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Abstract Selection

Changes in oxygen tension during radiotherapy of head and neck tumours. Lyng, H., Tanum, G., Evensen, J. F., Rofstad, E. K. Department of Biophysics, The Norwegian Radium Hospital, Oslo. heidi.lyng@labmed.uio.no. *Acta Oncologica* (1999), Vol. 38 (8), pp. 1037–42.
Increased knowledge about changes that occur in tumour oxygenation during radiotherapy and the biological factors causing these changes can be useful in the development of optimal radiation treatments. The aims of this study were a) to study changes in the oxygen tension (pO2) of human head and neck tumours during radiotherapy in relationship to changes in cell density and vascular density, and b) to investigate whether the pO2, measured before or during therapy, can be used to predict the therapeutic outcome. Preliminary data from the first 11 patients included in the study are reported. The pO2 was measured before treatment (11 patients) and once a week during therapy (eight patients), using polarographic needle electrodes. Cell density and vascular density were determined from biopsies taken after each pO2 measurement in five patients. Significant fluctuations in pO2 occurred during therapy. Changes in hypoxic fraction; i.e. fraction of pO2 readings below 2.5 mmHg, 5 mmHg or 10 mmHg, coincided with changes in cell density, but not with changes in vascular density, which suggests that the changes in hypoxic fraction were caused by changes in oxygen consumption rather than supply. Response evaluation after a median follow-up time of 19 months showed that progressive disease occurred among the patients with highly hypoxic tumour, regardless of whether hypoxic fraction before treatment or after two weeks of radiotherapy was considered.

Controlled trial of universal neonatal screening for early identification of permanent childhood hearing impairment: coverage, positive predictive value, effect on mothers and incremental yield. Wessex Universal Neonatal Screening Trial Group. Kennedy, C. R. Southampton University Hospitals Trust, UK. crkl@soton.ac.uk. *Acta Paediatrica. Supplement* (1999) December, Vol. 88 (432), pp. 73–5.
OBJECT: Congenital bilateral permanent childhood hearing impairment (PCHI) impairs communication skills and, in some cases, mental health and employment prospects. Management of PCHI within the first year of life can alleviate most of its adverse effects. We investigated whether neonatal screening of all babies born in hospital, in addition to the standard Health Visitor Distraction Tract (HVDT), would increase the rates of early diagnosis. METHODS: Between 1993 and 1996, two teams of four part-time testers and equipment moved between two pairs of hospitals to achieve four periods with neonatal screening and four without neonatal screening, each of four to six months duration in each hospital. Babies did or did not undergo neonatal screening dependent on the periods during which they were born. We used a transient evoked oto-acoustic emissions (TEOAE) test followed, in infants who failed this test, by an automated auditory brainstem response (AABR) test on the same day. We referred babies with positive results for audiological assessment. RESULTS: 53,781 infants were included in the trial, including 25, 609 born during periods of neonatal screening. The neonatal screen achieved 87 per cent coverage of inborn births, with a false alarm rate of 1.5 per cent, and an overall yield from the screen of 90 cases of bilateral PCHI > or = 40 dB HTL per 100,000 target population, equivalent to 80 per cent of the expected prevalence of the condition in the population. Seventy-one more babies with moderate or severe PCHI per 100,000 target population were referred before age six months during periods with neonatal screening than during periods without. Early confirmation and management of PCHI were significantly increased. The false-negative rate of neonatal screening was significantly lower than that of HVDT screening (four per cent vs 27 per cent). CONCLUSIONS: Neonatal screening is effective in identification of congenital PCHI and may be particularly useful for babies with moderate and severe PCHI for whom early management may have the most benefit.

A double-blind, placebo-controlled comparison of treatment with fluticasone propionate and levocabastine in patients with seasonal allergic rhinitis. FLNCO2 Italian Study Group. Ortolani, C., Foresi, A., Di-Lorenzo, G., Bagnato, G., Bonifazi, F., Crimi, N., Emmi, L., Prandini, M., Senna, G. E., Tursi, A., Mirone, C., Leone, C., Fina, P., Testi, R. Divisione Bizzozzero di Medicina Interna, Ospedale Niguarda Milano, Italy. *Allergy* (1999) November, Vol. 54 (11), pp. 1173–80.
Fluticasone propionate aqueous nasal spray (FPANS) is a topically active glucocorticoid which has been successfully used for the treatment of seasonal allergic rhinitis (SAR). Topical levocabastine is a highly selective H1 antagonist which has been proposed as an alternative treatment of SAR. The purpose of this study was to compare the clinical efficacy of two topical nasal treatments, FPANS and levocabastine, in the treatment of SAR. Additionally, the effect of treatments on nasal inflammation was examined during natural pollen exposure. A group of 288 adolescent and adult patients with at least a two year history of SAR to seasonal pollens participated in a multicenter, doubleblind, double-dummy, and placebo-controlled study. Patients were treated with either FPANS 200 microg, once daily (n = 97), or topical levocabastine, 200 microg, given twice daily (n = 96), or matched placebo (n = 95) for a period of six weeks, starting from the expected beginning of the pollen season. Clinically relevant pollens included Parietaria, olive, and grass. Assessment of efficacy was based on scores of daily nasal symptoms and on nasal cytology of nasal lavage. Nasal lavage was performed immediately before, during, and at the end of treatment in 39 patients. FPANS significantly increased the percentage of symptom-free days for nasal obstruction on waking and during the day, rhinorrhoea, sneezing, and itching. FPANS provided a better control for night and day nasal obstruction ($p<0.02$ and $p<0.01$) and rhinorrhoea ($p<0.01$) than levocabas tine. In addition, fewer patients treated with FPANS used rescue medication ($p<0.025$). The percentage of eosinophils in nasal lavage was reduced only during treatment with FPANS. The results of this study indicate that FPANS 200 microg, once daily, provides a better clinical effect than levocabastine 200 microg, twice daily, in patients with SAR. Unlike levocabastine, FPANS significantly attentuates nasal eosinophilia during pollen exposure, a feature which may explain its therapeutic efficacy.

