

SECTION OF LARYNGOLOGY & RHINOLOGY AND OTOTOLOGY

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The **ROYAL**
SOCIETY *of*
MEDICINE

President of the Laryngology & Rhinology Section: Professor Valerie Lund CBE FRCS
President of the Otology Section: Mr Robin Youngs FRCS

This is to give notice that a joint meeting of the Laryngology & Rhinology and Otology Sections of the Royal Society of Medicine will be held at 1 Wimpole Street, London on Friday 5 March 2010 in the Main Lecture Theatre

AGENDA

Trade Exhibition

There will be a commercial exhibition in the Atrium and Fellows are kindly requested to visit the stands during the course of the meeting.

10.30 am Otology Section

- 1. The minutes of the last meeting to be approved and signed**
- 2. Introduction and welcome of visitors to the meeting**
- 3. Title of the meeting: The global scope of otology**

Molecular therapy in otology

Professor Anil Lalwani, New York University School of Medicine

Aims: To understand the strategies for hearing restoration through the use of molecular therapeutics.

Learning Objectives: 1. Understand issues in cochlear gene therapy. 2. Understand strategies for promoting hair cell regeneration. 3. Understand recent advances in hearing restoration.

Key Points: Hearing loss is the most common sensory impairment in humans with nearly 275 million people affected worldwide. Yet there are interventions that reverse hearing loss. Molecular therapies, such as gene therapy and stem cell therapy hold the promise of restoring hearing. In this presentation, the basic principles of gene therapy and its application in the inner ear will be reviewed. Potential application of cochlear gene therapy includes hair cell protection in the face of chemical or noise-induced ototoxicity, spiral ganglion cell survival following hair cell death or injury, and hair cell regeneration. Introduction of stem cells that can differentiate into functioning hair cells with the appropriate connections to their corresponding spiral ganglion cells is yet another strategy to restore sensorineural hearing loss. The goal of this presentation is to provide a broad overview of these exciting potential therapies to restore hearing.

Suggested Reading: Kesser BW, Lalwani AK. Gene Therapy and Stem Cell Transplantation: Strategies for Hearing Restoration. *Advances in Oto-Rhino-Laryngology* 2009; 66: 64-86.

The challenge of deafness in the developing world

Professor Rakesh Prasad Shrivastav, Tribhuvan University Teaching Hospital, Kathmandu, Nepal

According to the World Health Organisation there are more than 278 million people suffering from moderate or worse (disabling) hearing impairment. Eighty percent of them live in low or middle income countries. Hearing impairment is the largest disability in Nepal, far ahead of blindness as was commonly believed for many years. There are many challenges in South East Asia (SEA) Region regarding prevention of deafness. The Government and/or policy makers in SEA have other priorities. There is severe lack of human resources, poor availability of training opportunities in some countries and shortage of audiologist/audiology technicians and primary ear and hearing care workers. In addition required infrastructure for diagnosis, treatment and hearing aid services are lacking. Several charities in Nepal like IMPACT Nepal, The Britain Nepal Otolaryngology Services and International Fellowship are carrying out several activities to meet these challenges in the community where ENT surgeons and audiology services are not available. Primary and secondary ear care services in the community is being carried out in few Districts while tertiary level ear care is provided in the community through mobile ear surgery camps where a team of ENT surgeons provide state of the art middle ear surgery on patients referred by the Primary Ear and Hearing Care Workers from within the community.

How to organise links with developing countries

Mr Nick Astbury, Norfolk and Norwich University Hospital

The VISION 2020 links programme will be relevant to otology and meeting the challenge of deafness in the developing world. I will describe the VISION 2020 Links process and illustrate it with details of some existing links and my experience of developing a link between the University Hospital of Gezira in Sudan and the Norfolk and Norwich University Hospital and University of East Anglia.

The VISION 2020 Links Programme originated as part of the 'VISION 2020 - the right to sight' initiative that was established in 1999 by the World Health Organisation and the International Agency for Prevention of Blindness to eliminate avoidable blindness worldwide.

