoattenuated mass of fat density in the left parapharyngeal space causing an impression on the nasopharynx and oropharynx with a peripheral hyperintense area. A cervical transparotid surgical approach was used. A histological study led to the definitive diagnosis of angiolipoma without evidence of malignancy. After surgery, the snoring disappeared and the patient remained tumour-free after 54 months of follow-up. This is the first case in the literature of a patient with nocturnal polysomnographic-documented OSAS caused by a left parapharyngeal angiolipoma.

Application of cell therapy to inner ear diseases. Nakagawa Takayuki, Ito Juichi. Department of Otolaryngology-Head and Neck Surgery, Graduate School of Medicine, Kyoto University, Kyoto, Japan. tnakagawa@ent.kuhp.kyoto-u.ac.jp *Acta Oto-laryngologica Supplementum* 2004 Mar (551), pp. 6–9, Refs: 45, ISSN: 0365-5237. English.

Most inner ear disorders involve irreversible loss of hair cells and their associated neurons. Recent advances in genetics and cell biology have raised hopes for the regeneration or protection of these cells. Cell therapy is a rapidly growing research area, and is potentially applicable to the treatment of inner ear disorders. Recent studies on cell transplantation into the inner ear have suggested that such cell therapy may be progressing towards the clinical application. This review highlights recent advances in cell transplantation studies focusing on the inner ear.

Genes related to hearing disorders. Kitajiri Shin-ichiro, Sakamoto Tatsunori, Ito Juichi. Department of Otolaryngology-Head and Neck Surgery, Graduate School of Medicine, Kyoto University, Kyoto, Japan. kitajiri@ent.kuhp.kyoto-u.ac.jp *Acta Oto-laryngologica Supplementum* 2004 Mar (551), pp. 10–3, Refs 25, ISSN: 0365-5237. English.

The inner ear is a highly specialized organ and the mechanisms of its function are complex and have not yet fully been elucidated. For example, there are questions such as how the stereocilia characteristics of hair cells are regularly arranged, how the reactions of stereocilia and ion channels of hair cells to sound are controlled, and how the ion environment is maintained in the internal ear. The mechanisms of inner ear function are being elucidated by analysis of human hereditary hearing disorders and genetic and molecular biological techniques using mouse hearing disorder models. Understanding of the mechanism of inner ear function provides important information for treatment of the inner ear. This review outlines several findings obtained from humans with hereditary hearing disorders and mouse hearing disorder models.

Transplantation of neural stem cells into the modiolus of mouse cochleae injured by cisplatin. Tamura Tetsuya, Nakagawa Takayuki, Iguchi Fukuichiro, Tateya Ichiro, Endo Tsuyoshi, Kim Tae Soo, Dong Youyi, Kita Tomoko, Kojima Ken, Naito Yasushi, Omori Koichi, Ito Juichi. Department of Otolaryngology-Head and Neck Surgery, Graduate School of Medicine, Kyoto University, Kyoto, Japan. *Acta Oto-laryngologica Supplementum* 2004 Mar (551), pp. 65–8, ISSN: 0365-5237. English.

This study aimed to examine the possibility of restoration of spiral ganglion neurons, which transmit sound stimulation to the brain, by transplantation of fetal neural stem cells (NSCs) into the modiolus of cochleae. Fetal mouse NSCs expressing green fluorescence were injected into the modiolus of cisplatin-treated cochleae of mice. The temporal bones were collected 14 days after transplantation, and provided histological examination. The

cell fate of transplants was determined by immunohistochemistry for a neural or glial cell-marker. Histological analysis two weeks after transplantation revealed robust survival of transplant-derived cells in the modiolus of the cochlea. NSCs injected in the basal portion of cochleae migrated as far as the apical end of the modiolus. Grafted NSCs expressing a neural cell marker were identified, but the majority of grafted NSCs differentiated into glial cells. These findings suggest the possible use of NSCs in cell therapy for restoration of spiral ganglion neurons. However, further treatments are required to increase the number of NSC-derived neurons in the modiolus to realize functional recovery.

