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Abstract Selection

Prognostic factors in patients with nasopharyngeal carcinoma. Kaasa, S., Kragh-Jensen, E., Bjordal, K., Lund, E., Evensen, J. F., Vermund, H., Monge, O., Boehler, P. Department of Medical Oncology and Radiotherapy, Norwegian Radium Hospital, Oslo. *Acta Oncologica* (1993) Vol. 32 (5), p. 531–6.
From 1971 to 1985 a total of 122 patients with non-distant metastatic nasopharyngeal carcinoma were treated at the Norwegian Radium Hospital with radiation doses that increased from 50 Gy (at 2 Gy/fractions) to 70 Gy (at 2 Gy/fractions) during the treatment period. Possible relationship between the increase in dose and survival time was investigated. The median cancer-specific survival time was 50 months, and the median crude survival time 38 months. No correlation was found between radiation dose and survival time. In a multivariate analysis histology was found to be the most important prognostic factor for survival with a relative risk of death from cancer of 3.4 and 3.2 for non-keratinizing carcinoma and squamous cell carcinoma respectively compared with undifferentiated carcinoma. When assessed in terms of N category the relative death risk for N2/N3 was 2.1 compared to N0/N1. Author.

Neutrophil chemotactic activity (NCA) in nasal secretions from atopic and nonatopic subjects. Effect of antigen challenge. Kowalski, M. L., Grzegorczyk, J., Sliwinska-Kowalska, M., Wojciechowska, B., Rozniecka, M., Rozniecki, J. Department of Pulmonology and Allergology, Faculty of Medicine, Medical Academy, Lodz, Poland. *Allergy* (1993) August, Vol. 48 (6), p. 409–14.
In order to elucidate the mechanism responsible for infiltration of nasal mucosa by granulocytes, we tested neutrophil chemotactic activity (NCA) in nasal lavages, by the modified Boyden chamber method, in 16 patients with perennial allergic rhinitis (AR), six ASA-sensitive patients with chronic rhinosinusitis (CRS), and seven normal, nonatopic control subjects (NC). Nasal secretions from all three groups showed significant NCA (mean 157.1 +/– 54.0, 62.2 +/– 20.7, and 39.4 +/– 11.4 per cent of FMLP chemotactic activity for AR, CRS, and NC subjects, respectively). Nasal secretions from patients with AR expressed significantly higher NCA ($P<0.02$) than did secretions from NA patients. NCA was unchanged by heating at 56 degrees C for 60 min and was not susceptible to degradation by trypsin. Nasal challenge with Dermatophagoides pteronyssinus antigen induced clinical symptoms and resulted in significant increases in total protein and albumin concentrations in nasal lavages in AR patients, but failed to change the mean NCA activity for up to 40 min after the challenge. These results indicate that nasal secretions from both atopic and nonatopic patients express NCA, but its relation to allergic inflammation remains to be established. Author.

Deflazacort protects against late-phase but not early-phase reactions induced by the allergen-specific conjunctival provocation test. Ciprandi, G., Buscaglia, S., Pesce, G. P., Iudice, A., Bagnasco, M., Canonica, G. W. Department of Internal Medicine, DI.M.I., University of Genoa, Italy. *Allergy* (1993) August, Vol. 48 (6), p. 421–30, ISSN: 0105-4538.
The protective effects of deflazacort against the inflammation that follows the conjunctival provocation test (CPT) by specific allergen were assessed in 24 patients with rhinoconjunctivitis caused by Parietaria judaica in a double-blind study. After a screening CPT, patients were randomized into four treatment groups, each being given deflazacort (oral tablets) at 6, 30, and 60 mg once daily, or matching placebo, for 3 d, outside the pollen season. Clinical evaluation (itching, hyperemia, lacrimation, and swelling of eyelids) and cytologic assessment (number of inflammatory cells in conjunctival scraping and evaluation of ICAM (intercellular adhesion molecule)-1/CD54 expression on epithelial cells) were performed at base line, 30 min (early-phase reaction (EPR), 6 h and 24 h (late-phase reaction (LPR) after specific CPT, and before and after treatment. Neither the EPR clinical reactions nor the EPR total number of inflammatory cells was modified by deflazacort. However, the LPR clinical effects were significantly reduced by deflazacort at 30 or 60 mg/d ($P<0.01$), as compared with placebo. The total number of inflammatory cells during LPR was significantly reduced by deflazacort at 30 or 60 mg/d ($P<0.01$), as compared with placebo. Furthermore, CD54 expression was significantly reduced by deflazacort at 30 or 60 mg/d both in the EPR ($P<0.01$) and LPR ($P<0.01$), as compared with placebo. None of the studied indicators were modified at the 6 mg/d dose. This study shows that deflazacort has a highly protective action against clinical and cellular LPR effects induced by the specific CPT. In addition, deflazacort markedly reduces CD54 expression on the conjunctival epithelium during both EPR and LPR. Author.

Loratadine and terfenadine in perennial allergic rhinitis. Treatment of nonresponders to the one drug with the other drug. Carlsen, K. H., Kramer, J., Fagertun, H. E., Larsen, S. Voksentoppen Children's Center for Asthma and Allergy, University Hospital, Oslo, Norway. *Allergy* (1993) August, Vol. 48 (6), p. 431–6.
The efficacy of loratadine and terfenadine in perennial allergic rhinitis was evaluated in a double-blind, selected cross-over study consisting of two phases. During the first phase, 76 patients with perennial allergic rhinitis, 8–67 years old, were included in the study. Of these, 41 patients received loratadine 10 mg daily, and 35 patients received terfenadine 60 mg twice daily, for 2 weeks. According to symptoms and side-effects, 32 patients were classified as responders to loratadine, and 28 patients as responders to terfenadine. All observed symptoms were significantly reduced in both treatment groups, but with no significant differences between the two groups. Side-effects were few and mild. In patients with normal IgE, loratadine was significantly superior to terfenadine in relieving nasal secretion, whereas terfenadine was significantly superior to loratadine in relieving nasal congestion. In patients with increased IgE, patients treated with loratadine showed significantly greater reduction in sneezing than patients treated with terfenadine. A positive correlation between total IgE and reduction in overall symptoms was found for patients treated with loratadine, whereas a negative correlation was found for patients treated with terfenadine. During the second study phase, the nonresponders received the other drug for 2 weeks. All seven nonresponders to terfenadine responded to loratadine after crossing over, whereas four of nine nonresponders to loratadine responded to terfenadine. Nonresponders to one drug may respond to the other drug. Thus, more than one antihistamine drug should be tried in perennial allergic rhinitis if the first fails. Author.