Loss-of-function mutations in a human gene related to Chlamydomonas reinhardtii dynein IC78 result in primary ciliary dyskinesia. Pennarun, R., Escudier, E., Chapelin, C., Bridoux, A. M., Cacheux, V., Roger, G., Clement, A., Goossens, M., Amselem, S., Duriez, B. Institut National de la Sante et de la Recherche Medicale U468, Hopital Henri-Mondor, 94010 Creteil, France. *American Journal of Human Genetics* (1999) December, Vol. 65 (6), pp. 1508–19.
Primary ciliary dyskinesia (PCD) is a group of heterogeneous disorders of unknown origin, usually inherited as an autosomal recessive trait. Its phenotype is characterized by axonemal abnormalities of respiratory cilia and sperm tails leading to bronchiectasis and sinusitis, which are sometimes associated with situs inversus (Kartagener syndrome) and male sterility. The main ciliary defect in PCD is an absence of dynein arms. We have isolated the first gene involved in PCD, using a candidate-gene approach developed on the basis of documented abnormalities of immotile strains of Chlamydomonas reinhardtii, which carry axonemal ultrastructural defects reminiscent of PCD. Taking advantage of the evolutionary conservation of genes encoding axonemal proteins, we have isolated a human sequence (DNAI1) related to IC78, a C. reinhardtii gene encoding a dynein intermediate chain in which mutations are associated with the

absence of outer dynein arms. DNAI1 is highly expressed in trachea and testis and is imposed of 20 exons located at 9p13-p21. Two loss-of-function mutations of DNAI1 have been identified in a patient with PCD characterized by immotile respiratory cilia lacking outer dynein arms. In addition, we excluded linkage between this gene and similar PCD phenotypes in five other affected families, providing a clear demonstration of locus heterogeneity. These data reveal the critical role of DNAI1 in the development of human axonemal structures and open up new means for identification of additional genes involved in related developmental defects.

The cricoarytenoid joint capsule and its relevance to endotracheal intubation. Paulsen, F. P., Jungmann, K., Tillmann, B. N. Department of Anatomy, Christian Albrecht University of Kiel, Germany. fpaulsen@anat.uni-kiel.de. *Anesthesia and Analgesia* (2000) January, Vol. 90 (1), pp. 180–5.
Impaired movement of the cricoarytenoid joint with hoarseness and immobility of the vocal ligament may occur as a consequence of endotracheal intubation. Little is known about the cricoarytenoid joint capsule and its role in intubation. We investigated the joint capsules of 48 cricoarytenoid joints by means of gross anatomy microscopy, histology, and scanning electron microscopy; 30 unfixed cadaver larynges were also subjected to attempts to simulate traumata such as those that may occur during intubation trials. The larynges were intubated with the arytenoid tip entering the lumen of the tracheal tube or extubated with the cuff of the tube only partially deflated. Subsequently, i.e. after dissecting the left and right cricoarytenoid joint from each larynx, the morphologic changes induced experimentally were analysed by using histologic methods. The cricoarytenoid joint was found to be lined by a wide joint capsule. Unexpectedly large and intensively vascularized synovial folds projected into the joint cavity. After simulation of intubation and extubation, histologic analysis revealed injuries to the synovial folds and joint surface impressions, but no trauma or rupture of the outer joint capsule. We conclude that laxity of the joint capsule and the large synovial folds are predisposing factors for intubation trauma of the cricoarytenoid joint, potentially leading to hemarthros and finally to cricoarytenoid joint dysfunction. IMPLICATIONS: The present study illustrates by morphological investigations and intubation experiments that laxity of the joint capsule and large synovial folds are predisposing factors for intubation trauma of the cricoarytenoid joint, potentially leading to hemarthrosis and finally to cricoarytenoid joint dysfunction.

