

ABSTRACTS OF SOCIETIES

Scottish Society for Rheumatology

Meeting held Autumn 2009, Dunfermline, Fife

Physical but not Mental Health Determines Impaired Quality of Life in ANCA Associated Vasculitis

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Background: Despite advances in therapy, patients with ANCA-associated vasculitis (AAV) continue to experience morbidity related to both disease and psycho-social factors. Such influences might be expected to impact on quality of life (QoL). This is the first study to describe aspects of quality of life in AAV using general population controls. **Methods:** Study design: case-control study. All Grampian AAV patients were invited to participate as cases. Controls were identified from a random sample of persons registered with four local general practices. Participants completed a questionnaire comprising validated tools in the assessment of quality of life and psycho-social factors. The Short Form-8 (SF8) was included and scored in tertiles. In addition, clinical data were collected for all cases. Cases and controls were compared and disease/psycho-social associations determined. **Results:** In total, 74/90 (82%) cases and 781/2000 (39%) controls participated. Overall, there was no significant difference in psychological distress (χ^2 : 0.47; $p=0.49$) or depression (χ^2 : 4.34; $p=0.50$) as measured by the General Health Questionnaire-12 and Beck Depression Inventory respectively between patients and controls. Similarly, there was no significant difference in mental health as measured by the SF8 mental component summary (χ^2 : 0.21; $p=0.90$). By contrast, persons with AAV were more likely to report significantly impaired physical health as measured by the SF8 physical component summary (χ^2 : 13.41; $p=0.001$). These results remained after adjusting for age and sex: cases were more than twice as likely to report poor (lowest tertile) physical health (OR: 2.63; 95%CI: 1.28-4.43) compared to controls. Fatigue, as measured by the Chalder Fatigue Scale, was the principal associate of impaired physical health (χ^2 : 26.61; $p<0.0001$). In contrast, disease factors were not related. **Conclusion:** In AAV, mental health does not impact on QoL when compared to the general population. However, physical health does present a significant concern to this group. Furthermore, fatigue was identified as a principal contributor to this problem.

Sponsors - NHS Grampian endowments, University of Aberdeen, Chief Scientist Office.

No competing interests declared.

Scottish Use of Rituximab in Connective Tissue Diseases: 'Real Life' Experience of the First 40 Patients

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Background: Systemic Lupus Erythematosus (SLE), Myositis and Vasculitis are multi-system diseases associated with autoantibody production. Current therapies are associated with morbidity and mortality, but B cell depletion can impair autoantibody production and has been used 'off license' for these diseases. There is minimal efficacy and safety data in non-trial patients. Audit of 'real-life' experience is therefore appropriate. **Methods:** Rheumatology consultants in Scotland were contacted to identify patients treated with rituximab. A

standard pro forma with minor modifications for SLE, myositis and vasculitis were developed based on validated disease scoring systems. Information was obtained from case notes, clinic letters and laboratory reports. **Results:** Forty patients were identified (SLE – 23, Myositis – 7, Vasculitis – 7, Others – 3). Nine patients received multiple infusions (total=21). Patients with severe, multi-system disease showed greatest clinical benefit from rituximab alone, or in combination with cyclophosphamide. Oral steroid dose was reduced at three-six months and one year post treatment in >95% of patients. 27/40 patients remained on previous immunomodulatory drugs, and 13 received a change in therapy. PR3 (ANCA) and CK were useful in monitoring treatment effect. There were five severe life threatening adverse events from 52 infusions and two deaths (>12 months post treatment.) **Conclusions:** Our results constitute a large 'real life' series. In Scottish patients, rituximab improves clinical outcomes most when patients have severe multisystem disease, reduces requirements for steroids and improves some serological markers for disease activity. The frequency of adverse events in patients receiving multiple infusions has implications for day-ward rituximab delivery.

Declaration - Travel costs were reimbursed by the University of Glasgow.