A comparison of topical levocabastine and oral terfenadine in the treatment of allergic rhinoconjunctivitis. The Livostin Study Group. Mygind, N. Department of Otorhinolaryngology, Rigshospitalet, Copenhagen, Denmark. *Allergy* (1993) October, Vol. 48 (7), p. 530–4.
This study was undertaken to compare the efficacy of twice-daily levocabastine, a new topical H1-blocking antihistamine, with that of twice-daily oral terfenadine in the treatment of allergic rhinoconjunctivitis. A total of 128 adult patients with a history of birch-pollen-provoked allergic rhinoconjunctivitis participated in this double-blind, parallel-group study. Ocular and nasal symptoms, assessed by a 100-mm visual analog scale, were recorded daily on diary cards for a period of 8 weeks. Global assessments of treatment efficacy were also performed. Conventional statistical analysis detected no significant differences between the two treatment regimens. Similarly, there was no difference in the number or type of adverse reactions in each treatment group. Statistical analysis according to Hauck & Anderson confirmed equivalence between the two treatment regimens. Topical levocabastine appears to be as

effective and well-tolerated as oral terfenadine in the treatment of allergic rhinoconjunctivitis. Author.

The effect of forceps size on the adequacy of specimens obtained by transbronchial biopsy. Loube, D. I., Johnson, J. E., Wiener, D., Anders, G. T., Blanton, H. M., Hayes, J. A. Department of Pathology, Brooke Army Medical Center, Fort Sam Houston, Texas 78234-6200. *American Review of Respiratory Diseases* (1993) November, Vol. 148 (5), p. 1411–3.
This study prospectively compared the diagnostic yield of transbronchial biopsies using large and small forceps (cup sizes, $3 \times 2 \times 0.9$ versus $2 \times 1.5 \times 0.6$ mm, respectively). Diagnostic yield was compared by a pathologist, blinded to the size of forceps used on the basis of the relative amount of tissue obtained, alveolar tissue obtained, and ability to ascertain a histopathologic diagnosis. Large forceps obtained significantly more tissue than did small forceps (20 of 27 patients (74 per cent) versus five of 27 patients (19 per cent), $P<0.005$, with similar amounts obtained in two patients). Also, large forceps obtained significantly more alveolar tissue than did small forceps (16 of 22 patients (73 per cent) versus six of 22 patients (27 per cent), $P<0.05$, with no alveolar tissue obtained in five patients). In 18 of the 27 patients, biopsies performed resulted in nonspecific diagnoses, including fibrosis or chronic inflammation. All nine of the patients with a specific diagnosis were ultimately proved to have sarcoidosis. There was a trend toward more of these patients having noncaseating granulomas obtained with the large forceps than with the small forceps (seven of nine patients versus four of nine patients). No difference was observed in the amount of postbiopsy bleeding with either forceps. We conclude that large forceps used for transbronchial biopsy yield more tissue and more alveolar tissue than do small forceps. These findings may have an impact on the diagnostic yield in some diseases such as sarcoidosis. Author.

Dynamic upper airway imaging during awake respiration in normal subjects and patients with sleep disordered breathing. Schwab, R. J., Gefter, W. B., Hoffman, E. A., Gupta, K. B., Pack A. I. Department of Radiology, University of Pennsylvania, Philadelphia. *American Review of Respiratory Diseases* (1993) November, Vol. 148 (5), p. 1385–400.
The effects of respiration on upper airway caliber were studied using cine computed tomography (CT) in 15 normal subjects, 14 snorer/mildly apneic subjects, and 13 patients with obstructive sleep apnea. All subjects were scanned in the supine position during awake nasal breathing. Eight-millimeter-thick axial slices were obtained at four anatomic levels from the nasopharynx to the retroglossal region every 0.4 s during a respiratory cycle. Tidal volume measured from an integrated pneumotachograph signal was correlated with slice acquisition during inspiration and expiration to generate loops comparing upper airway area and tidal volume. In all three subject groups and at all anatomic levels studied, there were significant dimensional changes in upper airway caliber during the respiratory cycle. The major findings in this investigation include: (1) the upper airway was significantly smaller in apneic than normal subjects, especially at the retropalatal low and retroglossal anatomic levels; in apneic patients the airway had an anterior-posterior configuration unlike the normal airway, which had a horizontal configuration with the major axis in the lateral direction; (2) in all three subject groups, little airway narrowing occurred in inspiration, suggesting that the action of the upper airway dilator muscles balanced the effects of negative intraluminal pressure in apneic patients there was more enlargement of the airway in early inspiration, presumably reflecting increased upper airway muscle dilator activity; (3) in expiration, positive airway pressure resulted in expansion of the airway; this expansion was largest in the apneic patients, indicating that the apneic airway was more distensible than the normal airway; (4) at the end of expiration the upper airway narrowed significantly, especially in the apneic patients. Thus the airway in apneic patients may be heading toward a closed position at end-expiration. Author.

Chemical immobilization and killing of intra-aural roaches: an in vitro comparative study. Leffler, S., Cheney, P., Tandberg, D. Department of Emergency Medicine, University of New Mexico, Alburquerque. *Annals of Emergency Medicine* (1993) December, Vol. 22 (12), p. 1795–8.
STUDY OBJECTIVE: The treatment of live insects in patients' ears is controversial. To determine which chemical agent is most effective for immobilizing and killing intra-aural cockroaches, we carried out the following investigation. DESIGN: An in vitro blinded comparative study. INTERVENTIONS: A model was developed in which live cockroaches were submerged in microscope immersion oil, 2 per cent lidocaine, 4 per cent lidocaine, or 2 per cent viscous lidocaine in a glass beaker. Responses of cockroaches were recorded with a video-cassette recorder and evaluated later by a blinded observer. Measured variables were time to death and time-integrated activity before death. Analysis was by analysis of variance with Tukey's procedure. RESULTS: Four groups of 40 cockroaches each were exposed to each of the four agents. Microscope oil killed the insects most quickly (mean, 27.2 seconds; 95 per cent confidence interval, 23.8 to 30.6). The other agents required more than 40 seconds and were inferior to oil ($F = 15.5$, $P<.0001$). Total activity was also least in the microscope oil group ($F = 25.7$, $P<.0001$). CONCLUSION: Microscope immersion oil is the most effective agent for immobilizing and killing intra-aural cockroaches. Author.

Nasal reconstruction with auricular microvascular transplant. Pribaz, J. J., Falco, N. *Annals of Plastic Surgery* (1993) October, Vol. 31 (4), p. 289–97.
A free flap derived from the ascending helix of the ear has been used to reconstruct an anatomically diverse set of defects of the distal nose in 6 patients. Our cadaver injection studies have demonstrated that the blood supply to the auricular flap is via small, consistent branches from the superficial temporal artery. The patients were carefully selected, and most had failed prior attempts at reconstruction. The auricular flaps were used to reconstruct the nasal tip, ala, columella, and sill. The donor vessels were anastomosed either to the facial artery and vein or to vessels in the neck, via vein grafts. The flaps survived in all cases, but all patients required minor subsequent revision. The auricular donor site was closed by rotation and advancement of local tissue. This flap is presented as a surgical option for selected patients with complex defects of the distal nose, where excellent match of colour and contour, predictable outcome, and avoidance of central facial donor site are desired. Author.