Inverted papilloma: report of 89 cases. Pasquini Ernesto, Sciarretta Vittorio, Farneti Giovanni, Modugno Giovanni Carlo, Ceroni A Rinaldi. Department of Otolaryngology, University of Bologna, Sant'Orsola-Malpighi Hospital, Italy. epasquini@yahoo.com. *American Journal of Otolaryngology* 2004 May-Jun, Vol. 25 (3), pp. 178–85, ISSN: 0196-0709. English.

PURPOSE: In this study, the surgical management of an inverted papilloma of the nose and paranasal sinuses performed at our institution is reviewed. **METHODS:** Eighty-nine patients diagnosed with an inverted papilloma and treated at the Ear, Nose, and Throat Department of Bologna University from January 1980 to January 2001 were retrospectively reviewed. Only 86 out of the 89 patients were retrospectively analyzed because three patients were treated for malignant tumours because of the association between inverted papilloma and invasive squamous cell carcinoma. Fifty patients were treated using traditional techniques such as lateral rhinotomy and midface degloving with medial maxillectomy (11 cases), a Caldwell-Luc procedure (21 cases), and transnasal ethmoidectomy or sphenoidectomy (18 cases), whereas 36 patients were treated using an endonasal endoscopic approach for their primary tumour. **RESULTS:** The traditionally treated patients had a mean follow-up of eight years (six to 19 years), whereas the endoscopically treated patients had a mean follow-up of 54 months (24–97 months). The overall recurrence rate was 15 per cent. There were 12 recurrences (24 per cent) in the traditionally treated patients: one out of 11 patients (nine per cent) had a recurrence after a medial maxillectomy by means of a lateral rhinotomy/midface degloving, whereas 11 patients out of 39 (28 per cent) had a recurrence after more conservative procedures such as the transantral approach and transnasal ethmoidectomy or sphenoidectomy. On the other hand, one recurrence was observed in the endoscopically treated patients (three per cent). **CONCLUSIONS:** Traditional techniques such as Caldwell-Luc and conservative transnasal ethmoidectomy or sphenoidectomy are associated with a high rate of recurrence in the treatment of an inverted papilloma. On the other hand, the endoscopic endonasal approach is an effective treatment for an inverted papilloma in selected cases and, when performed by a skilled surgeon, can achieve a radical resection of the tumour because of excellent magnification and visualization, with results comparable to those of traditional techniques such as lateral rhinotomy with medial maxillectomy.

The impact of race on survival in nasopharyngeal carcinoma: a matched analysis. Bhattacharyya Neil. Department of Otolaryngology and Laryngology, Division of Otolaryngology, Brigham and Women's Hospital, Harvard Medical School, Boston, MA 02115, USA. neiloy@massmed.org. *American Journal of Otolaryngology* 2004 Mar-Apr, VOL 25 (2), pp. 94–7, ISSN: 0196-0709. English.

OBJECTIVE: To determine if nasopharyngeal carcinoma (NPC) exhibits significant prognostic differences in Chinese versus white patients. **METHODS:** From the Surveillance, Epidemiology, and End Results database for the time period 1988 to 2000, all cases of NPC were extracted and staging variables computed. To each case of NPC diagnosed in a Chinese patient, a case of NPC in a white patient was randomly matched for age at diagnosis, gender, grade, stage, and treatment modality. Kaplan-Meier survival analysis was then conducted for the matched groups comparing overall survival and disease-specific survival both for the overall matched cohort and stage stratified cohorts. **RESULTS:** Among 1,520 cases of NPC, 338 were identified in Chinese patients with staging information. Of these, 171 were successfully matched to white patients. Average age at presentation was 51.5 years with a 3:1 male predominance. Overall survival was substantially better for Chinese patients (mean survival, 94 months; median survival, 95 months) than for

white patients (81 months and 64 months, $p = .037$). Stratified for stage, overall survival was better for Chinese patients for stage 3 but not stage 4 disease ($p = .012$ and $p = .447$, respectively). Disease-specific survival was not substantially different between Chinese patients (mean survival, 116 months) and white patients (mean survival 117 months, $p = .99$). No differences in disease-specific survival were identified for race when stratified by stage (all $p > .05$). **CONCLUSIONS:** Although overall survival is better for Chinese patients with NPC compared with white patients, disease-specific survival is similar between these racial groups. These data suggest that the biological behaviour of NPC is relatively independent of race.

