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Abstract Selection

Reconstruction of a large defect of the ear using a composite graft following a human bite injury. Godwin, Y., Allison, K., Waters, R. University Hospital, Birmingham, UK. *British Journal of Plastic Surgery* (1999) March, Vol. 52 (2), pp. 152–4.
Human bites to the ear are not an uncommon injury as a consequence of brawls or even contact sports like rugby. Untreated, the cosmetic outcome of such injury is unsightly. This case history documents how a patient, who had two-thirds of his external ear bitten off, was treated successfully by replacing the part as a composite graft. The segment replanted was minimally trimmed but inset to allow maximal soft tissue apposition at the skin edges. An episode of postoperative venous congestion was treated with leeches. Patience was exercised rather than early debridement of any struggling tissue. All these factors helped the final result, which was 100 per cent take of the replanted segment. Six months from the time of injury, the grafted segment has maintained its shape without cartilage resorption.

The impact of nutritional status on the prognoses of patients with advanced head and neck cancer. van Bokhorst de van der Schuer, van Leeuwen, P. A., Kuik, D. J., Klop, W. M., Sauerwein, H. P., Snow, G. B., Quak, J. J. Department of Dietetics, University Hospital Vrije Universiteit, Amsterdam, The Netherlands. *Cancer* (1999) August 1, Vol. 86 (3), pp. 519–27.
BACKGROUND: Malnutrition has been recognized as a poor prognostic indicator for cancer treatment-related morbidity and mortality in general, and it is reported to affect 30–50 per cent of all patients with head and neck cancer. In this study, the correlation of nutritional status with three-year survival was studied prospectively in 64 patients with T2-T4 carcinomas of the head and neck who were treated surgically with curative intent; the surgery was often followed by radiotherapy. METHODS: All patients underwent nutritional screening according to six different parameters on the day prior to surgery. Overall and disease specific survival analysis were performed with a follow-up period of at least three years. Survival analysis were performed with the log rank test and the Cox proportional hazards model. RESULTS: Lymph node stage, nonradical resection margins, and occurrence of major postoperative complications were demonstrated to affect disease specific survival for the group as a whole. None of the investigated nutritional parameters were correlated with survival. When men and women were analyzed separately, however, a preoperative weight loss of >five per cent did have a prognostic value for men. The combination of male gender, preoperative weight loss, and major postoperative complications were related to early death. CONCLUSIONS: Apart from the well-known prognostic parameters lymph node status (T classification) and status of surgical margins, preoperative weight loss and occurrence of major postoperative complications were also found to have a negative effect on the survival of male patients undergoing surgery for advanced head and neck cancer.

Clinical assessment of antihistamines in rhinitis. Scadding, G. K. Royal National Throat, Nose and Ear Hospital, London, UK. *Clinical and Experimental Allergy* (1999) July, Vol. 29 Suppl 3, pp. 77–81.
The first line of treatment for allergic rhinitis must be identification and avoidance as far as possible of the relevant allergens. This is rarely completely successful and so pharmaceutical treatment is also needed. Antihistamines are effective in allergic rhinitis, which comprises approximately 80 per cent of rhinitis found in children and 30 per cent in adults. Antihistamines antagonize the effect of histamine at the H1 receptor and their major clinical effects are related to this. They are effective against rhinorrhoea, itch and sneezing but have little effect on nasal obstruction. Clinical trials show between 36 and 80 per cent of patients experiencing good to excellent symptom relief (approximately twice that induced by placebo), in seasonal allergic rhinitis; between 55 and 86 per cent of patients experience moderate to excellent symptom relief in perennial allergic rhinitis. Meta-analysis reveals that antihistamines are inferior to corticosteroids in allergic rhinitis therapy. Antihistamines are generally well tolerated, although serious cardiac dysrhythmias have occurred with terfendadine and astemizole. Their place in therapy is probably as sole agent in mild, intermittent rhinitis and in combination with topical corticosteroids in more severe disease not controlled by corticosteroids alone.