Paediatric presentation of type 2 neurofibromatosis. Evans, D. G., Birch, J. M., Ramsden, R. T. Department of Medical Genetics St Mary's Hospital, Manchester M13 0JH, UK. *Archives of Diseases in Childhood* (1999) December, Vol. 81 (6), pp. 496–9.
BACKGROUND: Neurofibromatosis type 2 (NF2) is a highly penetrant autosomal dominant condition predisposing affected individuals to schwannomas and meningiomas. The proportion of children presenting with meningioma or schwannoma who have NF2 is not well described, and neither is the mode of presentation in most children with the inherited disease. AIMS: To determine the frequency of childhood meningioma and schwannoma cases caused by NF2 and the mode of presentation. METHODS: The records of the Manchester Children's Tumour Registry from 1954 were searched for cases of meningioma and schwannoma. Paediatric presentation in a large UK series of NF2 was also studied. RESULTS: 18 per cent (61/334) of patients with NF2 on the UK database presented in the paediatric age group (0–15 years), frequently with the symptoms of an isolated tumour. More than half had no family history to alert the clinician to their susceptibility. Three of 22 children presenting with a meningioma on the Manchester Children's Tumour Registry have gone on to develop classic features of NF2. CONCLUSIONS: Clinicians should suspect NF2 in children presenting with meningioma, schwannoma, and skin features, such as neurofibromas/schwannomas, but fewer than six cafe au lait patches, who thus fall short of a diagnosis of neurofibromatosis type 1.

Overlapping conditions among patients with chronic fatigue syndrome, fibromyalgia, and temporomandibular disorder. Aaron, L. A., Burke, M. M., Buchwald, D. Deprtment of Medicine, University of Washington, Seattle, USA. laaron@u.-washington.edu. *Archives of Internal Medicine* (2000) January 24, Vol. 160 (2), pp. 221–7.
BACKGROUND: Patients with chronic fatigue syndrome (CFS), fibromyalgia (FM), and temporomandibular disorder (TMD) share many clinical illness features such as myalgia, fatigue, sleep disturbances, and impairment in ability to perform activities of daily living as a consequence of these symptoms. A growing literature suggests that a variety of comorbid illnesses also may commonly coexist in these patients, including irritable bowel syndrome, chronic tension-type headache, and interstitial cystitis. OBJECTIVE: To describe the frequency of 10 clinical conditions among patients with CFS, FM, and TMD compared with healthy controls with respect to past diagnoses, degree to which they manifested symptoms for each condition as determined by expert-based criteria, and published diagnostic criteria. METHODS: Patients diagnosed as having CFS, FM and TMD by their physicians were recruited from hospital-based clinics. Healthy control subjects from a dermatology clinic were enrolled as a comparison group. All subjects completed a 138-item symptom checklist and underwent a brief physical examination performed by the project physicians. RESULTS: With little exception, patients reported few past diagnoses of the 10 clinical conditions beyond their referring diagnosis of CFS, FM, or TMD. In contrast, patients were more likely than controls to meet lifetime symptom and diagnostic criteria for many of the conditions, including CFS, FM, irritable bowel syndrome, multiple chemical sensitivities, and headache. Lifetime rates of irritable bowel syndrome were particularly striking in the patient groups (CFS, 92 per cent; FM, 77 per cent; TMD, 64 per cent) compared with controls (18 per cent) ($p<0.001$). Individual symptom analysis revealed that patients with CFS, FM and TMD share common symptoms, including generalized pain sensitivity, sleep and concentration difficulties, bowel complaints, and headache. However, several symptoms also distinguished the patient group. CONCLUSIONS: This study provides preliminary evidence that patients with CFS, FM, and TMD share key symptoms. It also is apparent that other localized and systemic conditions may frequently co-occur with CFS, FM, and TMD. Future research that seeks to identify the temporal relationships and other pathophysiologic mechanism(s) linking to CFS, FM, and TMD will likely advance our understanding and treatment of these chronic, recurrent conditions.

Lymph node detection of head and neck squamous cell carcinomas by positron emission tomography with fluorodeoxyglucose F 18 in a routine clinical setting. Kau, R. J., Alexiou, C., Laubenbacher, C., Werner, M., Schwaiger, M., Arnold, W. Department of Otorhinolaryngology–Head and Neck Surgery, Technical University of Munich, Germany. *Archives of Otolaryngology–Head and Neck Surgery* (1999) December, Vol. 125 (12), pp. 1322–8.
BACKGROUND: Accurate determination of lymph node involvement is a prerequisite for individualized therapy in patients with squamous cell carcinoma of the head and neck region. In a previous study, we showed that positron emission tomography (PET) with fluorodeoxyglucose F 18 with and without attentuation correction is superior to magnetic resonance imaging for this purpose in a scientific setting. OBJECTIVE: To evaluate the diagnostic accuracy of a shortened PET protocol (acquisition time, 20 minutes) in a routine clinical setting. DESIGN: The results of static, nonattenuation-corrected PET performed on patients in two bed positions starting 40 minutes after the intravenous injection of 370 MBq of fluorodeoxyglucose F 18 and the results of morphologic procedures (computed tomography and magnetic resonance imaging) were compared prospectively in 70 patients for lymph node staging. Postoperative pathologic findings served as a criterion standard. SETTING: An academic medical center. RESULTS: The diagnostic accuracy of PET for detecting 'neck sides' with malignant involvement was superior to morphologic procedures, with a sensitivity and specificity of 87 per cent and 94 per cent, respectively, compared with computed tomographic values of 65 per cent and 47 per cent and magnetic resonance imaging values of 88 per cent and 41 per cent, respectively. CONCLUSION: A short PET protocol that is suitable for routine clinical use is superior to morphologic procedures (computed tomography and magnetic resonance imaging) for the detection of lymph node involvement in head and neck squamous cell carcinomas.