Interstitial photodynamic therapy as salvage treatment for recurrent head and neck cancer. Lou P J, Jaeger H R, Jones L, Theodossy T, Bown S G, Hopper C. National Medical Laser Centre, Department of Surgery, University College London, London, UK. *British Journal of Cancer* 2004 Aug 2, Vol. 91 (3), pp. 441–6, ISSN: 0007-0920. English.

Interstitial photodynamic therapy (IPDT) is a technique for applying photodynamic therapy (PDT) to internal tumours using light delivered via fibres inserted percutaneously. This phase I-II study assessed the safety and efficacy of IPDT for patients with persistent or recurrent head and neck cancer unsuitable for further treatment with surgery, radiotherapy or chemotherapy, recruited for 'last hope' salvage treatment. Patients were sensitized with 0.15 mg kg⁻¹ mTHPC (meso-tetrahydroxyphenyl chlorin) four days prior to light delivery from fibres inserted directly into the target tumour (20 J per site at 652 nm) under image guidance. In all, 45 patients were treated. Nine achieved a complete response. Five are alive and free of disease 10–60 months later. Symptomatic relief (mainly for bleeding, pain or tumour debulking) was achieved in a further 24. The median survival (Kaplan-Meier) was 16 months for the 33 responders, but only two months for the 12 nonresponders. The only serious complication was a carotid blow out two weeks after PDT. No loss of function was detected in nerves encased by treated tumours. Interstitial photodynamic therapy provides worthwhile palliation with few complications and occasional long-term survivors for otherwise untreatable advanced head and neck cancers. It is a treatment option worth adding to those available to integrated head and neck oncology teams.

Meta-analysis of cephalosporins versus penicillin for treatment of group A streptococcal tonsillopharyngitis in adults. Casey Janet R, Pichichero Michael E. University of Rochester, Elmwood Pediatric Group, Rochester, New York 14620, USA. jrcasey@rochester.rr.com *Clinical Infectious Diseases* 2004 Jun 1 (epub: 2004 May 11), Vol. 38(11), pp. 1526–34, ISSN: 1537-6591. English.

We conducted a meta-analysis of nine randomized controlled trials (involving 2113 patients) comparing cephalosporins with penicillin for treatment of group A beta-haemolytic streptococcal (GABHS) tonsillopharyngitis in adults. The summary odds ratio (OR) for bacteriologic cure rate significantly favoured cephalosporins, compared with penicillin (OR, 1.83; 95 per cent confidence interval (CI), 1.37–2.44); the bacteriologic failure rate was nearly two times higher for penicillin therapy than it was for cephalosporin therapy ($p = .00004$). The summary OR for clinical cure rate was 2.29 (95 per cent CI, 1.61–3.28), significantly favouring cephalosporins ($p < .00001$). Sensitivity analyses for bacterial cure significantly favoured cephalosporins over penicillin in trials that were double-blinded and of high quality, trials that had a well-defined clinical status, trials that performed GABHS serotyping, trials that eliminated carriers from analysis, and trials that had a test-of-cure culture performed three to 14 days after treatment. This meta-analysis indicates that the likelihood of bacteriologic and clinical failure in the treatment of GABHS tonsillopharyngitis is two times higher for oral penicillin than for oral cephalosporins.

Management of bilateral choanal atresia in the neonate: an institutional review. Gujrathi C S, Daniel S J, James A L, Forte Vito. Department of Otolaryngology-Head and Neck Surgery, Hospital for Sick Children, 555 University Avenue, Toronto, Ont., Canada M5G 1X8. *International Journal of Pediatric Otorhinolaryngology* 2004 Apr, Vol. 68 (4), pp. 399–407, ISSN: 0165-5876. English.