- It works with overseas partner institutions (initially in Africa) to identify their main needs and priorities and then match those requirements with a suitable UK training eye unit.
- It is an initiative to give teaching eye institutions in developing countries the skills and resources to develop high quality programmes (including training) for eye care professionals (doctors, nurses and paramedical staff)

The International Centre for Eye Health (ICEH) promotes the development of links by acting as a resource and networking centre for existing Links and facilitates the development of new ophthalmic Links within NHS hospitals.

Eyes and ears

Prof Andrew Smith who is now based at ICEH, working on hearing impairment projects, has had a longstanding association with Lady Jean Wilson (and her husband John, himself blind, who founded SightSavers and IAPB) and is a trustee of the Hearing Conservation Council. Through Jean Wilson, a meeting was convened at ICEH to explore 'ear' links and take the initiative forward.

The Tropical Health and Education Trust (THET)

This type of 'specialist' eye link will be stronger if other departments are also involved and the link involves the whole organisation. One of the strengths of the VISION 2020 Links Programme is the close association with THET, a long standing general medical links programme that acts as an umbrella organisation to foster institutional links. Their website contains a mine of useful information including a 'Links Manual' - <http://www.thet.org>.

How the links process works

The VISION 2020 Links Programme has a defined needs assessment process which helps to establish a foundation for sustainable partnerships between teaching institutions in developing countries and partner eye hospitals in the UK.

The VISION 2020 Links programme will endeavour to:

- help the overseas partners to identify their priority needs for eye care training
- match them with the most appropriate UK institution and facilitate the process
- look for 'seed money' for the needs assessment process
- organise orientation visits by key members of staff, UK to Africa and Africa to UK
- establish the Steering Committees for both partners
- facilitate joint discussion and agreement of the goals and objectives
- monitor and report to the V2020 Links steering committee on the Links as they develop

Benefits for the overseas institution

1. Clinical skills transfer - for all cadres of ophthalmology staff will be improved through training in general or sub-specialty ophthalmology and through staff exchange
2. Community focus - community eye health programs will be developed in order to increase access to eye care and to increase awareness of eye health needs
3. Research - research capacity will be developed, giving local personnel the skills to formulate and answer questions important to blindness prevention in their local setting.

Benefits for the UK institution

A link programme will benefit the UK institutions by offering staff development and job satisfaction through 'hands on' work in a developing country, improving teaching skills, morale (and hopefully staff retention), and increasing the status of the UK partner as an instrument for change in global eye care.

Sudan-Norwich Link

This wider link has been running for 3 years. Our major achievements to date have been:

- Development of a new nursing curriculum
- Development and implementation of a paediatric nurse led diabetes service,
- Setting up an infection control structure covering all 7 hospitals in Gezira
- A comprehensive VISION 2020 links programme including an ophthalmic nursing skills course
- Development of an emergency care course for nurses
- Introduction of a major maternal and child health programme
- Development of a community research programme including a successful bid to the Wellcome Trust for strengthening capacity building in environmental health.

The UK's global health programme

Dr Jayshree Bagaria, Department of Health

What is the UK's Global Health Programme? What are the current challenges facing the UK and what could these mean for global health? Where is the future going and what about otology? These are some of the issues for discussion in this session.

12.30 pm - Close of session

Trade Exhibition

There will be a commercial exhibition in the Atrium and Fellows are kindly requested to visit the stands during lunch - **complimentary wine is provided**

2.00 pm - Laryngology & Rhinology Section

- 4. The minutes of the last meeting to be approved and signed**
- 5. Introduction and welcome of visitors to the meeting**
- 6. Title of the meeting: Karl Storz short papers meeting and "Challenges to surgical research"**

The Ellison-Cliffe Travelling Fellowship Report

Mr Carl Philpott

The T-14: A valid, sensitive and reliable parent-reported outcome measure for paediatric throat disorders

Miss Claire Hopkins, Guy's and St Thomas' Hospital

Objectives: We modified and abbreviated a pre-existing instrument, the Tonsil and Adenoid Health Status Instrument, to make it suitable for rapid completion as a disease-specific health-related quality of life instrument in children with tonsil and adenoid disease in the UK. We have determined the main psychometric properties of the resulting 14-item Paediatric Throat disorders Outcome Test (T-14).