Microvascular reconstruction of nose and ear defects using composite auricular free flaps. Tanaka, Y., Tajima, S., Tsujiguchi, K., Fukae, E., Ohmiya, Y. Department of Plastic and Reconstructive Surgery, Osaka Medical College, Japan. *Annals of Plastic Surgery* (1993) October, Vol. 31 (4), p. 298–302.
Two cases using composite auricular free flaps, based on the superficial temporal vessels, in the reconstruction of full-thickness defects of the nose and ear are reported. This composite free flap can be based on either the superficial temporal or the posterior auricular vessels depending on the defect to be reconstructed. The superficial temporal vessels can also be used in reversed flow to obtain a vascular pedicle of sufficient length for microvascular anastomosis. The anatomical vascular features of the flap make it possible to reconstruct various facial defects with freedom of design. Author.

Anterior lingual mandibular salivary gland defect—a dilemma in diagnosis. Barak, S., Katz, J., Mintz, S. Department of Oral and Maxillofacial Surgery, Elias Sourasky Medical Center, Tel Aviv, Israel. *British Journal of Oral and Maxillofacial Surgery* (1993) October, Vol. 31 (5), p. 318–20.
Anterior lingual mandibular salivary gland defects are very rare. These lesions present as non-definitive bony radiolucencies. There are several other radiolucent entities which present in the anterior mandible with greater frequency and this creates a diagnostic dilemma for the practitioner. The ultimate and proper treatment of non-treatment depends on a correct diagnosis of these lesions. The correctness of the diagnosis and avoidance of unnecessary traumatic procedures may be aided by more sophisticated radiographic studies, such as a CAT scan and/or Magnetic Resonance Imaging. A case of a very unusual appearing anterior lingual mandibular salivary gland defect is presented and the diagnosis, management and recommendation for more complex radiographic studies are discussed. Author.

The scapular fasciocutaneous flap: a new flap for reconstruction of the posterior neck. Gopinath, K. S., Chandrashekar, M., Kumar, M. V., Bhargava, A. Department of Surgery, Kidwai Memorial Institute of Oncology, Bangalore, India. *British Journal of Plastic Surgery* (1993) September, Vol. 46 (6), p. 508–10.
The axial, myocutaneous and free flaps have made immediate reconstruction of head and neck defects possible. Notwithstanding this remarkable progress, defects of the posterior neck leave the reconstructive surgeon with very little choice. The scapular fasciocutaneous flap is easy to harvest, reliable and versatile, with

functional and cosmetic results comparable to free flaps. We describe the anatomy and the technique of this new donor site, along with a case report. Author.

Early postoperative brachytherapy following free flap reconstruction. Panchal, J. I., Agrawal, R. K., McLean, N. R., Dawes, P. J. Department of Plastic Surgery, Newcastle General Hospital, UK. *British Journal of Plastic Surgery* (1993) September, Vol. 46 (6), p. 511–5.
Brachytherapy delivered within the early postoperative period has been associated with delayed wound healing and wound breakdown. The objective of this study was to determine whether reconstruction with a microvascular free flap reduced the incidence of wound breakdown in the presence of early postoperative brachytherapy following wide excision of soft tissue sarcomas and head and neck carcinomas. Ten patients with malignant tumours underwent wide excision and free flap reconstruction. Brachytherapy was administered using Iridium-192 wires in the early postoperative period via tubes inserted intraoperatively. In 9 of the 10 patients the wounds healed uneventfully, demonstrating that brachytherapy can be delivered in the early postoperative period following free flap reconstruction without an increase in the frequency of wound breakdown. Author.

Human Orf. Chahidi, N., de-Fontaine, S., Lacotte, B. Department of Plastic Surgery, University Hospital Brugmann, Brussels, Belgium. *British Journal of Plastic Surgery* (1993) September, Vol. 46 (6), p. 532–4.
Human Orf is an uncommon viral disease acquired through contact with infected sheep and goats. We report five cases of human Orf acquired while preparing mutton. The clinical picture and the management of human Orf are presented. Awareness of the benign nature of the condition is important in preventing ill-advised therapy. Author.

Case report: an unusual cause of epistaxis: non-traumatic intracavernous carotid aneurysm. A case report with 12 year follow-up and review of the literature. Romaniuk, C. S., Bartlett, R. J., Kavanagh, G., Salam, M. A. Department of Radiology, St James's University Hospital, Leeds, UK. *British Journal of Radiology* (1993) October, Vol. 66 (790), p. 942–5.
Intracavernous carotid aneurysms are uncommon. We report the natural history and radiological appearances of a giant, non-traumatic, intracavernous carotid aneurysm which extended through the skull base to the anterior nares and caused epistaxis. The magnetic resonance imaging appearances of such an aneurysm have not been previously described. The importance of correct diagnosis is discussed. Author.

Elevation of the larynx on normal and abnormal cineradiogram. Sundgren, P., Maly, P., Gullberg, B. Department of Diagnostic Radiology, University of Lund, Malmo General Hospital, Sweden. *British Journal of Radiology* (1993) September, Vol. 66 (789), p. 768–72.
The relationship between bolus volume (2.5, 5, 10 and 20 ml) and larynx elevation during swallowing was assessed in 10 non-dysphagic and 10 dysphagic individuals without pharyngeal dysfunction. Laryngeal elevation in different types of pharyngeal dysfunction was assessed in 60 non-dysphagic and 75 dysphagic patients. All subjects were examined with liquid barium and cineradiography at 50 frames/s. The laryngeal elevation was measured at the moment when the bolus reached the level of the valleculae and at maximum elevation. Elevation of the larynx, both the initial and maximal, was not influenced by sex, age or presence of dysphagia. Elevation of the larynx at the moment when the bolus reached the valleculae, when expressed in per cent of maximum elevation, was lower with 10 and 20 ml bolus volumes compared with 2.5 ml bolus volume ($P<0.05$) in the 10 dysphagic individuals. Pharyngeal dysfunction was associated with significantly lower initial elevation of the larynx, at the moment when the bolus reached the level of the valleculae, although the maximal laryngeal elevation was normal. Initial elevation was 30 per cent lower ($P = 0.03$) in patients with aspiration of bolus material into the trachea, 22 per cent lower ($P = 0.007$) in those with defective closure of the laryngeal vestibule without aspiration and 16 per cent lower ($P = 0.06$) in those with incoordination of the cricopharyngeal muscle compared with patients without dysfunction. Author.

High metabolic activity demonstrated by positron emission tomography in human auditory cortex in case of deafness of early onset. Catalan, Ahumada M., Deggouj, N., De-Volder, A., Melin, J., Michel, C., Veraart, C. Neural Rehabilitation Engineering Laboratory, University of Louvain, Brussels, Belgium. *Brain Research* (1993) October 1, Vol. 623 (2), p. 287–92.
Glucose metabolism has been studied in the auditory cortex of human subjects with deafness of early onset, and compared to normal subjects with ears plugged. The metabolism in the auditory cortex and in the association auditory cortex was higher in deaf subjects than in normal subjects. This result is compared to similar observations that we made previously in the visual cortex of human subjects with blindness of early onset. Author.