The endoscopic repair of bilateral choanal atresia using powered instrumentation has become a common procedure performed by many paediatric otolaryngologists. A 10-year retrospective review of the management of bilateral choanal atresia in the neonate was undertaken at the Hospital for Sick Children, a tertiary care paediatric institution in Toronto. Although many techniques were used for repair including the endoscopic technique, a simple puncture, dilation and stenting technique was used most frequently. Fifty-two patients were identified who underwent this technique. The modifications and refinements of this technique and post-operative care will be detailed. The results were as follows. All patients were successfully extubated within 24h of the operation. The average duration of nasal stenting was three months. Three patients required re-stenting, one of which had nasal stenting for the first year of life. This patient was born prematurely, had trisomy-21 and was stented weighing a mere 600 g. One patient had a small septal perforation and only two patients required transpalatal repair later in life for persistent nasal symptoms. There were no CNS complications and no incidence of significant nasal haemorrhage or infection. All patients received topical antibiotics and steroid drops during the stenting period. Mitomycin C was not used. Granulation tissue was not a significant problem. Despite the advances in endoscopic technology, the puncture, dilation and stenting technique is still the senior author's preferred method of repair for neonatal bilateral choanal atresia.

Effects of tonsillectomy and adenoidectomy on haemoglobin and iron metabolism. Elverland Hans H, Aasand Gunbjørn, Miljeteig Harald, Ulvik Rune J. Department of Otorhinolaryngology, University Hospital of Northern Norway, N-9038 Tromsø, Norway. helverla@online.no *International Journal of Paediatric Otorhinolaryngology* 2004 Apr, Vol. 68 (4), pp. 419–23, ISSN: 0165-5876. English.

OBJECTIVES: To investigate a possible effect of adenoidectomy, tonsillectomy, or both operations combined in children on haemoglobin concentration and iron metabolism. **METHODS:** Children eligible for surgery due to recurrent tonsillitis or upper airway obstruction had a venous blood sample drawn at the time of the operation and six months later. One hundred and three pre-operative and 91 blood samples at follow-up from patients not given iron supplementation were available for analysis of haemoglobin concentration, serum-ferritin and protoporphyrin-IX in erythrocytes. **RESULTS:** A 1.4g/dl median increase in haemoglobin concentration during the observation period was associated with a significant reduction of protoporphyrin-IX, while serum-ferritin remained unchanged and low. A pre-operative prevalence of anaemia of 56.3 per cent was reduced to 7.71 per cent. All combinations of normal and pathological values of serum-ferritin and protoporphyrin-IX were found in anaemic and non-anaemic patients. **CONCLUSIONS:** A beneficial effect of tonsillectomy and adenoidectomy on haemoglobin and iron metabolism was demonstrated. Iron deficiency was common.

Cochlear implantation in children under the age of two – what do the outcomes show us? Anderson Ilona, Weichbold Viktor, D Haese Patrick S C, Szuchnik Joanna, Quevedo Manuel Sainz, Martin Jane, Dieler Wafaa Shehata, Phillips Lucy. Clinical Research Department, MED-EL Worldwide Headquarters, Innsbruck, Austria. ilona.anderson@medal.com *International Journal of Paediatric Otorhinolaryngology* 2004 Apr, Vol. 68 (4), pp. 425–31, ISSN: 0165-5876. English.

OBJECTIVES: Literature that discusses the benefits of cochlear implantation (CI) in children under the age of two is limited. Previous concerns about surgical risk have been raised and addressed; however, actual benefit in terms of outcomes needs to be clearly defined. This study evaluates outcomes of children implanted under the age of two and compares them to children implanted at a later age. **METHODS:** Data were reviewed from the MED-EL International Children's study database. Thirty-seven children enrolled in the study have received cochlear implants before the age of two. Outcomes were assessed using the LiP and MTP tests and the MAIS and MUSS questionnaires pre-operatively and then at initial fitting, one, three, six and 12 months after first fitting and then annually thereafter. **RESULTS:** Statistical analysis demonstrated that these children's scores improved significantly over time. Improvement was shown

to occur at a quicker rate than for children implanted at an older age with the MTP and MUSS, but not with the LiP and the MAIS. Scores may be limited by sample size and the fact that children reached ceiling on some tests. **CONCLUSIONS:** Results suggest a distinct advantage early implantation may have for severe to profoundly hearing impaired children. This may be particularly the case for skills necessary for development of receptive and expressive language skills.