Vibratory analysis of the neoglottis after surgical intervention of cricopharyngeal myotomy and implantation of tracheal cartilage. Hirano, S., Kojima, H., Kaneko, K., Tateya, I., Asato, R., Omori, K. Department of Otolaryngology, Kyoto University Hospital, Japan. hirano@ent.kuph.kyoto-u.ac.jp. *Archives of Otolaryngology–Head and Neck Surgery* (1999) December, Vol. 125 (12), pp. 1335–40.
OBJECTIVE: To examine the effect of new surgical intervention, consisting of cricopharyngeal myotomy and tracheal cartilaginous implantation on the anterior wall of the esophagus, for tracheoesophageal shunt and esophageal phonation. DESIGN: We examined the vibration of the neoglottis of tracheoesophageal shunt and esophageal speakers after total laryngectomy using a high-speed video camera (frame rate, 1000 per second). PATIENTS: Twenty-one alaryngeal patients were involved: 13 who had undergone the present procedure and eight who had not. RESULTS: The regularity of neoglottal vibration and the degree of neoglottal closure were significantly ($p<0.01$) better in patients who had undergone the procedure than in those who had not. These effects on neoglottal vibration induced easier phonation. CONCLUSIONS: Cricopharyngeal mytomy was useful for avoiding reconstructed esophageal spasm, and tracheal cartilaginous implantation was effective for maintaining a wide subneoglottal space. This combination of procedures is useful for obtaining optimal vibration of the neoglottis in tracheoesophageal shunt and esophageal speakers.

Cyclin D1 and p53 overexpression predicts multiple primary malignant neoplasms of the hypopharynx and esophagus. Kohmura, T., Hasegawa, Y., Ogawa, T., Matsuura, H., Takahashi, M., Yanagita, N., Nakashima, T. Department of Otolaryngology, Nagoya University School of Medicine, Japan. *Archives of Otolaryngology–Head and Neck Surgery* (1999) December, Vol. 125 (12), pp. 1351–4.
BACKGROUND: Multiple primary upper aerodigestive tract carcinomas can occur in up to 15 per cent of patients. We have shown previously that half of the patients with multiple upper aerodigestive tract squamous cell carcinomas are initially seen with synchronous tumours. Most metachronous squamous cell carcinomas become manifest within three years. OBJECTIVE: To examine the expression of two proteins-cyclin D1 and p53-in an attempt to predict the occurrence of multiple primary malignant neoplasms (MPs). MATERIALS AND METHODS: Monoclonal antibodies to cyclin D1 (DCS-6 (dilution, 1:50). Novocastra Laboratories Ltd., Newcastle, England) and p53 (DO-7 (dilution, 1–100), Dako Corp, Carpinteria, Calif) proteins were used. Resection specimens from a total of 47 patients, 12 patients with MP and 35 patients with nonmultiple primary malignant neoplasms, were analysed. Those in the nonmultiple primary malignant neoplasm group had longer than three years' follow-up to ascertain the absence of MP. RESULTS: Tumour overexpression of cyclin D1 was significantly associated with the development of MP ($p<0.01$). Tumour overexpression of p53 was also frequent in patients with MP although statistical significance was not achieved. The combination of these two parameters was an even greater predictor of MP ($p<0.001$). CONCLUSIONS: Overexpression of cyclin D1 and p53 proteins was highly correlated with the development of MP. Additional studieis are necessary to confirm this finding. Immunohistochemical evaluation of primary squamous cell carcinomas for cyclin D1 and p53 overexpression may become an important fact of surgical pathologic reporting for primary upper aerodigestive tract squamous cell carcinomas.

Pediatric vocal fold paralysis: a long-term retrospective study. Daya, H., Hosni, A., Bejar-Solar, I., Evans, J. N., Bailey, C. M. Great Ormond Street Hospital for Children, London, England. HamidDaya@compuserve.com. *Archives of Otolaryngology–Head and Neck Surgery* (2000) January, Vol. 126 (1), pp. 21–5.
OBJECTIVE: To review our experience of pediatric vocal fold paralysis (VFP), with particular emphasis on etiological factors, associated airway pathologic conditions and treatment and prognostic outcomes. DESIGN: Retrospective case review of a cohort of patients presenting with VFP. SETTING: Tertiary referral center. PATIENTS: A consecutive sample of 102 patients presenting with VFP to Great Ormond Street Hospital for Children, London, England, over a 14-year period from 1980 to 1994. RESULTS: There was an almost equal distribution of unilateral (52 per cent (n = 53)) and bilateral (48 per cent (n = 49)) VFP. Iatrogenic causes (43 per cent (n = 44)) formed the largest group, followed by idiopathic VFP (35 per cent (n = 36)), neurological causes (16 per cent (n = 16)), and finally birth trauma (five per cent (n = five)). Associated upper airway pathologic conditions were noted in 66 per cent (n = 23) of patients who underwent tracheotomy. Tracheotomy was necessary in only 57 per cent (n = 28) of children with bilateral VFP. Prognosis was variable depending upon the cause, with neurological VFP having the highest rate of recovery (71 per cent (five of seven)) and iatrogenic VFP the lowest rate (46 per cent (12/26)). CONCLUSION: Recovery after an interval of up to 11 years was seen in idiopathic bilateral VFP; this has significant implications when considering lateralization procedures in these patients.