Tolerable hearing aid delays. I. Estimation of limits imposed by the auditory path alone using simulated hearing losses. Stone, M. A., Moore, B. C. Department of Experimental Psychology, University of Cambridge, England. *Ear and Hearing* (1999) June, Vol. 20 (3), pp. 182–92.
OBJECTIVE: When people who wear hearing aids speak, there are three paths by which they hear their own voices: 1) through the air and leakage around the earmold; 2) via the solid structure of their head; 3) through the air to the hearing aid microphone, and then through the aid circuitry. These paths involve different time delays. Digital processing introduces delays in path three from a few to several tens of milliseconds which could lead to a range of disturbing effects. We examined one purely auditory effect, namely hearing speech through all three of these paths. Subjective disturbance was measured as a function of delay in path three using simulations of hearing loss and a simulated hearing aid. With increasing hearing loss, the loudness of sound heard via paths one and two decreases, and the aid user relies more on path three. The disturbance produced by the delay then might be less perceptible. To test this idea, four different hearing losses were simulated, varying from mild to moderately severe. DESIGN: Each of two talkers was fitted with a closed earmold, and simultaneous above-ear and in-ear recordings were made of each talker reading prose. The above-ear signal was amplified using a simulated hearing aid with four-channel full dynamic range compression; compression ratios and gains were selected using an algorithm based on the absolute thresholds used in the simulations of hearing loss. The resultant output was then mixed with the in-ear signal with one of five values of delay, and the combined signal was processed using the four simulations of hearing loss. The resulting stimuli simulated for normal-hearing listeners the experience of having a hearing impairment and listening through a hearing aid while talking, except that the talker's voice was not that of the listener. Twenty normally hearing subjects gave subjective ratings of the disturbance of the echo for each delay and each simulated hearing loss. RESULTS: Disturbance ratings generally increased monotonically with increasing delay. Average results show that delays are rated as 'disturbing' for values between 20 and 30 msec for mild to moderate losses. For a moderately severe loss, the rating 'disturbing' was not quite achieved at 40 msec. For moderate losses, a speaker with low fundamental frequency (f0) (70 to 140 Hz) was less disturbing than a speaker with a medium f0, (100 to 180 Hz). This effect reversed for the mildest loss for low values of delay. CONCLUSIONS: The auditory effects of delays between bone-conducted sound and aid-conducted sound are likely to become disturbing for delays exceeding 20 msec. Somewhat longer delays may be tolerable for moderate to severe hearing losses. These delays are smaller than the delays at which audio-visual integration is disrupted.

Cochlear implants in the geriatric population: benefits outweigh risks. Buchman, C. A., Fucci, M. J., Luxford, W. M. House Ear Clinic, Los Angeles, USA. *Ear, Nose, and Throat Journal* (1999) July, Vol. 78 (7), pp. 489–94.
Cochlear implantation has become widely accepted as an effective means of hearing rehabilitation in severely and profoundly deaf individuals. In the elderly, cochlear implantation involves a number of unique issues that can affect patient outcomes. These

factors include age-related changes in the auditory system, prolonged durations of deafness, diminished communication abilities, and coexisting medical and psychosocial problems. In general, the results of cochlear implantation in the elderly have been comparable with those of younger adults. Perioperative attention to medical and surgical details allows for safe insertion and a minimum of postoperative complications. Patients older than 65 have obtained excellent results by both audiologic and quality-of-life measures.