Design, setting and participants: Pre- and post-operative questionnaires were completed by parents of children with throat disorders, referred to two large hospitals. We included both those with recurrent tonsillitis and obstructive sleep apnoea. A separate cohort of healthy children with comparable age range was also studied.

Main outcome measures: The internal consistency and responsiveness were analysed and construct validity documented via known-group differences.

Results: 126 completed questionnaires were received from the hospital referral group. The children's mean age was 6.5 years (range 1 – 16). The 40 unaffected children were well matched in age to the study population (mean 6.1 years, range 2 – 15).

The Cronbach's alpha for the pre-operative assessment on the T-14 total score was 0.84. The test-retest reliability coefficient for the total score was 0.98, indicating very high reproducibility. The T-14 discriminates well between children known to suffer with throat problems and a group of healthy controls ($p < 0.0001$; $t = 24.016$). Parentally reported T-14 scores were also improved (ie lower) ($t = 7.01$; $p < 0.0001$) 6 months following surgical intervention. The standard effect size (change in mean divided by the baseline SD) in patients completing post-operative questionnaires was 1.53. This is very large.

Conclusions: The T-14 is an appropriate disease-specific parent-reported outcome measure for children with throat disorders, for which we have demonstrated internal consistency, reliability, responsiveness to change, and two forms of construct validity.

Comparison of histopathologic features of primary and salvage laryngectomy specimens

Mr Patrick Spielmann, Ninewells Hospital, Dundee

Residual/ recurrent squamous cell carcinoma of the larynx following irradiation or chemoradiation has traditionally been treated with a total laryngectomy. In recent years partial laryngectomy techniques including endolaryngeal laser resection as salvage surgery for this group of patients has gained popularity. Differentiating between residual/ recurrent disease and post-treatment changes is challenging and can be a potential pitfall in partial laryngeal resections (1). This study was designed to compare the histopathological features of primary laryngectomy specimens with those obtained during salvage surgery and to compare outcomes with published data.

Methods: All laryngectomies performed over the period 2000 – 2009 were identified and divided into 'primary surgery' and 'salvage surgery' groups based on oncological treatment history. All specimens were retrieved and assessed independently by a histopathologist for the following features: multifocality, discohesive tumour cells, extent of spread and evidence of perineural and lymphovascular invasion.

Results: 35 patients were identified, 17 had undergone previous chemoradiation for laryngeal carcinoma and were classified as salvage, 18 were grouped to primary surgery. Demographics were similar between these groups. There were significantly more specimens with discohesive tumour cells in the salvage group ($p < 0.05$), and a trend to more multifocal tumour location in the salvage surgery group. There was also a trend to more extensive tumour spread in the salvage group with more specimens demonstrating contralateral spread, subglottic extension as well as more adverse histopathologic features of perineural and lymphovascular invasion

Conclusion: This study provides further evidence to that published by Zbaren et al that the disease process in chemo/radiorecurrent carcinoma of the larynx may exhibit different local characteristics compared to primary untreated carcinomas. Whilst this is not a contraindication to limited resection techniques as salvage, appropriate clinical and histopathological assessment of biopsy specimens is crucial in the selection of patients.