Nasopharyngeal carcinoma: genetic changes, Epstein-Barr, virus infection, or both. A clinical and molecular study of 36 patients. Choi, P. H., Suen, M. W., Huang, D. P., Lo, K. W., Lee, J. C. Department of Clinical Oncology, Prince of Wales Hospital, Chinese University of Hong Kong. *Cancer* (1993) November 15, Vol. 72 (10), p. 2873–8.
BACKGROUND. The pathogenesis of nasopharyngeal carcinoma has been under intense investigation, especially of its peculiar predominance in southern China. The authors previously reported consistent loss of genetic material on the short arm of chromosome 3 in a few nasopharyngeal carcinoma cases. In this study, the authors examined the genetic changes as well as the presence of Epstein-Barr virus (EBV) genome on 36 nasopharyngeal carcinoma primary biopsy specimens of the undifferentiated type and the correlation of the findings to patients' clinical status. METHODS. The authors examined the DNA from tumor tissue and from matched blood leukocytes of 36 patients who suffered from nasopharyngeal carcinoma by the restriction fragment length polymorphism analysis. The genotyping for EBV was carried out by polymerase chain reaction using primers complementary to both types of EBV and probes specific to EBNA-2A (EBV-A) or EBNA-2B (EBV-B). RESULTS. A consistent deletion at two specific locus of the short arm of chromosome 3 was observed in all informative cases. The authors also found that EBV genome, especially type A, was present in 35 of 36 cases. In the remaining one case, EBV-B was detected. CONCLUSIONS. As the same tumor tissue was used for both genetic and viral studies in each case, the results may represent sequential genetic lesions in the pathogenesis and/or summation of genetic events. Moreover, 7 of 32 informative tumors were from patients of early staging (Stages I and II), which suggests the genetic changes may occur in the early development of nasopharyngeal carcinoma. Difference in allele frequency in specific locus was also noted between Asian and white patients for the first time. Author.

A nearly fatal tracheal obstruction resulting from a transtracheal oxygen catheter. de-Groot, R. E., Dik, H., de-Groot, H. G., Bakker, W. Department of Pulmonology, Municipal Hospital Leyenburg, 's Gravenhage, The Netherlands. *Chest* (1993) November, Vol. 104 (5), p. 1634–5.
In a patient with a transtracheal oxygen catheter (ITO2C), a nearly fatal complication occurred due to the formation of a mucous plug on the tip, which almost totally obstructed the tracheal lumen. To our knowledge, this complication has not been reported before with the use of this type of transtracheal oxygen catheter. Author.

Increased immune reactivity to house dust mites in adults with chronic rhinosinusitis. Armenaka, M. C., Grizzanti, J. N., Oriel, B., Rosenstreich, D. L. Department of Medicine, Albert Einstein College of Medicine, Bronx, New York. *Clinical and Experimental Allergy* (1993) August, Vol. 23 (8), p. 669–77.
Sixty-three adults with symptomatic chronic rhinosinusitis had computerized tomographic (CT) scans of the paranasal sinuses, which were used to quantify disease severity. These patients were divided into three closely age- and sex-matched groups: a CT scan-negative group (chronic rhinitis only), a mild sinusitis group and a severe sinusitis group. Serum dust mite-specific IgG levels were found to be significantly elevated in the sinusitis patients compared with a matched group of asymptomatic normal individuals. Levels were highest in the more severe sinusitis group, in which the mean titre was 559 U/ml and the incidence of titres greater than 400 U/ml was 48 per cent, as compared with a mean titre of 139 U/ml and only a 10 per cent incidence of titres greater than 400 U/ml in the normal subjects ($P<0.005$ and <0.01). In contrast, although the frequency of immediate hypersensitivity to dust mite, as assessed by intradermal skin tests, tended to be higher in patients with sinusitis, it was not significantly different from normal individuals. The association

between mite IgG and disease was most striking in the patient sub-group with negative mite skin tests. In this group, mite IgG levels were significantly higher than normal, even in those patients with only chronic rhinitis. These findings demonstrate that increased serum levels of IgG against dust mites are strongly associated with chronic rhinosinusitis, especially in the sub-group of patients who are not allergic to mites. Author.

Mast cells and mediators in the nasal mucosa after allergen challenge. Effects of four weeks' treatment with topical glucocorticoid. Juliusson, S., Holmberg, K., Karlsson, G., Enerback, L., Pipkorn, U. Department of Otorhinolaryngology, Sahlgrenska Hospital, University of Goteborg, Sweden. *Clinical and Experimental Allergy* (1993) July, Vol. 23 (7), p. 591–9.
The study focuses on the relationship between the tissue density of mast cells, the tissue histamine levels and the levels of markers of mast cell activation after an allergen challenge of the nasal mucosa of allergic patients. The effect of 4 weeks' treatment with a topical glucocorticoid, fluticasone propionate, was studied in a double-blind, placebo-controlled study of 25 hay fever patients. Nasal biopsies were obtained before and after the treatment period for the evaluation of mast cell density and tissue histamine levels. Nasal challenges were performed at 2-week intervals for 8 weeks using a standardized nasal lavage model. TAME-esterase was analysed in the returned lavage fluid from all the challenges (weeks 0–8), while the levels of histamine and tryptase were analysed in lavage fluids from challenges performed before and after the treatment period (weeks 0 and 4). The symptoms of nasal allergy were assessed after each challenge. Treatment with fluticasone propionate did not influence mast cell density, the tissue histamine concentration, the lavage histamine levels or the TAME-esterase activity, while a reduction in nasal symptoms and tryptase in nasal lavage fluid was revealed. Our present study again emphasizes the fact that the mast cell is an important trigger cell in the immediate nasal allergic response. The study also demonstrates the usefulness of the measurements of tryptase as an indicator of both mast cell activation and the efficacy of topical steroid treatment. Author.

A physiological coma scale: grading of coma by combined use of brain-stem trigeminal and auditory evoked potentials and the Glasgow Coma Scale. Soustiel, J. F., Hafner, H., Guilburd, J. N., Zaaroor, M., Levi, L., Feinsod, M. Department of Neurosurgery, Rambam Medical Center, Haifa, Israel. *Electroencephalography and Clinical Neurophysiology* (1993) November, Vol. 87 (5), p. 277–83.
Forty-five comatose patients were prospectively studied by means of clinical examination and evoked potentials. In each patient, clinical data included Glasgow Coma Scale (GCS) score, age, pupillary response to light, corneal reflex, and eye movements. Neurophysiological evaluation was based on brain-stem trigeminal evoked potentials (BTEPs) and brain-stem auditory evoked potentials (BAEPs). For each physiological test, a progressive grading system was designed. This system was based on the evaluation of central conduction times along the trigeminal and the auditory pathways within the brain-stem. The accuracy of the clinical and the neurophysiological indicants in predicting 'favorable' or 'unfavorable' outcome was assessed singly and in combination. Of the clinical indicants, the GCS provided the most accurate prognosis (80 per cent). Similar results were provided by the BAEP and the BTEP, with significant improvement in the confidence of outcome prediction. No significant difference in the accuracy of outcome predictions could be found between combined clinical data and neurophysiological data. However, the combination of clinical and neurophysiological data markedly increased both the accuracy and the confidence of outcome prediction, reaching 86 per cent correct predictions at the over 90 per cent confidence level with only 2 per cent false pessimistic errors. According to these findings, a clinical-physiological coma scale, the trigeminal-auditory Glasgow (Coma Scale) score (TAG score) was designed. The TAG score demonstrated the highest accuracy at each confidence level as compared to other single indicants. We concluded that the TAG score may improve the evaluation of deep comatose patients and assist the physician in the management of such patients. Author.