Phonosurgery in the elderly: a review. Slavit, D. H. Ames Vocal Dynamics Laboratory, Lenox Hill Hospital, New York City, USA. *Ear, Nose and Throat Journal* (1999) July, Vol. 78 (7), pp. 505–9.
Surgery in the elderly requires a knowledge of the changes in the larynx that take place with aging. In the elderly larynx, there are changes in the elastin and collagen fibres within the lamina propria. There is also thinning and atrophy of the mucous membranes and atrophy of the mucous glands. Common disorders are vocal fold atrophy, sulcus vocalis, glottic incompetence, and vocal fold edema. A reduction in the number of lymphatic channels is responsible for the vocal fold edema. Vocal fold atrophy is responsible for the increase in pitch that is frequently heard in elderly men. Other common conditions in the elderly include vocal fold nodules, polyps, and Reinke's edema. The most common phonosurgical procedures performed in the elderly are vocal fold surgery for benign pathology and laryngeal structure surgery for glottic incompetence. Microsurgical techniques on benign vocal fold lesions aim to avoid injury to the transitional layer, which is rich in fibroblasts. Although the superficial layer of the lamina propria involves less fibroblastic activity, any surgical manipulation of the lamina propria can influence the vibratory properties of the vocal folds, particularly when the basement membrane zone is manipulated. The alterations in phonosurgical techniques used in the elderly are the result of histologic changes in the vocal folds and altered wound healing. Functional voice disorders often develop to compensate for the structural changes in the larynx. Correction of hyperfunctional or abnormal functional technique is as important as phonosurgical correction of vocal fold pathology.

Long-term results of pediatric primary one-stage cholesteatoma surgery. Silvola, J., Palva, T. ENT Department, Institute of Clinical Medicine, University of Tromso, Norway. *International Journal of Pediatric Otorhinolaryngology* (1999) May 5, Vol. 48 (2), pp. 101–7.
The long-term results of surgical treatment for pediatric cholesteatoma are variable and there is no consensus on operation methods and on factors affecting outcome of surgery. We analyzed the independently evaluated long-term results and possible reasons for recurrence of cholesteatoma. A total of 84 consecutive pediatric (age <16 years) cholesteatoma operations in the Helsinki University Central Hospital ENT Department. The operations were not staged, and all mastoids were obliterated and bony ear canals reconstructed without open cavities. The pre- and postoperative and annual control data were recorded in a database. The last control was independently performed (JS) with an average follow-up of 4.8 years and 87 per cent attendance. The total recurrence rate was 29 per cent (24/84), and it was not dependent on the size of cholesteatoma, mastoid status, cholesteatoma in the window niches or stapedial erosion. A retraction process developed in 25 per cent (21/84) of the ears and 42 per cent (9/21) of these turned into retraction pocket cholesteatoma as late as 13 years postoperatively. Retractions and postoperative discharge, especially in combination, predisposed to recurrence. Of the healed ears, 37 per cent became atelectatic. Hearing was maintained on the preoperative level. Reduced middle ear and attic ventilation led to retractions, and atelectasis and a tendency to discharge accelerated the process. Pitfalls in mastoid obliteration and attic reconstruction and the failure to create new ventilation routes were important reasons for recurrence of cholesteatoma.

Evaluation of the use of a questionnaire to detect hearing loss in babies in China. Newton, V. E., Liu, X., Ke, X., Xu, L., Bamford, J. M. Centre for Audiology, Education of the Deaf and Speech Pathology, University of Manchester, UK. *International Journal of Pediatric Otorhinolaryngology* (1999) May 5, Vol. 48 (2), pp. 125–9.
A questionnaire was used to screen hearing of 1020 babies six to eight months in China. All babies failing the questionnaire and 10 per cent of those who passed were tested using auditory brainstem audiometry (ABR). Babies with unilateral or bilateral hearing thresholds 30 dBnHL or more were investigated to determine the cause of the hearing impairment. Sixty-seven failing the questionnaire were tested and 23 were confirmed to have a hearing loss, 20 with bilateral hearing impairment. The causes were: 13 otitis media with effusion (OME), one hypoxia, one genetic and five unknown. One child with an OME related hearing loss passed the screen The sensitivity of the questionnaire was estimated to be 70 per cent, specificity 96 per cent.