Cotton-tip applicators as a leading cause of otitis externa. Nussinovitch Moshe, Rimon Ayelet, Volovitz Benjamin, Raveh Eyal, Prais Dario, Amir Jacob. Department of Pediatrics C, Schneider Children's Medical Center of Israel, Petah Tikva 49202, Israel. nussim@clalit.org.il. *International Journal of Paediatric Otorhinolaryngology* 2004 Apr, Vol. 68 (4), pp. 433–5, ISSN: 0165-5876. English.

OBJECTIVE: Otitis externa (OE), also known as 'swimmer's ear', is an inflammation or infection of the external auditory canal. Many risk factors have been identified, mainly excessive moisture in the canal from swimming. **STUDY DESIGN/METHODS:** To study the leading risk factors of otitis externa. Eighty-seven children aged 3.5–12 years (mean (Formula: see text) months) who were diagnosed with otitis externa from December 1999 to March 2001 were studied for age, sex, cerumen cleaning habits, signs and symptoms. Findings were compared to an age-matched control group of 90 children without otitis externa. **RESULTS:** Sixty-one children (70.1 per cent) in the study group had their ears cleaned with a cotton-tip applicator (Q-tip) during the 10 days preceding the diagnosis of otitis externa. In the control group, only 31 (34 per cent) used applicators routinely during the 10 days prior to diagnosis ((Formula: see text)). Other risk factors for otitis externa were swimming in a pool (34 per cent), wax removal (5.8 per cent) and ventilation tubes (1.1 per cent). **CONCLUSIONS:** Use of a cotton-tip applicator to clean the ear seems to be the leading cause of otitis externa in children and should be avoided.

Effect of middle ear effusion on distortion product otoacoustic emission. Tas Abdullah, Yagiz Recep, Uzun Cem, Adali Mustafa K, Koten Muhsin, Tas Memduha, Karasalioglu Ahmet R. Department of Otorhinolaryngology, Faculty of Medicine, Trakya University, Edirne 22030, Turkey. abdultas@yahoo.com. *International Journal of Paediatric Otorhinolaryngology* 2004 Apr, Vol. 68 (4), pp. 437–40, ISSN: 0165-5876. English.

OBJECTIVES: It is well documented that children, particularly between the ages of about two and six years, exhibit a high prevalence and incidence of otitis media. Distortion product otoacoustic emissions (DPOAEs) offer great potential for clinical testing of cochlear function in children. The aim of the present study was to determine the influence of middle-ear effusion and physical properties of the effusion on the recording of DPOAE. **METHODS:** Nineteen children (38 ears) undergoing myringotomy and/or tympanostomy tube insertion for secretory otitis media were studied. Pre-operative and post-operative first day DPOAE signal to noise ratios were compared. The results were analyzed by paired samples test and ANOVA statistical methods. **RESULTS:** We found significant differences between pre-operative and post-operative first day DPOAE signal to noise at 1, 1.5, 2 and 4 kHz. In addition, comparison of the pre-operative DPOAE signal to noise ratio and per-operative middle-ear findings are shown significant differences between glue (thick mucus) and the other three groups (mucus, serous and no-effusion groups) at 2 and 4 kHz, and between glue and no effusion group at 8 kHz. Also post-operative DPOAE signal to noise ratio in relation to per-operative middle-ear findings were significantly different at 2, 4 and 8 kHz. The most increase of emissions at the post-operative first day was seen in ears with glue effusion at 1 and 2 kHz. **CONCLUSIONS:** Otitis media with effusion can be monitored by DPOAE measurement pre-operatively and post-operatively. In the pre-operative evaluation, glue effusion may cause a reduction in the emissions at 2, 4 and 8 kHz more than the other kind of effusions.