Nasopharyngeal angiofibroma in patients with familial adenomatous polyposis. Giardiello, F. M., Hamilton, S. R., Krush, A. J., Offerhaus, J. A., Booker, S. V., Petersen, G. M. Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland. *Gastroenterology* (1993) November, Vol. 105 (5), p. 1550–2.
Four patients with nasopharyngeal angiofibroma and familial adenomatous polyposis are reported here. Nasopharyngeal angiofibroma was 25 times more frequent in our patient population with familial adenomatous polyposis than in an age-matched hospital population. The association of these two rare conditions suggests that nasopharyngeal angiofibroma is an extracolonic manifestation of adenomatous polyposis. In addition, somatic mutation of the adenomatous polyposis coli gene, which causes adenomatous polyposis when mutated in the germline, could play a role in the pathogenesis of sporadic nasopharyngeal angiofibroma. Author.

The vascular component of sodium salicylate ototoxicity in the guinea pig. Didier, A., Miller, J. M., Nuttall, A. L. Laboratoire de Neurophysiologie Sensorielle, Universite Claude Bernard, Villeurbaune, France. *Hearing Research* (1993) September, Vol. 69 (1–2), p. 199–206.
Drugs of the salicylate family (aspirin-like drugs) are reversibly ototoxic. Electrophysiologic and ultrastructural evidence suggests an impairment of the sensory hair cells of the cochlea following salicylate treatment. In addition, since these drugs can cause vasoconstriction, the ototoxicity of salicylates may also involve an impairment of the blood circulation in inner ear. However, a vascular hypothesis of salicylate toxicity has not received much attention. In the current study, we simultaneously measured cochlear blood flow (by laser Doppler flowmetry) and the sound-evoked potentials from the round window. Sodium salicylate caused a decrease in cochlear blood flow that appeared within 30 min following an intramuscular injection of a low dose of sodium salicylate (100 mg/kg). This sodium salicylate dose did not cause a change in auditory sensitivity. For higher doses (200 mg/kg and 300 mg/kg), both cochlear blood flow and auditory sensitivity were affected. The 300 mg/kg dose decreased blood flow by about 25 per cent and elevated compound action potential thresholds by 10 to 25 dB for high frequencies (> or = 8 kHz). Further experiments showed that salicylate-induced threshold shifts were significantly reduced for the mid-frequencies when cochlear blood flow is increased by the vasodilating drug hydralazine (negating the flow reduction caused by salicylate). These data indicate that in addition to the direct effect of systemically administered salicylate on neurosecretory function a decreased blood flow contributes to the ototoxicity of salicylates. Author.

Thyroid hormone induces earlier onset of auditory function in neonatal rats. Freeman, S., Geal, Dor. M., Shimoni, Y., Sohmer, H. Department of Physiology, Hebrew University-Hadassah Medical School, Jerusalem, Israel. *Hearing Research* (1993) September, Vol. 69 (1–2), p. 229–35.
The effect of thyroid hormone injection on the development of auditory function in neonatal rats was evaluated using auditory nerve-brainstem evoked responses (ABR). The hormone induced earlier onset of auditory function. In order to differentiate between conductive and sensorineural factors, both air-conducted (AC) and bone-conducted (BC) ABR responses were recorded. Neonatal rats were injected with thyroxine (T4), or with saline (control animals), from day of birth (post-natal day-PND-0), daily, until PND 9. AC- and BC-ABRs were recorded from PND 6 up to PND 20. It was found that both AC- and BC-ABR thresholds were lower in the T4-injected rats up to PND 15, after which no difference was found between the two groups. This indicated earlier maturity of both conductive (external and middle ears) and sensorineural (inner ear) factors and is probably due to the earlier appearance in the blood of higher T4 levels, following injection, than that occurring naturally during the neonatal period in these animals. Author.

A comparative study of clarithromycin and amoxycillin suspensions in the treatment of pediatric patients with acute otitis media. Coles, S. J., Addlestone, M. B., Kamdar, M. K., Macklin, J. L. Abbott Laboratories Limited, Maidenhead, Berkshire, England. *Infection* (1993) July–August, Vol. 21 (4), p. 272–8.
This phase III, single-blind, randomized, multicentre, clinical trial compared the safety and efficacy of clarithromycin and amoxycillin in the treatment of otitis media in pediatric patients. Two hundred and fifty-nine patients aged 1–12 were prescribed suspensions of clarithromycin (132 patients) or amoxycillin (127 patients). Both suspensions were prescribed at a dose of 125 mg for children weighing less than 25 kg or at 250 mg for children weighing more than 25 kg, but three doses of amoxycillin per day were given, while only two doses clarithromycin per day were required. Each drug was administered for approximately 5 days. Clinical evaluations were

performed pre-treatment (Study Day 1), at the end of treatment (Study Days 6–9), and post-treatment (Study Days 28–32). At the end of treatment, 91 out of 114 evaluable patients (80 per cent) had clinical cures with clarithromycin, while 71 out of 105 evaluable patients (68 per cent) had clinical cures with amoxycillin ($P = 0.057$). Clinical success rates were 96 per cent for both treatments (110/114, clarithromycin; 101/105 amoxycillin). Adverse events related to the study medications occurred in four of 132 patients receiving clarithromycin (3 per cent) and eight out of 127 subjects receiving amoxycillin (6 per cent). Three patients discontinued treatment due to adverse events, all three receiving amoxycillin. At the doses administered, clarithromycin given twice-daily was as safe and effective as given three-times-daily in the treatment of acute otitis media in pediatric patients. Author.