Bacteriology of the middle meatus in children. Gordts, F., Abu-Nasser, I., Clement, P. A., Pierard, D., Kaufman, L. Department of Otolaryngology, University Hospital VUB, Free University of Brussels, Belgium, knoctp@az.vub.ac.be. *International Journal of Pediatric Otorhinolaryngology* (1999) May 5, Vol. 48 (2), pp. 163–7.
Little is known about the bacteriology of the middle meatus in children. Therefore, middle meatal samples were obtained from 50 children who underwent adeniodectomy or adenotonsillectomy, while a group of 50 children submitted to minor non-ENT surgical procedures, were used as a control group. Haemophilus influenzae, Moraxella catarrhalis and Streptococcus pneumoniae were the most frequent cultured organisms, not only in the ENT group (in 68, 50 and 60 per cent of the children respectively) but also in the control group (40, 34 and 50 per cent). These three potential pathogens were more frequently seen among the children of the ENT group but only for H. influenzae was the observed difference statistically significant (P = 0.009). On semiquanitative analysis, there seemed to be more negative cultures or cultures with only a few colonies in the control group, while the richer cultures were obtained from the ENT group. Again, only for H. influenzae, these differences reached a statistical significance (P = 0.003). Streptococcus viridans and Neisseria species, both organisms that might be able to inhibit colonization by some of the pathogens, were more frequently cultured in the control than in the ENT group: Strep. viridans 30 vs. 10 per cent (P = 0.025) and Neisseria species 14 vs. two per cent (P = 0.069).

Detection of Alloiococcus otitis in mixed bacterial populations from middle-ear effusions of patients with otitis media. Beswick, A. J., Lawley, B., Fraise, A. P., Pahor, A. L., Brown, N. L. School of Biological Sciences, University of Birmingham, Edgbaston, UK. alan.beswick@hsl.gov.uk. *Lancet* (1999) July 31, Vol. 354 (9176), pp. 386–9.
BACKGROUND: Otitis media is a potentially serious disorder, since there is a risk of permanent hearing loss. Culture methods are not useful in characterization of populations of bacteria in the middle ear. We have used a PCR-based method that does not depend on prior knowledge of the bacteria identified by culture. METHODS: Middle-ear effusion fluid was obtained from 12 patients with chronic otitis media with effusion. Total DNA was extracted from the samples, and the hypervariable regions of bacterial 16S rRNA genes were amplified by means of broad-range PCR primers. Individual PCR products were segregated by cloning to allow analysis of mixed bacterial populations. FINDINGS: Many bacterial species were detected by PCR, whereas with culture-based approaches, no bacterial growth was detected for 10 of the 12 patients. The gram-positive bacterium Alloiococcus otitis (A. otitidis) was detected by 16S rDNA amplification in six of the 12 samples, but not by culture techniques. Interpretation the method may have general usefulness in characterizing bacterial populations at the site of infection and may indicate, from small sample numbers, organisms that are candidates for further investigation.

Microanatomy of the cerebellopontine angle and internal auditory canal: study with new magnetic resonance imaging technique using three-dimensional fast spin echo. Mitsuoka, H., Arai, H., Tsunoda, A., Okuda, O., Sato, K., Makita, J. Department of Neurosurgery, Juntendo University, Tokyo, Japan. *Neurosurgery* (1999), March, Vol. 44 (3), pp. 561–6.
OBJECTIVE: We report a new magnetic resonance imaging technique that uses three-dimensional fast spin echo and the minimum intensity projection method. Using this technique, detailed images of the cerebellopontine angle (CPA) and internal