Effect of adenoidectomy in children with complex problems of rhinosinusitis and associated diseases. Ungkanont Kitirat, Damrongsak Siri. Department of Otolaryngology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand. *International Journal of Paediatric Otorhinolaryngology* 2004 Apr, Vol. 68(4), pp. 447–51, ISSN: 0165-5876. English.

OBJECTIVES: The effectiveness of adenoidectomy in the management of paediatric sinusitis is still a controversial issue. The size of the adenoid and associated diseases are the factors for consideration. The adenoid has been studied and is proved to be a probable source of infection for the paranasal sinus. The purpose of this study is to evaluate the efficacy of adenoidectomy in reducing the frequency of sinusitis in children. **METHODS:** A prospective study was done in paediatric patients with rhinosinusitis admitted for adenoidectomy from January 2000 to January 2002. Pre-operative frequency of rhinosinusitis, underlying diseases and the diseases caused by the adenoid were recorded. The adenoid size was evaluated by lateral skull X-ray. The patients were followed after surgery and frequency of rhinosinusitis and associated diseases were compared with the pre-operative period. **RESULTS:** There were 37 patients with a mean age of 6+/- 2.8 years Mean duration for pre-operative review was 436.7 days and mean duration for post-operative follow up was 450.2 days. Almost all (92 per cent) of the patients had obstructive sleep disorder and 88.2 per cent had adenoid-nasopharyngeal ratio >0.7. There was a statistically significant reduction of episodes per year of rhinosinusitis and obstructive sleep disorder after surgery (*p*-value < 0.001 and 0.008, respectively). **CONCLUSIONS:** Adenoidectomy was proved to be effective in the management of paediatric rhinosinusitis in this series. Adenoidectomy should be most beneficial as a surgical option before endoscopic sinus surgery (ESS), especially in younger children with obstructive symptoms.

Button batteries in the ear, nose and upper aerodigestive tract. Lin Vincent Y W, Daniel S J, Papsin B C. Department of Otolaryngology, The Hospital for Sick Children, Toronto, Ont., Canada. vlin@sympatico.ca *International Journal of Paediatric Otorhinolaryngology* 2004 Apr, Vol. 68 (4), pp. 473–9, ISSN: 0165-5876. English.

OBJECTIVES: With the miniaturization of electronic devices, the demand and usage of button batteries has risen. As a result, button batteries are more readily available for young children to handle and potentially mishandle. They are frequently inadvertently placed by children in their ears or noses. Occasionally they are swallowed and lodged along the upper aerodigestive tract. **METHODS:** We outline the pathophysiology of button battery-induced trauma and present key radiological features of button batteries that are important in preventing delayed diagnosis after paediatric ingestion. **RESULTS:** Button batteries of all sizes have a distinctive double contour on radiographs. **CONCLUSIONS:** Button battery ingestion requires prompt diagnosis and removal. A high index of suspicion along with radiographs help assist with the diagnosis. Potential tragic complications can be averted with expeditious removal.

Audiologic and treatment outcomes after linear accelerator-based stereotactic irradiation for acoustic neuroma. Chung Hans T, Ma Roy, Toyota Brian, Clark Brenda, Robar James, McKenzie Michael. Department of Radiation Oncology, British Columbia Cancer Agency, Vancouver, BC V5Z 4E6, Canada. *International Journal of Radiation Oncology, Biology, Physics* 2004 Jul 15, Vol. 59 (4), pp. 1116–21, ISSN: 0360-3016. English.