Radiotherapy alone or combined with neck dissection for T_1–T_2 carcinoma of the pyriform sinus: an alternative to conservation surgery. Mendenhall, W. M., Parsons, J. T., Scott, P. S., Cassisi, N. J., Million, R. R. Department of Radiation Oncology and Otolaryngology, University of Florida College of Medicine, Gainesville, Florida. *International Journal of Radiation Oncology, Biology and Physics* (1993) June, Vol. 27, pp. 1017–1027.
PURPOSE: We present our experience with irradiation alone or combined with neck dissection for AJCC T_1–T_2 pyriform sinus carcinoma and compare our results to those obtained with conservation surgery. METHODS AND MATERIALS: Seventy-three patients were treated between 1964 and 1990. All patients had a minimum of 2 years of follow-up; no patient was lost to follow-up. RESULTS: The 5-year rates of local control and ultimate local control were, for Stage T_1 (17 patients), 88 per cent and 94 per cent and for Stage T_2 (56 patients), 79 per cent and 91 per cent. Patients with T_2 lesions had a significantly higher rate of local control after twice-daily, compared with once-daily, irradiation ($P = .04$). However, a multivariate analysis of various parameters revealed that none of the variables tested significantly influenced this end point: vocal cord mobility ($P = .15$), once- vs. twice-daily fractionation ($P = .33$), T_1 vs. T_2 ($P = .32$), apex invasion ($P = .58$), and pretreatment CT scan ($P = .67$). Local control with laryngeal voice preservation was obtained in 88 per cent of patients with T_1 cancers and 80 per cent of those with T_2 cancers. Ultimate control above the clavicles at 5 years according to AJCC stage was as follows: I and II, 100 per cent; III, 78 per cent; IVA, 75 per cent; and IVB, 60 per cent. The probability of cause-specific survival at 5 years was as follows: I and II, 100 per cent; III, 83 per cent; and IVA and IVB, 51 per cent. Overall, nine patients (12 per cent) developed severe complications, one of which was fatal. CONCLUSION: Compared with available data from series using conservation surgery, radiotherapy alone or followed by neck dissection results in similar rates of local control and survival with a significantly lower risk of fatal complications.

Pituitary adenomas: long-term results for radiotherapy alone and post-operative radiotherapy. Hughes, M. N., Llamas, K. J., Yelland, M. E., Obst, D., Tripcony, L. B. Queensland Radium Institute, Royal Brisbane, Hospital, Brisbane. *International Journal Radiation Oncology, Biology and Physics* (1993) June, Vol. 27, pp. 1035–1043.
PURPOSE: Analysis of prognostic factors and long-term results of treatment of pituitary adenomas. METHODS AND MATERIALS: The study involved a retrospective review of outcome in a series of 268 patients with pituitary adenomas, treated at the Queensland Radium Institute from January 1962 to December 1986. The study population included 108 patients treated with radiotherapy alone and 160 patients treated by surgery and post-operative radiotherapy. In each group, univariate and multivariate analyses were conducted of possible prognostic factors including age, sex, performance status, tumor type, tumor extent, visual disturbance, radiotherapy dose, and field size. RESULTS: For radiotherapy alone, the 10-year progression-free survival rate was 60 per cent, and overall tumor control was obtained in 77 per cent. Univariate analysis suggested that tumor type and radiotherapy field size were of prognostic significance. Multivariate analysis confirmed that Prolactinoma subtype and increasing radiotherapy field size were independently predictive of reduced progression-free survival. Long-term visual complications occurred in 1 per cent of patients treated by radiotherapy alone. In patients treated by surgery and post-operative radiotherapy, the 10-year progression-free survival rate was 77 per cent, and overall tumor control was achieved in 83 per cent. Univariate analysis suggested that tumor type, completeness of surgical excision, and radiotherapy dose were predictive of outcome. However, on multivariate analysis, only the extent of surgical excision predicted prognosis independently. Long-term visual sequelae were noted in 3 per cent of patients treated by surgery and post-operative radiotherapy. CONCLUSION: Both radiotherapy alone and post-operative radiotherapy are effective in long-term control of pituitary adenomas, and produce acceptably low complication rates.

Intraoperative radiotherapy for esophageal carcinoma—significance of IORT dose for the incidence of fatal tracheal complication. Arimoto, T.,* Takamura, A.,* Tomita, M.,* Suzuki, K.,* Hosokawa, M.,† and Kaneko, Y.† *Department of Radiology, Hokkaido University, School of Medicine; and †Division of Surgery, Keiyu-kai Sapporo Hospital, Sapporo, Japan. *International Journal Radiation Oncology, Biology and Physics* (1993) June, Vol. 27, pp. 1063–1067.
PURPOSE: The feasibility of intraoperative radiotherapy (IORT) combined with modified regional lymphatic dissection (plus esophagectomy) for advanced esophageal carcinoma was tested. The quality of life in the patients was expected to improve by modified surgery, securing a good local control by additional IORT. METHODS AND MATERIALS: Total esophagectomy plus modified three-regional lymphatic dissection with upper mediastinal IORT followed by postoperative external beam irradiation was systematically given to 62 patients between August 1989 and June 1992. Sixty-five per cent of the patients were age over 60, and 76 per cent (47/62) of the patients were Stage III or IV by pTNM. Several techniques for the IORT were developed and used throughout this period, including a temporary collapse of the right lung by unilateral tracheal intubation (for the insertion of IORT applicator) and an *in vivo* dosimetry to know the appropriate range (energy) of electron beam. The method of surgical treatment, the dose of external beam irradiation were kept standardized, and only the dose of IORT was randomized either to 20 or 25 Gy. IORT-related complications and the pattern of failures were carefully monitored. RESULTS: (a) Most prominent IORT-related complication was the late tracheal damage, which occurred 6 of 44 patients who were at risk for more than a year. (b) The incidence of IORT-induced tracheal damage was sharply dependent on the dose of IORT; 6 out of 21 patients who received single dose of 25 Gy, and none out of 33 who were given 20 Gy or less. (c) 2-year cause-specific survival and actuarial 2-year survival were 75.0 ± 14.5 per cent and 62.5 ± 13.2 per cent, respectively. No loco-regional recurrence has been detected at the time of analysis. CONCLUSION: IORT in combination with modified total esophagectomy is an effective and safe method to obtain a local control in advanced esophageal carcinomas, if the dose of IORT does not exceed 20 Gy.

Management of epistaxis in Rendu-Osler disease: is brachytherapy effective? Pohar, S.,* Mazeron, J-J.,† Ghilezan, M.,† Le Bourgeois, J-P.,† and Pierquin, B.† *Department of Radiation Oncology, Cleveland Clinic, Cleveland OH; and †Department de Cancerologie, Hopital Henri Mondor, Creteil, France. *International Journal Radiation Oncology, Biology and Physics* (1993) June, Vol. 27, pp. 1073–1077.
PURPOSE: This paper reviews the results of intranasal brachytherapy for epistaxis in 43 patients with Rendu-Osler disease treated between 1971–1991 at Henri Mondor Hospital. METHODS AND MATERIALS: 2–3 intranasal catheters were afterloaded with ^{192}Ir sources. Computer dosimetry was performed and then the dose was prescribed to an isodose thought to cover the nasal mucosa. The dose rate ranged from 0.16 Gy/h–0.63 Gy/h with a median of 0.34 Gy/h. Dose at one application ranged from 15–35 Gy with a median of 30 Gy. The severity of epistaxis was graded 1 to 5. RESULTS: The time to recurrence of significant epistaxis ranged from 6–178 months with a median of 24 months. The dose prescribed did not correlate with control rate. The only brachytherapy complication was septal perforation in 4 patients; in one this was a result of repeated nasal coagulation. CONCLUSION: We suggest that intranasal brachytherapy is a useful modality in the management of epistaxis in Rendu-Osler disease.