auditory canal (IAC) were obtained in normal volunteers and in patients with acoustic neuromas or hemifacial spasm. METHODS: Ten normal volunteers, 44 patients with acoustic neuromas, and 31 patients with hemifacial spasm were studied using the three-dimensional fast spin echo magnetic resonance imaging protocol. The CPA and IAC were scanned by using a one mm slice thickness in the axial and parasagittal planes. RESULTS: Normal anatomy was as follows. 1) The vestibulocochlear nerve was ovoid near brain stem and changed to a slightly crescentic configuration (C shape) as it travelled laterally. 2) Separation of the cochlear and vestibular nerves was observed near the central part of the IAC. 3) Discrimination between the superior and inferior vestibular nerves was also possible near the fundus of the IAC. 4) The facial nerve was easily identifiable as a discrete nerve at the anterior aspect of the vestibulocochlear nerve. 5) The meatal loop of the cerebellar artery was located medial to the porus in 44 per cent of 95 CPAs and reached the porus or protruded into the porus in 56 per cent. Acoustic neuromas were as follows. 1) In a patient with a very small intracanalicular tumour, the nerve on which the tumour was located could be identified. 2) In 22 of 44 acoustic neuromas, cerebrospinal fluid was present between the tumour and the fundus of the IAC. Hemifacial spasm was as follows. The relationship between the responsible artery and the facial nerve could be precisely observed. CONCLUSION: The three-dimensional fast spin echo method offers ultrahigh-resolution images, which are extremely useful in understanding the surgical anatomy of the CPA and IAC.

Long-term clinical efficacy of grass-pollen immunotherapy (see comments). Durham, S R., Walker, S. M., Varga, E. M., Jacobson, M. R., O'Brien, F., Noble, W., Till, S. J., Hamid, Q. A., Nouri-Aria, K. T. Department of Upper Respiratory Medicine, Imperial College School of Kingdom. s.durham@rbh.nthames.nhs.uk. *New England Journal of Medicine* (1999) August 12, Vol. 341 (7), pp. 468-75. Comment in *New England Journal of Medicine* (1999) August 12, Vol. 341 (7), pp. 522–4.
BACKGROUND: Pollen immunotherapy is effective in selected patients with IgE-mediated seasonal allergic rhinitis, although it is questionable whether there is long-term benefit after the discontinuation of treatment. METHODS: We conducted a randomized, double-blind, placebo-controlled trial of the discontinuation of immunotherapy for grass-pollen allergy in patients in whom three to four years of this treatment had previously been shown to be effective. During the three years of this trial, primary outcome measures were scores for seasonal symptoms and the use of rescue medication. Objective measures included the immediate conjunctival response and the immediate and late skin responses to allergen challenge. Cutaneous-biopsy specimens obtained 24 hours after intradermal allergen challenge were examined for T-cell infiltration and the presence of cytokine-producing T helper cells (TH2 cells) (as evidenced by the presence of interleukin-4 messenger RNA). A matched group of patients with hay fever who had not received immunotherapy was followed as a control for the natural course of the disease. RESULTS: Scores for seasonal symptoms and the use of rescue antiallergic medication, which included short courses of prednisolone, remained low after the discontinuation of immunotherapy, and there was no significant difference between patients who continued immunotherapy and those who discontinued it. Symptom scores in both treatment groups (median areas under the curve in 1995, 921 for continuation of immunotherapy and 504 for discontinuation of immunotherapy; $P = 0.60$) were markedly lower than those in the group that had not received immunotherapy (median value in 1995, 2863). Although there was a tendency for immediate sensitivity to allergen to return late after discontinuation, there was a sustained reduction in the late skin response and associated CD3+ T-cell infiltration and interleukin-4 messenger RNA expression. CONCLUSIONS: Immunotherapy for grass-pollen allergy for three to four years induces prolonged clinical remission accompanied by a persistent alteration in immunologic reactivity.