PURPOSE: Although surgical excision is the traditional treatment modality for acoustic neuroma, radiotherapy (RT) is gaining momentum as an alternative. This is particularly evident in patients with useful hearing, in whom fractionated RT offers the potential for hearing preservation. Our objective was to determine the disease control, hearing preservation (via audiograms), and toxicity rates after linear accelerator-based stereotactic radiation for acoustic neuroma. **METHODS AND MATERIALS:** A total of 72 acoustic neuroma patients underwent stereotactic irradiation and had at least six months of follow-up between October 1997 and March 2002. Of these, 45 received single-fraction stereotactic radiosurgery (SRS) and 27 received fractionated stereotactic radiotherapy (SRT). Before treatment, all SRS patients were functionally deaf and 23 of 25 SRT patients had useful hearing in the affected ear. The minimal peripheral dose was 12 Gy and 45 Gy in all SRS and SRT patients, respectively. Tumour control, toxicity, and hearing preservation were recorded. **RESULTS:** The median follow-up in the SRS and SRT groups was 27 and 26 months, respectively. No tumour progression was seen after SRS and SRT. On the basis of the audiogram criteria, the one-year and two-year hearing

preservation rate was 85 per cent and 57 per cent, respectively. The mean pre- and post-SRT speech recognition threshold was 20 and 38 dB, respectively. The mean proportion of pre- and post-SRT speech discrimination was 91 per cent and 59 per cent, respectively. **CONCLUSION:** Stereotactic RT achieves good local control, with acceptable toxicity. RT fractionation appears to provide encouraging rates of hearing preservation.

Radiotherapy of squamous cell carcinoma of the nasal vestibule.

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PURPOSE: To evaluate the results of primary radiotherapy (RT) for squamous cell carcinoma of the nasal vestibule. **METHODS AND MATERIALS:** A total of 56 patients with Stage T₁ and T₂ tumours (Wang classification) were treated with external beam RT (EBRT) with or without a boost using endocavitary brachytherapy. Of these, 32 were treated with EBRT and an additional boost with intermediate-dose-rate brachytherapy, 15 with EBRT and a boost with high-dose-rate brachytherapy, and nine with EBRT alone. **RESULTS:** The local control rate at two years was 80 per cent. Most cases could be successfully salvaged with surgery, resulting in an ultimate local control rate of 95 per cent. No statistically significant differences were noted among the different treatment approaches. Of the 56 patients, 12 per cent developed lymph node metastases. **CONCLUSION:** Primary RT is an adequate treatment for Stage T₁ and T₂ squamous cell carcinoma of the nasal vestibule with excellent cosmetic results. The radiation technique used depends on the primary tumour extension and the experience of the treating radiation oncologist. In the case of N₀ disease, elective treatment of the regional lymph nodes is not recommended.

The application of magnetic resonance imaging-guided fine-needle aspiration cytology in the diagnosis of deep lesions in the head and neck.

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PURPOSE: Image-guided fine-needle aspiration cytology (FNAC) may be useful as an alternative diagnostic approach to lesions in the head and neck. This study reports on the use of magnetic resonance imaging (MRI)-guided FNAC for diagnostic evaluation of deep lesions in this region. **MATERIALS AND METHODS:** This was a prospective study of 12 patients with deep lesions in the head and neck who underwent MRI-guided FNAC at the Shanghai 9th People's Hospital. A 0.2-T open magnet was used for MRI and localization of the 20-gauge MRI-compatible needle. All of the aspirated samples were stained with haematoxylin and eosin and examined by a cytopathologist. **RESULTS:** The needle in all 12 cases was displayed on MRI in the central portion of the lesion under the guidance of MRI. 12 of 12 patients (100 per cent) had diagnostic aspirations and none needed open biopsy for more specific histological interpretation. Six of these 12 patients with tumours (four malignant, two benign) underwent operative treatment with positive post-operative pathologic results. One patient had a diagnosis of inflammation. The diagnostic accuracy was 91.67 per cent (11 of 12), the sensitivity was 85.71 per cent (six of seven), and the specificity was 100 per cent (five of five). There were no false-positive results and one false-negative result, for a false-negative rate of 14.29 per cent (one of seven). All aspiration procedures were well tolerated and without complications. **CONCLUSIONS:** MRI-guided FNAC is a cost-effective tool for establishing tissue diagnosis as a primary investigative modality. It is helpful and accurate in the diagnosis of deep lesions in the head and neck and in follow-up of patients, thereby avoiding further surgical intervention.