Paradoxical vocal cord dysfunction in juveniles. Powell, D. M., Karanfilov, B. I., Beechler, K. B., Treole, K., Trudeau, M. D., Forrest, L. A. Department of Otolaryngology, The Ohio State University, Columbus 43210, USA. Powell.210@osu.edu. *Archives of Otolaryngology–Head and Neck Surgery* (2000) January, Vol. 126 (1), pp. 29–34.
OBJECTIVE: To evaluate demographic and videolaryngoscopic features in a large series of juveniles with paradoxical vocal cord dysfunction (PVCD). DESIGN: Case series data from videolaryngoscopic tapes retrospectively evaluated in a masked, controlled fashion, and demographic data collected via retrospective medical chart review. SETTING: A tertiary care otolaryngology and speech pathology referral centre. PATIENTS: Twenty-two patients with PVCD aged 18 years and younger diagnosed as having PVCD at The Ohio State University Voice Institute, Columbus. MAIN OUTCOME MEASURES: Age, sex, social history, and medical history (demographic); epiglottic position, arytenoid and interarytenoid appearance, phase 0 stability, true vocal cord respiratory motion, degree of anteroposterior (AP) constriction, and false vocal cord adduction (videolaryngoscopic). RESULTS: Of 22 patients, 18 were girls, and 12 had significant social stressors, particularly organized sports. Nineteen patients had posterior laryngeal changes commonly found in gastroesophageal reflux disease. Twelve patients demonstrated abnormal true vocal cord adduction during quiet respiration. Seven patients demonstrated supraglottic anteroposterior constriction and false vocal cord approximation during phonation. CONCLUSIONS: Juvenile PVCD is more common in girls and is associated with social stresses. Anatomic laryngeal changes typically associated with gastroesophageal reflux disease are extremely common in these patients. Juveniles with PVCD frequently demonstrate abnormal true vocal cord adduction during quiet respiration. We recommend that initial evaluation of juvenile patients for possible PVCD be conducted via transnasal fiberoptic laryngoscopy while the patient is asymptomatic, and that strong consideration be given to empiric pharmacological treatment of gastroesophageal reflux disease in juveniles diagnosed as having PVCD.

Treatment of intractable diseased tissue in the maxillary sinus after endoscopic sinus surgery with high-pressure water jet and preservation of the periosteum. Kikawada, T., Nonoda, T., Matsumoto, M., Kikura, M., Kikawada, K. Hamamatsu Ear, Nose and Throat Surgicenter, Japan. hents@tb3.so-net.ne.jp. *Archives of Otolaryngology–Head and Neck Surgery* (2000) January, Vol. 126 (1), pp. 55–61.
OBJECTIVE: To describe a new high-pressure water jet (HPWJ) treatment to remove intractable diseased mucosa persisting in the maxillary sinus several months after endoscopic sinus surgery (ESS) while preserving the periosteum. DESIGN: A retrospective review of HPWJ treatment in 45 consecutive patients with at least 12 months follow-up. SETTING: A private surgicenter in Japan. PATIENTS: Patients (25 male and 20 female) ranged in age from eight to 59 years. All patients had diffuse intractable lesions in the opened maxillary sinus after the initial ESS, with or without disease of the ethmoid and other major sinuses. MAIN OUTCOME MEASURES: Resolution of diffuse intractable disease in the maxillary sinus and postoperative change in the size of the cavity were evaluated using nasal endoscopy and computed tomographic scan. RESULTS: Twenty-six (81 per cent) of 32 sides in 25 patients with isolated persistent maxillary sinus disease were restored after HPWJ procedures; 25 (93 per cent) of 27 sides in 20 patients who also had ethmoiditis also were restored. In the

latter group, ethmoiditis recurred in five sides, which also included two sides of unrestored maxillary sinuses. Of the 51 restored sides, 33 (65 per cent) were restored within three months after HPWJ treatment under endoscopic observation. No complications were seen during the surgery. Except for one side in one patient from which all diseased mucosa was removed almost completely, along with the periosteum, no reduction of the cavity by scar tissue formation was observed. This method did not affect the development of the maxillary bone in children. CONCLUSION: Removing diffuse intractable diseased mucosa in the maxillary sinus while preserving the periosteum with HPWJ treatment is an effective surgical therapy that fulfills the ultimate purpose of ESS.