Ossiculoplasty. McGee, M., Hough, J. V. Hough Ear Institute, Department of Otorhinolaryngology – Head and Neck Surgery, University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma 73112-4466, USA. *Otolaryngologic Clinics of North America* (1999) June, Vol. 32 (3), pp. 471–88.
Homograft human bone is not only the most logical choice for grafting material, but also the closest transplantation material to the host histologically. This article discusses surgical repair of the ossicular chain with homograft bone transplants, including rationale for present surgical techniques, a thorough description of simple methods of microlathing homograft bone grafts, and instructions for maintaining an ossicular replacement bone bank. Furthermore, results in all types of ossiculoplasty and a method of classification of tympanoplasty are presented in this article.

Penicillin-nonsusceptible pneumococcus in acute otitis media in New York City. Haddad, J. Jr, Saiman, L., Chin, N. X., Della-Latta, P. Columbia-Presbyterian Medical Center, New York, New York, USA. *Otolaryngology – Head and Neck Surgery* (1999) July, Vol. 121 (1), pp. 27–30.
OBJECTIVE: To determine the proportion of children with acute otitis media (AOM) presenting in our catchment area in New York City who were infected with nonsusceptible Streptococcus pneumoniae and to determine the susceptibility of these organisms to penicillins and other antibiotics commonly used to treat AOM. SETTING: Ambulatory clinics and the emergency department of a tertiary care, inner-city medical center. PATIENTS: During a two-year period from 1993 to 1995, 115 children (aged six months to 12 years) with AOM underwent tympanocentesis. Patients did not receive antibiotics for at least one week before tympanocentesis. RESULTS: Thirty-one children were infected with S. pneumoniae, and 83.9 per cent of isolates were susceptible to penicillin. Of the 16.1 per cent strains that were nonsusceptible, most (four of five strains) were intermediately resistant, and only one exhibited high-level resistance to penicillin. Of all the cephalosporins tested, only cefotaxime had consistent activity against the intermediately resistant strains. Notably, all nonsusceptible pneumoccoci were inhibited by macrolides. CONCLUSIONS: This study provides unique reference data for nonsusceptible Streptococcus pneumoniae in children with AOM and documents that newer cephalosporin agents were not active against all of these strains.

Healing large tympanic membrane perforations using hyaluronic acid, basic fibroblast growth factor, and epidermal growth factor. Chauvin, K., Bratton, C., Parkins, C. Department of Otolaryngology Head and Neck Surgery, Louisiana State University Medical Center, New Orleans, USA. *Otolaryngology – Head and Neck Surgery* (1999) July, Vol. 121 (1), pp. 43–7.
Large tympanic membrane perforations usually require a surgical tympanoplasty for closure. Reducing surgical costs and risks has encouraged investigators to examine nonsurgical office procedures for healing these perforations. Growth accelerators are the most promising agents. We study here the closure of large acute perforations using weakly applications of one mg of one per cent hyaluronic acid (HA), 0.4 microg basic fibroblast growth factor (bFGF), or one microg epidermal growth factor (EGF) directly to the tympanic membranes of the experimental ears. Control ears were treated with 0.1 mL Vasocidin. Complete closure was obtained in 100 per cent of the ears treated with HA and EGF and 85.7 per cent of those treated with bFGF by day 21, compared with 63.6 per cent of the controls by day 32. Moderate-to-severe ipsilateral and contralateral external canal hypertrophy was noted in 14.2 per cent and 37.5 per cent of the ears treated with bFGF and HA, respectively, but was not seen in ears treated with EGF or in the control group.

Incidence of abnormal laryngeal findings in asymptomatic singing students. Lundy, D. S., Casiano, R. R., Sullivan, P. A., Roy, S., Xue, J. W., Evans, J. Department of Otolaryngolgy and the School of Music, University of Miami, Florida, USA. *Otolaryngology – Head and Neck Surgery* (1999) July, Vol. 121 (1), pp. 69–77.
OBJECTIVE: Abnormalities in the mucosal lining of the vocal folds may interfere with the normal vibratory patterns and result in vocal limitations, especially for singers whose demands are great. A prospective, longitudinal study was undertaken to investigate the incidence of laryngeal abnormalities in asymptomatic singing students. METHODS: Sixty-five singing students at the school of music underwent videostroboscopic evaluation and completed a comprehensive questionnaire. Videos were rated by three experienced clinicians, and interrater reliability was calculated. Results were correlated with demographic factors, background medical history, and singing history. RESULTS: Five students (8.3 per cent) exhibited early signs of benign vocal fold lesions (two with nodules and three with cysts). A high incidence