Predicting Response to Anti-TNF Treatment in RA Patients

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Background: Some patients with rheumatoid arthritis remain unresponsive to anti-TNF therapy (aTNF). We aimed to identify factors predicting good response to aTNF by retrospectively analysing a database of NHS Highland patients who received first aTNF treatment. **Methods:** Patients who received aTNF and were followed up at three and/or six months were included for analysis. Disease activity was assessed using the DAS28, and response classified by EULAR criteria. **Results:** Ninety-two and 82 patients were included in three and six months analysis. Mean DAS28 fell from 6.65 ± 0.88 to 5.00 ± 1.33 at three months and 4.83 ± 1.37 at six months. Factors predictive of greater reduction in DAS28 included lower age ($p<0.01$ for oldest vs youngest tertile), high initial DAS28 ($p<0.01$ for <6.1 vs ≥ 7.1) and male gender at three but not six months ($p<0.01$). EULAR good or moderate response was achieved by 7.6% and 41.3% of patients at three months, and 14.4% and 41.5% at six months. Predictors of improved EULAR response included younger age, high baseline albumin and absence of co-morbidities (Table I). High baseline ESR was more strongly associated with non-response than high tender joint score, swollen joints or patient global assessment. Factors not predictive of response included disease duration, number of previous DMARDs and social deprivation. **Conclusions:** While reliable prediction of response to aTNF is currently not possible, young age and absence of co-morbidities are associated with improved response.

The study was supported by a University of Aberdeen project grant.

Response to Treatment with Biological Therapies in Psoriatic Arthritis

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Background: Biological therapies are effective in treating psoriatic arthritis which is unresponsive to DMARDs. We audited our use of biological therapies to see if our patient demographics and response rates were similar to published figures. **Methods:** A cross-sectional observational study of patients with psoriatic arthritis who have been prescribed biological therapy at Gartnavel Hospital. **Results:** In total, 37 patients were treated of whom 18 were female, mean age was 46 years and mean disease duration was 10.8 years. Mean duration of

DMARD therapy was 9.5 years. Twenty-eight patients received etanercept, 13 adalimumab and two infliximab, with six having more than one biological therapy. Mean duration of biological therapy was 23.8 months (range 0-60 months). Over the total duration of treatment, etanercept achieved marked improvement in tender joint count (83%), swollen joint count (70%), ESR (27%), CRP (67%), HAQ (54%), pain (58%), patient global score (59%) and physician global score (35%) compared to baseline readings taken prior to starting biological therapy. Adalimumab also achieved marked improvement in tender joint count (73%), swollen joint count (59%), ESR (33%), CRP (56%), HAQ (31%), pain (40%), patient global score (45%) and physician global score (21%). ACR50 criteria were achieved in 12/22 patients on etanercept and 3/7 patients on adalimumab. **Conclusions:** Both etanercept and adalimumab were associated with significant improvement ($p < 0.05$) in psoriatic arthritis, equivalent to rates from published data. Overall, etanercept was more effective than adalimumab at six and 12 months ($p < 0.05$) with a trend to significance at 18 months and over total duration of treatment.

Personal Experiences of NHS QIS Online Audit for Podiatry

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Background: Foot problems in the rheumatic diseases are common, under researched and frequently neglected. An online audit tool has been developed and funded by NHS Quality Improvement Scotland in order to measure the burden of foot disease in patients with rheumatoid arthritis (RA) across Scotland. The podiatry audit forms part of a larger-scale project developing a national web based audit tool in rheumatology. **Methods:** The Foot Impact Scale (FIS) for RA formed the basis of the data to be entered online; this was combined with demographics, disease factors and podiatry treatment received. Data were collected by podiatrists during the month of May; the audit was open to other healthcare professionals from June onwards. **Results:** From a total of 196 patients currently in the database (August 2009), 64 patients were entered from 10 clinical sites in the Fife region. All data were entered by two dedicated rheumatology podiatrists; no other health professionals contributed to the audit in Fife. Patients took on average 10 minutes to complete the FIS, and the podiatrists took approximately 10 minutes at the end of the session to enter the data online. **Conclusions:** This was a good initiative which provided useful information and an opportunity to readily compare results across participating trusts via the online audit tool. However, the results from Fife are a biased sample due to all results being input by podiatry - patients in receipt of podiatry care are more likely to have foot involvement.

This work has been funded by NHS Quality Improvement Scotland.