First audiometric results with the Vibrant soundbridge, a semi-implantable hearing device for sensorineural hearing loss. Snik, A. F., Cremers, C. W. Department of Otorhinolaryngology, University Hospital, Nijmegan, The Netherlands. *Audiology* (1999) November, Vol. 38 (6), pp. 335–8.
The Vibrant soundbridge is a semi-implantable hearing advice. The implanted electromagnetic transducer is attached to the incus and it is linked by telemetry to the externally worn audio processor. In Nijmegen, this device has been applied to seven patients with moderate or severe sensorineural hearing loss (PTA between 43 and 71 dB HL) who could not tolerate ear moulds. As the amplification of the device depends on the input level (amplifier with wide dynamic range compression), loudness scaling measurements were performed. The gain as a function of input level was determined from aided and unaided loudness growth curves. The mean gain was 21 dB at an input level of 40 dB SPL. The mean gain decreased to 5 dB at an input level of 90 db SPL. Measured gain values were lower than target values prescribed by the FIG6 method, mainly however for the low-frequency range and for low-level sounds. It was concluded that this device is very promising for patients who cannot tolerate an ear mould.

Slow deep breathing prevents the development of tachygastria and symptoms of motion sickness. Jokerst, M. D., Gatto, M., Fazio, R., Stern, R. M., Koch, K. L. Department of Psychology, The Pennsylvania State University, University Park 16802, USA. *Aviation, Space and Environmental Medicine* (1999) December, Vol. 70 (12), pp. 1189–92.
BACKGROUND: The purpose of this study was to see if slow deep breathing, a non-pharmacological procedure known to increase parasympathetic nervous system (PNS) activity, would prevent the development of gastric dysrhythmias and symptoms of motion sickness when subjects were exposed to a rotating optokinetic drum. METHODS: Participating in this study were 46 healthy males and females aged 17–26 who were pre-tested in the rotating drum and found to be susceptible to motion sickness. They were randomly placed into one of the following three conditions: Slow Deep Breathing (n = 18), Counting Breaths (subjects were asked to count their breaths and asked for the count every three min, n = 16), and Control (subjects breathed normally, n = 12). Electrogastrograms were recorded from all subjects during a six-min baseline and a 16-min rotation period. Subjects were asked about their symptoms every three min. RESULTS: A significant difference in percent tachygastria from baseline to rotation was found between the three conditions. Percent tachygastria increased during rotation for the Counting Breaths group and the Control group, but remained the same as baseline for the Slow Deep Breathing group. The Slow Deep Breathing group (5.3) reported significantly fewer symptoms than the Counting Breaths group (9.0), but not the Control group (7.8). CONCLUSION: In conclusion, slow deep breathing in a situation previously demonstrated to provoke tachygastria prevented the development of gastric dysrhythmias and decreased symptoms of motion sickness.

The levels of expression of galectin-1, galectin-3, and the Thomsen-Friedenreich antigen and their binding sites decrease as clinical aggressiveness increase in head and neck cancers. Choufani, G., Nagy, N., Saussez, S., Marchant, H., Bisschop, P., Burchert, M., Danguy, A., Louryan, S., Salmon, I., Gabius, H. J., Kiss, R., Hassid, S. Department of Otolaryngology and Head and Neck Surgery, Cliniques Universitaires de Bruxelles, Hopital Erasme, Brussels, Belgium. *Cancer* (1999) December 1, Vol. 86 (11), pp. 2353–63.
BACKGROUND: The aim of this study was to investigate whether an increase in malignancy level is accompanied by significant modifications of the expression of galectin-1, galectin-3 and Thomsen-Friedenreich antigen (T antigen) as well as the expression of binding sites for these three markers in head and neck squamous cell carcinomas (HNSCCs). METHODS: Immunohistochemical and glycohistochemical staining reactions were carried out with antibodies, labeled lectins, and a custom-made neoglycoprotein on the basis of histologic slides from a retrospective series of 40 normal and 75 HNSCC formalin fixed, paraffin embedded tissues, and were quantitatively described with the aid of computer-assisted microscopy. RESULTS: Whatever the histologic type, the epithelial tissues in HNSCC exhibited very significantly ($p<0.01$ to $p<0.0001$) lower amounts of galectin-1, galectin-3 and T antigen and their respective binding sites than their corresponding normal counterparts. The tumors of the larynx differed very significantly ($p<0.0001$ to $p<0.000001$) from all other tumour types. A loss of differentiation in the HNSCCs is accompanied first by the loss of expression of galectin-3 and galectin-3-reactive sites and then by that of the T antigen and its binding site(s). The opposite feature was observed when the parameters associated with the TNM classification were taken into account. The negative lymph node HNSCCs could be distinguished ($p = 0.02$) from the positive lymph node HNSCCs on the basis of a loss of galectin-3 expression. The modifications occurring in the extent of expression of galectin-1 and galectin-1-reactive sites were relatively marginal in comparison with those observed for galectin-3-dependent and T-antigen-dependent staining. CONCLUSIONS: The decrease in the extent of expression of galectin-3 and galectin-3-reactive sites, T antigen and T antigen-binding sites, and, to a lesser extent, galectin-1 and gelectin-1-reactive sites correlates significantly with an increasing level of clinically detectable HNSCC aggressiveness.

