The Association of Surgeons in Training Medal
Short Paper Session

**0051: TO EVALUATE THE EFFECT OF HYPERBARIC OXYGEN THERAPY ON THE HEARING OUTCOME IN PATIENTS WITH SUDDEN SENSORINEURAL HEARING LOSS**

S. Agrawal*, N. Sharma, N. Banerjee. **PGIMER & Dr. Ram Manohar Lohia Hospital, India**

**Aim:** To ascertain whether the addition of HBOT to conventional medical treatment improves hearing outcome in patients with Sudden SNHL, to assess the impact of patient-related and audio vestibular parameters on prognosis, to document any adverse effects of HBOT.

**Methods:** 40 patients with Sudden SNHL, 18–60 years, were enrolled. 20 patients (Group A) received steroids, plasma expander, gingko biloba, nicotinic acid, betahistine, and antiviral. 20 patients (Group B) received the above with HBOT (10 sessions). Audiological assessments were performed with pure tone audiometry on day 5,10, at each month’s end, for 3 months.

Following parameters were noted: demographics (age, gender); tinnitus; vertigo; time between onset of loss and initiation of treatment; severity of hearing loss. Hearing outcomes were evaluated by four indices: cure rate, marked recovery rate, recovery rate, and hearing gain.

**Results:** Mean hearing gain was 31.5 + 20.0 dB in Group B, which was higher than in Group A, 16.8 + 17.5 dB (p = 0.018). Marked recovery rate was higher in Group B (50% vs 20%; p = 0.047). Patients treated within first seven days of onset showed higher hearing gains and marked recovery rates. Cure rate was higher in patients without vertigo (19% vs 0%; p = 0.045). 20% patients suffered from adverse effects of HBOT, most common being otitis media.

**Conclusion:** Addition of HBOT to conventional treatment significantly improves the outcome of sudden deafness; its use should be encouraged as an adjunctive therapy. Age, gender, tinnitus, severity of hearing loss did not affect the outcome of sudden hearing loss. Present of vertigo and initiation of treatment more than seven days after onset were poor prognostic factors. HBOT was a relatively benign intervention.

**0152: ANALYSIS OF PRO [-2] PSA: A NOVEL BIOMARKER THAT SIGNIFICANTLY IMPROVES THE DETECTION OF PROSTATE CANCER**

R. Foley †, L. Gorman †, D. Lundon †, N. Sharifi †, K. Murphy †, A. Tuzova †, A. Perry †, T.B. Murphy †, R.W. Watson †. †University College Dublin, Ireland; ‡ Mater Misericordiae University Hospital, Ireland; § Beaumont Hospital, Ireland; ‡ University College Dublin, Ireland

**Aim:** In order to effectively select patients for prostate biopsy more accurate biomarkers of disease are needed. The objective of this study was to analyse the clinical utility of a novel biomarker; pro [-2] PSA in order to inform the decision for prostate biopsy in an Irish cohort of men.

**Methods:** The serum of 250 men from three tertiary referral centres with pre-biopsy blood draws was analysed for tPSA, fPSA and pro [-2] PSA. From this the phi score was calculated (pro [-2] PSA/fPSA)*√(fPSA). Calibration plots, ROC analysis as well as decision curve analysis were utilised to ascertain the potential utility of the phi score.

**Results:** The phi score was well calibrated in this cohort demonstrating good correlation between predicted probabilities and actual outcome. The AUC for the phi score was 0.72 for the prediction of prostate cancer and 0.78 for the prediction of high grade prostate cancer (gleason ≥ 7), compared to 0.62 and 0.70 for fPSA. Decision curve analysis demonstrated net benefit of the phi score over its entire range of risk probabilities.

**Conclusion:** The measurement of pro [-2] PSA can increase the accuracy of risk calculation in each individual patient thereby helping to better inform the decision for prostate biopsy in a referral population.