Reference

1. Zbaren P, Christie A, Caversaccio MD, Stauffer E, Thoeny HC. Pretherapeutic staging of recurrent laryngeal carcinoma: Clinical findings and imaging studies compared with histopathology. *Head Neck* 2007; 137: 487 – 491

Histopathological and morphological effects of Celon ProCut® radiofrequency energy on palatal soft tissue – a prospective pilot study

Mr Paul Stimpson, Imperial College London, University College London

Introduction: Radiofrequency energy has multiple applications in surgery but within the field of Otolaryngology it has gained popularity as a safe and effective method for treating patients with snoring and mild obstructive sleep apnoea. A multisegmental approach is often required and interstitial radiofrequency is used in combination with cutting radiofrequency for trimming of soft palate mucosa. Little is known about the effect of cutting radiofrequency energy on human soft palate. Excessive collateral injury may impact on tissue healing and functional outcomes and therefore detailed knowledge of local tissue effects is essential to accurately plan excisional procedures.

Methods: We designed a prospective pilot study to perform detailed histological analysis of specimens of human soft palate and uvula following resection with the Celon ProCut[®] cutting radiofrequency energy device. In addition, scanning electron microscopy was performed on sample specimens excised using the ProCut[®] needle and on specimens excised using the CO₂ laser for comparison.

Results: 12 patients were included. In 10 patients, specimens of redundant uvula and faucal pillars were collected and underwent formal histological analysis. The maximum depth of tissue injury was 1mm in two specimens and overall average depth of injury was 0.15mm. Depth of injury was independent of tissue subtype at the resection margin. Morphological effects of the Celon ProCut[®] needle were analysed and compared to the effect of CO₂ laser using scanning electron microscopy.

Conclusion: Celon ProCut[®] causes minimal collateral injury to the soft palate during resection for the treatment of snoring and mild obstructive sleep apnoea. We present a histopathological analysis demonstrating local tissue damage and morphological effects of Celon ProCut[®] on palatal soft tissues. A detailed knowledge of local effects on resected specimens allows more accurate estimation of in-vivo tissue injury at the resection margin and may enable more accurate prediction of healing patterns and repair.

Olfactory dysfunction in allergic fungal sinusitis

Mr Carl Philpott, University of East Anglia, Norwich

Background: AFRS is a chronic disease which requires sustained medical therapy following endoscopic sinus surgery. However patients appear to complain of olfactory dysfunction in spite of apparent control of their disease based on endoscopic assessment of their sinus cavities. This persistent complaint is perceived as a significant detriment to their quality of life.

Objective: This study aims to correlate subjective reporting of olfactory function with endoscopic staging and performance on the Sniffin' Sticks test and with quality of life assessments in patients with allergic fungal rhinosinusitis (AFRS).

Methods: Seventy patients with AFRS seen in a tertiary rhinology clinic were recruited to undergo olfactory testing following routine endoscopic follow up. Patients were included if they met the modified diagnostic criteria for AFRS (immunocompetence, polyps, eosinophilic mucin, CT findings and positive fungal stain). The Sniffin' Sticks test was used to derive their TDI score and a visual analogue score was used for their perceived olfactory ability. Patients were also asked to complete a short form 36 questionnaire for quality of life scores. An endoscopic staging score was given for each patient.

Results: 37 male and 33 female patients with AFRS underwent olfactory testing over the course of 6 months; 38 of these completed all parts of the assessment. The age range of the patients was 25 to 72 (mean 51). The mean TDI score was 18 showing a poor level of olfactory function in this group. There was a significant correlation between patients' performance on the Sniffin' Sticks and endoscopic staging and with their reported olfactory ability ($p < 0.001$ for all 3 correlations). The mean score for the SF36 was 72 (range 23 to 98) but there was a poor correlation with TDI, VAS and endoscopic scores ($p > 0.05$ for all 3).

Conclusion: All patients with significant sinonasal inflammatory disease such as AFRS should receive evaluation with olfactory testing and be treated on their merit in order to lessen the impact on their quality of life, as this will vary from one individual to another.