FDG positron emission tomography in head and neck cancer: pitfall or pathology? Stokkel, M. P., Bongers, V., Hordijk, G. J., van Rijk, P. P. Department of Nuclear Medicine, University Hospital Utrecht, The Netherlands. *Clinical Nuclear Medicine* (1999) December, Vol. 24 (12), pp. 950–4.
PURPOSE: Fluorodeoxyglucose (FDG) positron emission tomography (PET) is a functional imaging technique used for imaging and staging malignant diseases. In many oncologic situations, however, abnormal changes seen on the PET studies are not caused by tumor, which is especially true in the head and neck region. The authors present an overview of the phenomena that may confound the interpretation of the images in head and neck cancer. MATERIALS AND METHODS: FDG PET studies were performed in patients with primary head and neck cancer and in patients in whom recurrent disease was likely. The results were correlated with clinical findings. Eight solitary cases were selected from a total of 180 patients studied. RESULTS AND CONCLUSIONS: Benign lesions and iatrogenic and physiologic changes may show increased FDG uptake. Therefore, clinical information on previous surgical interventions and optimal patient preparation are necessary for adequate interpretation. If these prerequisites can be met, benign lesions appear to be the only lesions that may interfere with the specificity of FDG PET.

The safety of flexible endoscopic evaluation of swallowing truth sensory testing (FEESST): an analysis of 500 consecutive evalutions. Aviv, J. E., Kaplan, S. T., Thomson, J. E., Spitzer, J., Diamond, B., Close, L. G. Department of Otolaryngology/Head and Neck Surgery, College of Physicians and Surgeons, Columbia University, New York, New York, USA. *Dysphagia* (2000) Winter, Vol. 15 (1), pp. 39–44.
We assessed the safety of a new office or bedside method of evaluating both the motor and sensory components of swallowing called flexible endoscopic evaluation of swallowing with sensory testing (FEESST). FEESST combines the established endoscopic evaluation of swallowing with a technique that determines laryngopharyngeal sensory discrimination thresholds by endoscopically delivering air-pulse stimuli to the mucosa innervated by the superior laryngeal nerve. Endoscopic assessment of laryngopharyngeal sensory capacity followed by endoscopic visualization of deglutition was prospectively performed 500 times in 253 patients with dysphagia over a 2.5-year period in a tertiary care center. The patients had a variety of underlying diagnoses, with stroke and chronic neurological disease predominating (n = 155). To

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determine the safety of FEESST, the presence of epistaxis, airway compromise, and significant changes in heart rate before and after the evaluation were assessed. Patients were also asked to rate the level of discomfort of the examination; 498 evaluations were completed. There were three instances of epistaxis that were self-limited. There were no cases of airway compromise. There were no significant differences in heart rate between pre- and posttest measurements ($p>0.05$). Eighty-one per cent of patients noted either no discomfort or mild discomfort as a result of the examination. In conclusion, FEESST is a safe method of evaluating dysphagia in the tertiary care setting and may also have application for the chronic care setting.

A modified classification for the maxillectomy defect. Brown, J. S., Rogers, S. N., McNally, D. N., Boyle, M. Regional Center for Maxillofacial Surgery, University Hospital Aintree, Longmoor Lane, Liverpool L7 4AL, UK. *Head and Neck* (2000) January, Vol. 22 (1), pp. 17–26.
BACKGROUND: At present no widely accepted classification exists for the maxillectomy defect suitable for surgeons and prosthodontists. An acceptable classification that describes the defect and indicates the likely functional and aesthetic outcome is needed. METHODS: The classification is made on the basis of the assessment of 45 consecutive maxillectomy patients derived prospectively from the database (September 1992) and retrospectively from 1989. RESULTS: The classification of the vertical component is as follows: Class 1, maxillectomy without an oro-antral fistula; Class 2, low maxillectomy (not including orbital floor or contents); Class 3, high maxillectomy (involving orbital contents); and Class 4, radical maxillectomy (includes orbital exenteration); Classes 2 to 4 are qualified by adding the letter a, b, or c. The horizontal or palatal component is classified as follows: a, unilateral alveolar maxillectomy; b, bilateral alveolar maxillectomy; and c, total alveolar maxillary resection. CONCLUSION: This practical classification attempts to relate the likely aesthetic and functional outcomes of a maxillectomy to the method of rehabilitation. Copyright 2000 John Wiley & Sons, Inc. Head Neck 22:17–26, 2000.