**0334: OPTIMISATION OF BIOMATERIAL SURFACES FOR NEXT GENERATION NEUROSURGICAL IMPLANTS**

R. Bartlett †*, B. Cousins. University College London, UK

**Aim:** Neurosurgically implanted electrical devices are used to treat a range of severely debilitating disorders. However, their current use is limited by poor long-term biocompatibility, and thus this research aimed to investigate whether chemical modification was useful strategy in overcoming this.

**Methods:** Glass and gold substrates were chemically modified using organosilane precursors to produce either methyl (−CH3), amine (−NH2) or thiol (−SH) functionalised surfaces. Contact angle (θ) measurements were performed to validate the modification process and PC-12 cells cultured. Light microscopy and SEM provided information on cell behaviour, whilst cell-based assays were used to quantify metabolic activity and proliferation.

**Results:** Thiol functionalised surfaces were found to confer significantly greater levels of cell adhesion (p = 0.005), proliferation (p < 0.001),
0356: ORGAN DONATION REGISTRATION: EVIDENCE BASED MARKETING?

R. Thomas1,*, W. Scott2, J. Forsythe1, L. Marsen1, S. University of Edinburgh, UK; 2 Scottish Government, UK

Aim: 778 Scots are waiting for a transplant and last year 43 died whilst waiting. Only 42% of eligible Scots are on the organ donor register (ODR). Apathy is a barrier: 32% of those unregistered said they would join, demonstrating a potential focus for a targeted marketing campaign.

Methods: In 2005, the Scottish ‘Kill Jill’ campaign focused on the contemporary trend of voting for outcome (cost: £325,000). In 2008, the “Connected” marketing had a more personal approach (cost: £615,000).

Results: “Kill Jill” increased new Scottish registrations by 33%, compared to the 6.5% English increase over the same period. The 108,423 new registrations should mean six additional renal transplants over a decade. The subsequent “Connected” campaign generated 34,729 more registrations, a 1.8% growth in ODR. It was predicted that this would result in 2.6 extra transplants.

Conclusion: Marketing is expensive and results are difficult to quantify. One renal transplant saves £214 000 per person compared to dialysis. If only one of 108,423 donates both kidneys after death, the “Kill Jill” campaign has paid for itself. The “Connected” campaign predicted that each £1 spent, saves the NHS £5.28. ODR campaigns deliver a healthy return-of-interest and the initial considerable outlay should result in many lives transformed and saved.

0685: EXPLORING THE TUMOUR STROMA MACROPHAGES TO IDENTIFY RESPONDERS TO RADIOThERAPY IN LOCALLY ADVANCED RECTAL CANCER

S. Shafi1*, A. Noshirwani, N. West, S. Perry, T. Maisey, D. Jayne. University of Leeds, UK

Aim: Only half the patients with locally-invasive-rectal-carcinoma (LIRC) respond to short-course-preoperative-irradiationtherapy(SCPRT). A predictive test enabling better patient selection could avoid undue radiation exposure to poor-responders. Macrophages within the tumour immune microenvironment with tumouricidal M1 and tumour-protective M2 phenotypes could be modulating this response. This study investigates the possible predictive value of M1 and M2 in identifying patients’ likely response to SCPRT.

Methods: Dual-staining immunohistochemistry was performed on 29 biopsy and post-SCPRT resection LIRC specimens with CD68 as macrophage marker, Human-Leukocyte-Antigen-DK(HLA-DK) as M1-marker and Cluster-of-Differentiation-163(CD163) as M2-marker. Specimens were scored for hot-and-random spots by Nuance-3.0.2 and compared with patients’ outcome data.

Results: A significant difference was found for high and low M1 percentages with a tumour response of 20% and 80%, respectively (p = 0.017). No such difference was found for M2. The ratio of M1/M2 in biopsy vs. resection samples was found to be significantly different (p < 0.05), and change in ratio producing a significant mean change (p = 0.024).

Conclusion: Patients with a variable macrophage phenotype composition within LIRC biopsies respond differently to SCPRT. Further investigation involving a panel of macrophage/other immune-cell markers could verify and validate these findings and develop them as predictive tests identifying good-responders to radiotherapy in patients with LIRC.