of posterior erythema (n = 44; 73.4 per cent), suggesting possible reflux, was found. CONCLUSIONS: A surprisingly high number of otherwise asymptomatic singing students demonstrated abnormal laryngeal findings. Their relationship with vocal performance will be addressed as well as implications for preventative measures.

Systemic reactivation of otitis media with effusion in a rat model. Jewett, B. S., Prazma, J. P., Hunter, S. E., Rose, A. S., Clark, J. M., Sartor, B. R., Pillsbury, H. C. Division of Otolaryngology Head and Neck Surgery, Department of Surgery, University of Chapel Hill, School of Medicine, North Carolina 27599-7070, USA. *Otolaryngology – Head and Neck Surgery* (1999) July, Vol. 121 (1), pp. 7–12.

OBJECTIVE: This study addresses the interaction of bacterial antigens, specifically peptidoglycan-polysaccharide (PG-PS) and lipopolysaccharide (LPS), in the induction and reactivation of mucoid middle ear effusions. METHODS: Twenty-seven rats underwent eustachian tube obstruction before inoculation of the middle ear effusions, six rats were randomly selected and euthanized as the first control group (control I). The remaining 21 animals were randomly assigned to three groups that received intravenous injections of Krebs Ringer (control II), PG-PS, and LPS, respectively. These rats were euthanized two days after intravenous injection. Middle ear mucin production and histologic changes were measured in all animals. RESULTS: The mean concentrations of mucin were 0.94 ± 0.52 mg/mL, 0.41 ± 0.87 mg/mL, 16.33 ± 3.67 mg/mL, and 1.15 ± 0.41 mg/mL in the control I, control II, PG-PS, and LPS groups, respectively. Thus the mean concentration of mucin in the middle ear lavage samples was significantly greater in rats that were injected intravenously with PG-PS than in rats in other groups ($P<0.05$). Histologic analyses demonstrated a greater degree of goblet cell hyperplasia in the PG-PS group than in other groups. CONCLUSIONS: This is the first animal model of recurring otitis media with effusion in which a systemic injection of PG-PS was used to reactivate a middle ear effusion in rats previously primed with a transtympanic injection of PG-PS. This study suggests that after otitis media with effusion has resolved, it may be reactivated by the presence of bacterial antigens and/or cytokines in the systemic circulation.

Voice target time in Parkinson's disease: A preliminary report. Jiang, J., Lin, E., Sheynin, B., Hanson, D. G. Department of Otolaryngology Head and Neck Surgery, Northwestern University School of Medicine, Chicago, Illinois, USA. *Otolaryngology – Head and Neck Surgery* (1999) July, Vol. 121 (1), pp. 87–91.

A target-matching paradigm was developed to assess the vocal equivalents of reaction and movement time in Parkinson's disease. Six patients with Parkinson's disease and six age- and gender-matched control subjects were asked to enunicate /pa/ to reach a target frequency and intensity level in response to a light stimulus. The stimulus and acoustic responses were simultaneously recorded. Measures included laryngeal reaction time, time between stimulus and phonation onset; frequency voice target time, time from phonation onset to target level of frequency; and amplitude voice target time, time from phonation onset to target level of intensity. The two subject groups were significantly differentiated by laryngeal reaction time ($t = 299.67$, d.f. = 10, $P = 0.005$) and frequency voice target time ($t - 148$, d.f. = 10, $P = 0.014$). These data suggest voice target time is a viable tool for assessing the effects of neurologic disorders on voice execution in Parkinson's disease.