A technique for fractionated stereotactic radiotherapy in the treatment of intracranial tumors. Podgorsak, E. B.,* Souhami, L.,† Caron, J-L.,‡ Pla, M.,* Clark, B.,* Pla, C.,* and Cadman, P.* Departments of *Medical Physics, †Radiation Oncology, and ‡Neurosurgery, Montreal General Hospital, McGill University, Montréal, Québec, Canada. *International Journal Radiation Oncology, Biology and Physics* (1993) June, Vol. 27, pp. 1225–1230.
PURPOSE: The excellent treatment results obtained with traditional

radiosurgery have stimulated attempts to broaden the range of intracranial disorders treated with radiosurgical techniques. For major users of radiosurgery this resulted in a gradual shift from treating vascular diseases in a single session to treating small, well delineated primary tumors on a fractionated basis. In this paper we present the technique currently used in Montreal for the fractionated stereotactic radiotherapy of selected intracranial lesions. METHODS AND MATERIALS: The regimen of six fractions given every other day has been in use for 'fractionated stereotactic radiotherapy' in our center for the past 5 years. Our current irradiation technique, however, evolved from our initial method of using the stereotactic frame for target localization and first treatment, and a 'halo-ring' with tattoo skin marks for the subsequent treatments. Recently, we developed a more precise irradiation technique, based on an in-house-built stereotactic frame which is left attached to the patient's skull for the duration of the fractionated regimen. Patients are treated with the stereotactic dynamic rotation technique on a 10 MV linear accelerator (linac). RESULTS: In preparation for the first treatment, the stereotactic frame is attached to the patient's skull and the coordinates of the target center are determined. The dose distribution is then calculated, the target coordinates are marked onto a Lucite target localization box, and the patient is placed into the treatment position on the linac with the help of laser positioning devices. The Lucite target localization box is then removed, the target information is tattooed on the patient's skin, and the patient is given the first treatment. The tattoo marks in conjunction with the target information on the Lucite target localization box are used for patient set-up on the linac for the subsequent 5 treatments. The location of the target center is marked with radio-opaque markers on the target localization box and verified with a computerized tomography scanner prior to the second treatment. The same verification is done prior to other treatments when the target center indicated by the target localization box disagrees with that indicated by the tattoo marks. The new position of the target center is then determined and used for treatment positioning. CONCLUSION: The in-house-built frame is inexpensive and easily left attached to the patient's skull for the 12 day duration of the fractionated regimen. Positioning with the Lucite target localization box verified with tattoo marks ensures a high level of precision for individual fractionated treatments.

Potential doubling time in head and neck tumors treated by primary radiotherapy: preliminary evidence for a prognostic significance in local control. Corvò, R.,* Giaretti, W.,† Sanguineti, G.,* Geido, E.,† Orecchia, R.,† Barra, S.,* Margarino, G.,‡ Bacigalupo, A.,* Vitale, V.* *Divisione di Oncologia Radioterapica, †Laboratorio di Biofisica, and ‡Divisione di Oncologia Chirurgica, Istituto Nazionale per la Ricerca sul Cancro, Genova, Italy. *International Journal Radiation Oncology, Biology and Physics* (1993) June, Vol. 27, pp. 1165–1172.
PURPOSE: The aim of the study was to determine preliminarily whether cell kinetic parameters evaluated using in vivo infusion of bromodeoxyuridine (BrdUrd) and flow cytometry, play a role as prognostic factors of loco-regional control in squamous cell head and neck carcinoma treated with radiotherapy. METHODS AND MATERIALS: Between April 1989 and December 1991, 42 patients with unresectable Stage II–IV squamous cell carcinoma of the oral cavity, pharynx or larynx were given an infusion of BrdUrd solution prior to primary tumor biopsy sampling at 4–6 hr later. The simultaneous labeling S-phase fraction (LI) and duration (Ts) as well as the estimated potential doubling time (Tpot) were measured using flow cytometric analysis of BrdUrd and DNA content. Twenty-six patients received standard radiotherapy (70 Gy/35 fractions/7 weeks) whereas 15 patients were treated with the concomitant boost technique (75 Gy/40 fractions/6 weeks). RESULTS: A complete set of flow cytometric data was available for 31 patients. The median value of LI, Ts, and Tpot were 9 per cent, 9 hr and 5 days, respectively. Univariate analysis among the patients treated homogeneously by standard radiotherapy, indicated that local control was affected by Tpot value ($P = 0.02$). When the same analysis was performed for the patients treated with either standard radiotherapy or concomitant boost regimen, we found a $P = 0.04$. Thus, patients with a tumor Tpot value ≤ 5 days had a significantly lower three-year local control than patients with Tpot >5 days. Log-rank test univariate analysis showed, in addition, that nodal status was the strongest prognostic factor of local control ($P = 0.005$). Age, tumor stage, tumor site, performance status, grading, radiotherapy regimen, DNA ploidy and LI value were, instead, not significantly related to loco-regional control. Finally, when comparing the type of radiotherapy for tumors with Tpot ≤ 5 days, we found a trend toward a better local control after concomitant boost regimen, with respect to standard regimen ($P = 0.06$). CONCLUSION: The present preliminary results suggest that Tpot could play a role as additional prognostic factor influencing the disease outcome in head and neck carcinoma treated by radiotherapy.

A multivariate analysis of prognostic factors in management of pineal tumor. Chao, C. K. S.,* Lee, S-T.,† Lin, F-J.,* Tang, S. G.,* and Leung, W-M.* *Department of Radiation Oncology, †Department of Neurosurgery, Chung Gung Memorial Hospital, Taipei, Taiwan. *International Journal Radiation Oncology, Biology and Physics* (1993) July, Vol. 27, pp. 1185–1191.
PURPOSE: A multivariate analysis of prognostic factors of treatment outcome of pineal tumor. METHODS AND MATERIALS; From February 1979 to June 1987, 25 patients with primary pineal tumors were treated in our department. Patients were treated with either AECL Co-60 unit or 10 MV linear accelerator to the primary tumor with an adequate margin or to the whole brain (median dose of 36 Gy) with or without a cone-down boost of 10 to 20 Gy. Craniospinal irradiation was performed in two patients with positive CSF cytology. Minimum follow-up was 40 months. Patients were further stratified according to tumor type. Group I consisted of seven patients with pineal germinoma. Group II included nine patients with nongerminoma, and Group III represented nine patients treated without a histological verification but clinical diagnosis. RESULTS: The relapse-free survival (RFS) of Group I patients was 100 per cent and 86 per cent at 2 and 5 years, respectively. Relapse-free survival was 55 per cent and 21 per cent at 2 and 5 years, respectively, for Group II patients. Six of 9 patients in Group II died of disease due to either local recurrence or tumor seeding. Eight of 9 patients in Group III remain no evidence of disease, and RFS was 89 per cent at 2 and 5 years. Multivariate analysis revealed that tumor histology is the only significant prognosticator. Age, gender, type of surgical procedure, RT field, and tumor dose were not. Cox's regression model also failed to demonstrate a significant correlation of tumor seeding with the type of surgery. CONCLUSION: The type of tumors in the pineal region dictates the treatment outcome. Definitive radiation therapy is effective in controlling germinoma, whereas a more aggressive approach is needed to improve local control for nongerminoma. For a localized pineal lesion, we advocate that treatment can be tailored to the primary tumor with adequate margins. However, for locally advanced tumors whole brain or craniospinal irradiation should be considered. No definitive correlation between type of surgery and the probability of tumor seeding was identified.