0739: HEAD AND NECK CANCER DETECTION: THE EFFICACY OF THE 2-WEEK-WAIT REFERRAL PATHWAY

T. Tikka1*, P. Pracy2, V. Paleri2, 1 Queen Elizabeth Hospital, UK; 2 Freeman Hospital, UK

Aim: Identify significant factors in correct cancer diagnosis through the ENT 2-week-wait referral pathway.

Methods: Retrospective review of 5083 patients’ notes with possible head and neck caner who were referred through the 2-week-wait-referral pathway from 2007 to 2010 in 2 tertiary UK Hospitals. Multivariate binary logistic regression analysis was performed to identify significant factors in cancer diagnosis. The final model was compared to a model created by the current NICE guidance.

Results: Low sensitivity and high specificity was found for all presenting symptoms. Presence of hoarseness for more than 6 weeks; dysphagia for more than 3 weeks; presence of blood in mouth with concurrent sensation of lump in throat; the sensation of lump in neck; sore throat; otalgia; odynophagia; presence of otalgia with concurrent lump in throat sensation are highly statistically significant symptoms for correct diagnosis of an ENT cancer. Our final suggested model has higher predictive value in correct cancer diagnosis comparing to the NICE guidance model.

Conclusion: The current NICE referral guidance failed to increase detection rates of ENT cancers. We are recommending a new national referral checklist, based on our logistic regression analysis, to be used by General Practitioners when assessing patients with probable ENT cancer.

0777: A PROSPECTIVE STUDY OF CART, CHROMOGRAFIN A, CHROMOGRAFIN B AND PANCREATIC POLYPEPTIDE IN THE DIAGNOSIS OF PANCREATIC NEUROENDOCRINE TUMOURS

S. Singhagreson1*, N. Martin, K. Murphy. Imperial College London, UK

Aim: Biochemical markers are an integral part of pancreatic neuroendocrine tumour (pNET) diagnosis, however, the current gold standard of biomarkers, chromogranin-A (CgA) has significant limitations. Recent research has suggested other circulating markers including cocaine-and-amphetamine-regulated-transcript (CART), chromogranin-B(CgB) and pancreatic polypeptide(PP) may have utility as pNET diagnostic markers. To investigate the sensitivities and specificities of measuring circulating CART, CgA, CgB and PP for pNET diagnosis.

Methods: Plasma samples were obtained from patients with pNETs, non-neuroendocrine pancreatic disease (NNPD) and non-pancreatic disease (NPD) and circulating concentrations of CART, CgA, CgB and PP were measured.

Results: Circulating CART was the only marker significantly elevated by pNETs compared to NPD (48.00 (35.75–67.00 pmol/L) [NPD] vs. 89.00 (66.00–147.00 pmol/L) [pNET], p < 0.01, n = 7–42). CART was the most sensitive marker for pNETs, with a sensitivity of 71%, compared to 29%, 25%, and 0% for CgA, CgB and PP respectively. It also had a specificity of 88%, which was lower than the specificities of CgA, CgB and PP with 100%, 98%, 94% respectively.

Conclusion: These data suggest that circulating CART may be a more sensitive and reliable marker than CgA, CgB or PP in pNET diagnosis which may result in earlier diagnosis and so a greater proportion of resectable tumours at presentation.

Surgical Training and Education Short Paper Session

0065: COGNITIVE TASK ANALYSIS PERFORMANCE OF SURGICAL TRAINEES USING AN OPEN HERNIA REPAIR SIMULATOR

A.O. Rae*, M. Khatib, S. Sarker, F. Bello. Imperial College London, UK

Aim: To evaluate the use of an interactive open hernia simulator on the cognitive task analysis performance of trainees compared to other methods of acquiring the knowledge for the operation.

Methods: 32 foundation and core surgical trainees were randomised to receive 1 of 4 interventions (interactive open hernia repair simulator) G1, non-interactive open hernia repair simulator G2, a video tutorial of the