Validation of a disease activity scoring system for the assessment of ENT complaints in Wegener's granulomatosis

Mr Marcos Arturo Martinez Del Pero, Cambridge University Hospitals

Background: Wegener's granulomatosis (WG) is a primary vasculitis that typically affects the upper and lower airways and the kidneys. It affects approximately 100-200 people per million in the UK and at follow up 90% of patients have ENT involvement. Due to the complex nature of the condition and its relative low incidence, several assessment tools have been designed for documentation of disease activity and long-term damage. These are useful to clinicians who are unfamiliar with the condition, as a measure of treatment outcome and as a research tool to make meaningful comparisons between studies.

The most widely used assessment tool for disease activity in Wegener's granulomatosis is the Birmingham Vasculitis Activity Score (BVAS). There are five items relating to the ENT system in the current score. These were included on the basis of expert opinion of experienced clinicians.

Aims: To validate an improved scoring system for ENT disease in WG.

Methods: In order to achieve face and content validity, an all-inclusive database was designed to collect data on ear, nose and throat symptoms and signs.

Patients were seen prospectively using the database to record their complaints and whether the patient had disease activity, remission and/or infection. The information was compared to BVAS scores done retrospectively from clinic letters by vasculitis doctors on the same visit. This fulfils construct validity and criterion-oriented validity.

Results: Information was recorded on 144 patients. The male to female distribution was 1:1 and the median age was 57.7 years of age. ENT disease was present in 87% of patients. Two thirds of patients were in remission. The most common complaint in patients in remission was hearing loss and in patients with active disease it was nasal complaints.

The six items found to have a significant correlation with disease activity were bloody rhinorrhoea, inflammation on nasendoscopy, inflammation on laryngoscopy, objective stridor, inflamed tympanic membrane/middle ear granulation and sudden sensorineural hearing loss. These items also showed higher sensitivity and specificity when compared to BVAS. The rules for scoring the system are the same as those for BVAS as the principle and the condition are the same.

Conclusion: The authors have validated an improved scoring system to help diagnose disease activity/remission in the ENT system of patients with WG. The condition is increasingly managed in a multidisciplinary setting that includes ENT surgeons and this score would help guide the assessment for comparisons within and between patients. These items will now need to be tested for reliability.

Laser series: laryngeal laser resections with frozen section

Miss Tosief Zahoor, Leeds Teaching Hospitals NHS Trust

Study Design: A Retrospective study of all patients who underwent laser resection for T1 and T2 laryngeal carcinoma from December 2002 to September 2009 by the senior author. Data was collected prospectively. All patients presenting with early cancer to the Leeds Head& Neck Cancer Unit were seen jointly by the senior author and a Clinical oncologist and offered a choice between radiotherapy and laser resection. MDT Analysis was made of factors including resection margins, duration of inpatient stay, complications, functional outcome of voice and cure of disease. In addition comparative analysis was made of frozen section pathology specimens with that of formalin histology of these same specimens.

Results: A total of 73 patients underwent the procedure. Mean age was 69 years.

50% of patients chose to have laser treatment over radiotherapy.

16% were day case. 68 % had an overnight stay, the majority being tertiary referrals living more than 15 miles from our hospital. The remaining 16% had an average of 3.8 days stay, over half of which were for reasons other than post operative recovery from primarily supraglottic resections.

58% required a single procedure to achieve cure. Of the remaining 42% who underwent a repeat procedure, just over a third had recurrent disease with the others having dysplasia or inflammatory changes only. Overall we found that in total 8% of patients had to undergo post operative radiotherapy for recurrent disease. One patient had to undergo a total laryngectomy because of rapid progression of disease. The other 33% had a repeat procedure with frozen section achieving clear margins.

Over 85% of patients had frozen section specimens sent intra operatively. Those that did not were patients who underwent laser excision for carcinoma in situ and for diagnostic purposes. We found that with our technique only 30% of patients required a repeat frozen section intra operatively; these were equally divided between T1 and T2 disease.

There was greater than 85% concordance of the frozen section histology with that of the formalin histology of the same specimens. Only one patient had frozen section which suggested inadequate margins although the formalin histology showed clear margins. Of the remaining patients who had non concordance the majority went on to have a second procedure within a month with further clear margins. 5% of these patients had poor access and therefore a complete laser resection was not possible and they were referred on for radiotherapy treatment.