External radiotherapy prior to thyroid cancer: A case-control study. Hallquist, A., Hardell, L.,‡ and Löfroth, P-O.† *Department of Oncology, †Department of Radiation Physics, University Hospital, S–901 85 Umeå; and ‡Department of Oncology, Örebro Medical Center, S–701 85 Örebro, Sweden. *International Journal Radiation Oncology, Biology and Physics* (1993) July, Vol. 27, pp. 1085–1089.
PURPOSE: The aim of this investigation was to study previous radiotherapy of malignant diseases as a risk factor for thyroid cancer. METHODS AND MATERIALS: By using the Swedish Cancer Registry all cases of thyroid cancer with another malignant disease at least one year previously and living within the catchment area of our hospital were traced. During 1959–1989 a total of 1056 cases of thyroid cancer were identified. Of these 37 had had another previous malignant disease and they constituted the cases in this study. As controls four persons with at least two malignant diseases, thyroid cancer excluded, were selected for each case from the same cancer registry. RESULTS: Ten (27.0 per cent) of the 37 patients with thyroid cancer as a second tumor had earlier been irradiated with the treatment dose including the thyroid gland as compared with 34 (24.5 per cent) of the 139 control patients. Eight of the ten cases with previous irradiation of the thyroid gland had papillary cancer. The median latency was 13 years. The estimated radiation dose in the thyroid varied between 3 and 40 Gy. External radiotherapy gave a crude odds ratio of 1.1 with 95 per cent confidence interval = 0.5–2.8 for thyroid cancer. The weighted odds ratio was calculated to 2.3 with confidence interval = 0.5–8.9. CONCLUSION: This case-control study gave a non significantly increased odds ratio for thyroid cancer in patients with external radiotherapy including the thyroid gland.

Influence of intraluminal brachytherapy dose on complications in the treatment of esophageal cancer. Kumar, M. U.,* Swamy, K.,* Supe, S. S.,† and Anantha, N.* * Department of Radiotherapy, †Department of Medical Physics, Kidwai Memorial Institute of

Oncology, Hosur Rd., Bangalore 560029, India. *International Journal Radiation Oncology, Biology and Physics* (1993) August, Vol. 27, pp. 10691072.
PURPOSE: Demonstration of the influence of intraluminal brachytherapy dose on complications in the treatment of esophageal carcinoma. METHODS AND MATERIALS: Between January 1990 and June 1991, 75 patients with esophageal cancer were treated with external radiotherapy followed by intraluminal brachytherapy. Patients had a Karnofsky score of over 70, with no supra-clavicular nodal or distant disease. An external radiotherapy dose between 40 and 55 Gy (mean 52 Gy), 5 times a week, 2 to 2.06 Gy/fraction, followed by a single session of Intraluminal brachytherapy using a locally developed, manual, afterloading applicator with Cs–137 sources with dose ranges of 8–10 Gy (Group 1: 42 patients), 10–12 Gy (Group 2: 11 patients), and 12–15 Gy (Group 3: 22 patients) at a mean dose rate of 2.09 Gy/hr was delivered. RESULTS: The actuarial figures at 1 year were 39 per cent for overall survival, 29 per cent for disease-free survival, and 38 per cent for local control. Fourteen patients (18.6 per cent) developed complications of either an esophageal stricture or fistula. These were dependent on intraluminal brachytherapy dose, whereas external radiotherapy and intra-luminal brachytherapy doses did not contribute significantly to local control. For Groups 1, 2, and 3, actuarial local control were 28 per cent, 45 per cent, and 63 per cent ($P<0.1$) and of complications were 6 per cent, 20 per cent, and 70 per cent ($P<0.001$), respectively. Also, on applying the Time/Dose/Fractionation formula on brachytherapy doses, it was found that the complication rate was 6 per cent for TDF of <31, 25 per cent for TDF of 32–37, and 70 per cent for TDF of <38 ($P<0.001$). CONCLUSION: External radiotherapy doses in the range of 50 to 55 Gy followed by a dose of 10–12 Gy of intraluminal brachytherapy was found optimal with respect to complications and local control in the radiotherapeutic management of esophageal cancer.

Preservation of parotid function after external beam irradiation in head and neck cancer patients: a feasibility study using 3-dimensional treatment planning. Hazuka, M. B., Martel, M. K., Marsh, L., Lichter, A. S., Wolf, G. T. University of Michigan Medical Center, Ann Arbor 48109. *International Journal Radiation Oncology, Biology and Physics* (1993) October, Vol. 27, pp. 731–737.
PURPOSE: Radiation-induced xerostomia is a frequent complication and major cause of morbidity in head and neck cancer patients. The severity of xerostomia is related to radiation dose and the amount of parotid tissue included in the irradiated volume. To reduce this side-effect and preserve salivary function, we have evaluated the use of 3-dimensional (3–D) treatment planning to spare the contralateral parotid gland in twelve patients undergoing radiation therapy for head and neck cancers. METHODS AND MATERIALS; In each case, beam's eye view displays were used to design beam and blocking arrangements that excluded the contralateral parotid. Ten patients were treated with 2 nonopposing oblique fields in the axial and non-axial plane while two patients required a non-axial, non-coplanar 3-field arrangement. These 3–D treatment plans were also compared with conventional 2-dimensional (2–D) plans. The 2-dimensional plans were designed independently of the 3–D treatment planning information using the orthogonal radiographs and hard copies of the computed tomography scans. RESULTS: An average of 1.8 per cent (range, 0–7 per cent) of the target volume was underdosed with the 95 per cent isodose level for the 3–D plans compared with 18.8 per cent (range, 2.0–36.6 per cent) for the 2–D plans. This was due to improved identification of the target volumes and better design of blocked fields with beam's eye view treatment planning. Furthermore, the mean dose to the opposite parotid was 3.9 Gy for the 3–D plans vs 28.9 Gy for the conventional plans. With a minimum follow-up of 4 months, only 2 of 12 patients have complained of a dry mouth. CONCLUSION: These encouraging results suggest that this approach is feasible in many cases. 3–D treatment planning may allow the use of parotid sparing techniques in patients who otherwise would not have been considered candidates using conventional radiotherapy techniques.