The yin and yang of nitric oxide: reflections on the physiology and pathophysiology of NO. Bentz, B. G., Simmons, R. L., Haines, G. K. 3rd, Radosevich, J. A. Department of Otolaryngology–Head and Neck Surgery, Northwestern University School of Medicine, Searle Building 12-561, 303 East Chicago Avenue, Chicago, Illinois 60611-3008, USA. *Head and Neck* (2000) January, Vol. 22 (1), pp. 71–83.
Nitric oxide (NO.) is an arginine-derived nitrogen-based radical that is rapidly becoming one of the most important molecular species to be discovered. Over the past decade, an explosion of evidence has revealed the extreme complexity of function of this seemingly simple inorganic molecule. It is now evident that NO. demonstrates a functional dualism, playing a pivotal role in numerous physiologic and pathophysiologic processes. Whether this molecule is beneficial or detrimental is dependent upon the tissue of generation, the level of production, the oxidative/reductive (redox) environment in which this radical is generated, and the presence or absence of NO. transduction elements. Nitric oxide is generated by three independent isoenzymes that resemble the p-450 enzyme superfamily in both form and function. It ultimately alters enzymatic function through covalent modification, redox interactions, and interactions with metallic functional centers. This radical is a key figure in a number of pathophysiologic processes by means of similar yet uncoordinated interactions. In consideration of the already broad spectrum of roles attributed to NO., it seems highly likely that this molecule will be implicated in an ever widening variety of functions relative to the practice of otolaryngology–head and neck surgery. This article reviews the enzymology, signal transduction mechanisms, physiology, and pathophysiology of NO. as it pertains to head and neck cancer. Copyright 1999 John Wiley & Sons, Inc. Head Neck 22:71–83, 2000.

Malignant otitis externa caused by Malassezia sympodialis. Chai, F. C., Auret, K., Christiansen, K., Yuen, P. W., Gardam, D. Department of Otolaryngology, Head and Neck Surgery, Royal Perth Hospital, Wellington St, Perth, WA 6000, Australia. *Head and Neck* (2000) January, Vol. 22 (1), pp. 87–9.
BACKGROUND: Malignant otitis externa caused by fungal infections is rare. A review of the literature showed only nine cases, and the causative fungus in all cases was Aspergillus. This article reports an unusual case caused by Malassezia sympodialis. METHODS: A 53-year-old man with non-insulin dependent diabetes presented with malignant otitis externa. He deteriorated despite treatment with intravenous antipseudomonal therapy and surgical debridement. Microbiologic tests revealed M. sympodialis. He responded rapidly to intravenous amphotericin. RESULTS: Systemic human infections caused by M. sympodialis have not been reported. M. furfur systemic infection is rare and has been associated lipid hyeralimentation by means of a central character. Only one other case of M. fungemia without these associated risk factors has been reported. CONCLUSIONS: The first case of malignant otitis externa caused by M. sympodialis is presented. It highlights the difficulty of initial biologic diagnosis and the need for lipid-enriched media to grow this fastidious organism. Copyright 2000 John Wiley & Sons, Inc. Head and Neck 22:87–89, 2000.

Signs of endolymphatic hydrops after perilymphatic perfusion of the guinea pig cochlea with cholera toxin; a pharmacological model of acute endolymphatic hydrops. Lohuis, P. J., Klis, S. F., Klop, W. M., van Emst, M. G., Smoorenburg, G. F. Hearing Research Laboratories, Department of Otorhinolaryngology, Utrecht University, Room G.02.531, Heidelberglaan 100, NL-3584 CX, Utrecht, The Netherlands. p.lohuis@lmb.azu.nl. *Hearing Research* (1999) November, Vol. 137 (1–2), pp. 103–13.
There are indications that endolymph homeostasis is controlled by intracellular cAMP levels in cells surrounding the scala media. Cholera toxin is a potent stimulator of adenylate cyclase, i.e. it increases cAMP levels. We hypothesized that perilymphatic perfusion of cholera toxin might increase endolymph volume by stimulating adenylate cyclase activity, providing us with a pharmacological model of acute endolymphatic hydrops (EH). Guinea pig cochleas were perfused with artificial perilymph (15 min), with or without cholera toxin (10 microg/ml). The endocochlear potential (EP) was measured during and after perfusion. The summating potential (SP), evoked by two, four and eight kHz tone bursts, was measured via an apically placed electrode zero, one, two, three and four hours after perfusion. Thereafter, the cochleas were fixed to enable measurement of the length of Reissner's memrbane, reflecting EH. After perfusion the EP increased significantly over time in the cholera toxin group as compared to the controls. Also, the SP increased gradually at all frequencies in the cholera toxin group. Comparison within animals showed that the increase in SP became significant after two hours at 4 kHz, after three hours at 2 kHz and after four hours at 8 kHz. In the control group the SP did not change significantly. The compound action potential (CAP) amplitude decreased monotonically over time at all frequencies in both the cholera toxin group. Also, the cochlear microphonics amplitude decreased over time at all frequencies in both groups, but the decrease was significantly only in the cholera toxin groups after three hours at 2 and 4 kHz. Quantification of the length of Reissner's membrane showed a small but insignificant enlargement in the cholera toxin treated animals compared to controls. These results are in accord with our view that EH is accompanied by an increase in SP and a decrease in CAP. Our results partially confirm previous results of Feldman and Brusilow (Proc. Natl. Acad. Sci. USA (1973) 73, 1761–1764). New aspects in relation to that study are the significantly increased EP and SP. In the classical EH model, based on obstruction of the absorptive function of the endolymphatic sac, increased SPs are accompanied by decreased EPs. In this cholera toxin model of EH, it is unlikely that the endolymphatic sac is involved. Apparently, EH can be based on mechanisms located in the cochlea itself as opposed to mechanisms located in the endolymphatic sac.