Subjective analysis of voice showed that 50% had a 'good' voice post operatively, 34% 'acceptable' and 16% had 'poor' voice.

Complications – 13% of patients developed laryngeal webs, of which 10% were significant and needed excision. One patient underwent a tracheostomy secondary to post operative haemorrhage after surgery to a laryngeal web 2 years after treatment for the initial tumour. One patient had aspiration pneumonia and resulted in an extended hospital stay.

Conclusion: Laser excision with frozen section is a valid technique for the treatment of T1 and T2 laryngeal cancer and offers many advantages over radiotherapy. We found that with good pathological support cure can be achieved in a single day case procedure with laser excision with frozen section for the majority of cases.

Parathyroid hormone assay as a predictor of early hypoparathyroidism following total thyroidectomy

Mr Aanand Acharya, Heart of England NHS Foundation Trust

Background: Hypoparathyroidism is a recognised complication of total thyroidectomy which may be a temporary or permanent phenomenon. Sharing the same blood supply as the thyroid glands, parathyroid glands may not function post-operatively even if preserved peri-operatively. Affected patients develop symptoms of hypocalcaemia. As the onset of hypocalcaemia can be delayed for up to 72 hours, patients may need post-operative clinical and biochemical monitoring.

Parathyroid Hormone (PTH) is produced by the parathyroid glands and has a half life of around 3-4 minutes. Hence, an early low PTH level could predict hypocalcaemia before it is clinically or biochemically apparent. Historically, PTH levels have been used to predict the outcome of parathyroidectomy operations. We set out to test the possible role of different PTH levels in predicting subsequent hypocalcaemia with a view to developing a rational and scientific patient discharge protocol for total thyroidectomy patients.

Method: Prospective study of all patients undergoing total thyroidectomy in our unit between October 2008 and December 2009. All patients had an early PTH level and serial corrected calcium measurements.

Results

Thirty four patients were included in the study. There were 20 total thyroidectomies and 14 completion hemithyroidectomies. Thirty two percent (11/34) of patients developed early hypocalcaemia requiring calcium supplementation. Early PTH levels ranged from 4.6 – 73.2 ng/L.

PTH levels used to predict hypocalcaemia (Normal range 12 – 72 ng/L)	Sensitivity	Specificity
PTH < 25 ng/L	100%	65%
PTH < 22 ng/L	100%	70%
PTH < 20 ng/L	91%	83%
PTH < 15 ng/L	64%	96%
PTH < 10 ng/L	45%	100%

No patients with an early PTH level greater than 22 ng/L developed hypocalcaemia. Sixty one percent of patients (11/18) with an early PTH level less than 22 ng/L developed early hypocalcaemia.

Conclusion

PTH assay in the immediate postoperative period can identify both that group of patients who are not at risk of developing hypocalcaemia and also the potentially vulnerable group. We would suggest a threshold early PTH level of 22 ng/L represents a safe level. Length of hospital stay for this group need not be influenced further by calcium concerns and may be considerably reduced.

Guest lecture**Challenges to surgical research**

Professor Martin Birchall, Consultant ENT Surgeon and Professor of Surgery, University of Bristol

Pilloried for two decades, surgical research is gradually undergoing a renaissance, with surgeons central to innovations in technology, cancer care and regenerative medicine, for example. Surgical discipline and certainty imbued by training lends surgical researchers an advantage in the true translation of scientific discoveries. The road to academic success for young surgeons remains littered with potholes and roadside devices, but is still negotiable and rewards remain worth the effort for those willing to lead or be part of innovative, multidisciplinary research teams.

4.00 pm – Close of meeting**Date and time of next meeting:**

Friday 7 March 2010

Laryngology & Rhinology Section

One airway, many specialities

Garnett Passe Lecture

Otology Section

Cholesteatoma – from science to surgery