Prevalence of voice disorders in teachers and the general population.

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Over three million teachers in the United States use their voice as a primary tool of trade and are thought to be at higher risk for occupation-related voice disorders than the general population. However, estimates regarding the prevalence of voice disorders in teachers and the general population vary considerably. To determine the extent that teachers are at greater risk for voice disorders, 2,531 randomly selected participants from Iowa and Utah (1,243 teachers and 1,288 non-teachers) were interviewed by telephone using a voice disorder questionnaire. Prevalence – the number of cases per population at risk at a specific time – was determined. The prevalence of reporting a current voice problem was significantly greater in teachers compared with non-teachers (11.0 per cent vs 6.2 per cent), $\chi^2(2)(1) = 18.2, p < .001$, as was the prevalence of voice disorders during their lifetime (57.7 per cent for teachers vs 28.8 per cent for non-teachers), $\chi^2(2)(1) = 215.2, p < .001$. Teachers were also significantly more likely than non-teachers to have consulted a physician or speech-language pathologist regarding a voice disorder (14.3 per cent vs 5.5 per cent), $\chi^2(2)(1) = 55.3, p < .001$. Women, compared with men, not only had a higher lifetime prevalence of voice disorders (46.3 per cent vs 36.9 per cent), $\chi^2(2)(1) = 20.9, p < .001$, but also had a higher prevalence of chronic voice disorders (> four weeks in duration), compared with acute voice disorders (20.9 per cent vs 13.3 per cent), $\chi^2(2)(1) = 8.7, p = .003$. To assess the association between past voice disorders and possible risks, adjusted odds ratios (ORs) were estimated using multiple logistic regression. The results identified that being a teacher, being a woman, being between 40 and 59 years of age, having 16 or more years of education, and having a family history of voice disorders were each positively associated with having experienced a voice disorder in the past. These results support the notion that teaching is a high-risk occupation for voice disorders. Important information is also provided regarding additional factors that might contribute to the development of voice disorders.

Endonasal transsphenoidal removal of tuberculum sellae meningiomas: technical note.

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OBJECTIVE: Tuberculum sellae meningiomas traditionally have been removed through a transcranial approach. More recently, the sublabial transsphenoidal approach has been used to remove such tumours. Here, we describe use of the direct endonasal transsphenoidal approach for removal of suprasellar meningiomas. **METHODS:** Three women, aged 32, 34, and 55 years, each sought treatment for visual loss and headaches. In each patient, magnetic resonance imaging (MRI) showed a suprasellar mass causing optic chiasmal and optic nerve compression (average size, 2 × 2 cm). All three patients underwent tumour removal via an endonasal approach with the operating microscope. Suprasellar exposure was facilitated by removal of the posterior planum sphenoidale. Ultrasound was used to help define tumour location before dural opening. The extent of tumour removal was verified with angled endoscopes in all patients, and with intra-operative MRI in one patient. The surgical dural and bony defects were repaired in all patients with abdominal fat, titanium mesh, and two to three days of cerebrospinal fluid lumbar drainage. Nasal packing was not used. **RESULTS:** There were no post-operative cerebrospinal fluid leaks or meningitis. One patient required a re-operation two weeks after surgery to reduce the size of her fat graft, which was causing optic nerve compression; within 24 hours, her vision rapidly improved. At three months after surgery, all three patients had normal vision, no new endocrinopathy, and no residual tumour on MRI. At 10 months after surgery, one patient had a small asymptomatic tumour regrowth seen on MRI. **CONCLUSION:** The endonasal approach with the operating microscope appears to be an effective minimally invasive method for removing relatively small midline tuberculum sellae meningiomas. Intra-operative ultrasound, the micro-Doppler probe, and angled endoscopes are useful adjuncts for safely and completely removing such tumours. Longer follow-up is needed to monitor for tumour recurrence in these patients.