Update on NHS QIS Online Audit for Rheumatology

E Murphy

Wishaw General Hospital, NHS Lanarkshire

So far, over 350 patients have been entered into the podiatry audit which started in May 2009. The RA audit will start in Autumn 2009 and will enrol newly diagnosed patients with RA. **Background:** The Clinical Care of patients with RA (CARA) audit was published in 2009, and highlighted the need for continuing audit into our management of patients with RA. NHS QIS have funded a web-based audit tool which will facilitate this. **Who can take part?** All rheumatology units in Scotland are invited to take part. **Which data are being collected?** At baseline we are collecting a very simple dataset, comprising: • ARA classification criteria • serology • symptom duration, referral date and OPD data • EQ5-D (five simple questions), HAQ and DAS28. It should be possible to collect and enter this in a couple of minutes, either during or after a clinic. **How do I get involved?** Each unit should identify a

lead clinician for their hospital/unit, who should send e-mail addresses of all involved to Liz Murphy - Elizabeth.Murphy@lanarkshire.scot.nhs.uk. Each user will then be sent log-in details (username and password). **When can we start?** Now! **And in the future?** We will collect follow-up data at six and 12 months on therapy, access to AHP services, and outcomes. Further details will be available at the Spring meeting.

Patient Reported Improvement In Psychosocial Functioning After Community Rheumatology Occupational Therapy

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Background: Rheumatic diseases have a negative impact on both physical and psychosocial function such as; social isolation, depression, adverse relationships and helplessness. Lack of control or learned helplessness is associated with depression and fatigue. Occupational Therapy (OT) helps people to regain that sense of control. Research by Hammond et al 2008, has shown benefits in both physical and psychosocial functioning following OT. The aim of the study was to obtain information about patient's experience of OT including its effect on psychosocial functioning. **Methods:** Following a pilot questionnaire, 200 consecutive OT patients discharged between April 2007 and January 2008, were sent a questionnaire with a covering letter and stamped addressed envelope. Questions included demographic information, Likert scales for feedback on physical and psychosocial functioning and space for patient's comments. Returned questionnaires were automatically scanned using FORMIC and analysed. **Results:** 127 (63.5%) patients responded. Decreased psychosocial functioning as a consequence of occupational performance deficits was evident, with 57 (45%) patients reporting more isolation; 76 (60%) were lower in mood; 46 (36%) reported adverse relationships and 79 (62%) felt less in control of their lives. Thirty-one (69%) patients who felt isolated, 40 (66%) who were lower in mood, 23 (62%) with relationship difficulties and 41 (65%) who felt less in control of their lives reported improvement following OT interventions. In the main, anecdotal comments from patients were very positive. **Conclusions:** Patients with rheumatic diseases reported increased psychosocial functioning following Rheumatology OT.

Is There an Association Between Low Birth Weight or Premature Birth and Adult Chronic Widespread Pain?

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Background: Adult chronic widespread pain (CWP) is related to adverse childhood events. These include physically traumatic events and adverse psychosocial events such as separation from parents. The current study aimed to determine whether there is any association between low birth weight or gestation and adult CWP. **Methods:** The 1958 Birth Cohort Study is an ongoing, prospective cohort study. 12,069 participants were identified as eligible to participate in a Biomedical Survey between 2002/4. Birth weight and gestational age were recorded at birth. Participants were categorised as full birth weight (FBW, ≥ 2.5 kg), low birth weight (LBW < 2.5 kg but ≥ 1.5 kg), or very low birth weight (VLBW, < 1.5 kg); and full-term (≥ 37 weeks) or preterm. CWP was measured by questionnaire according to the American College of Rheumatology definition. Risk ratios were calculated using Poisson regression. **Results:** 7,382 participants provided birth weight, gestation and CWP data. VLBW was associated with an increased risk of CWP compared to FBW (Risk Ratio 1.45, 95% Confidence Interval 0.42, 5.22). The risk was not explained by sex and social class at birth. Premature birth was associated with an increased risk of CWP compared to full-term birth (RR 1.26, 95%CI 0.95, 1.67). This was fully explained in

multivariable regression analysis by social class, childhood behavioural problems, adult psychiatric disorder and sex. **Conclusions:** VLBW and premature birth may be markers of increased risk of adult CWP. The explanatory variables appear consistent with an aetiological hypothesis relating to hypothalamic-pituitary-adrenal axis dysfunction. The increased survival of extremely preterm, extremely low birth weight infants underlines the importance of understanding these mechanisms.

Project completed as part of MSc in Health Services & Public Health Research at the University of Aberdeen.

Temporal Structural Changes in Hip OA Detected by Shape and Appearance Modelling of DXA Images: A One-Year Prospective Longitudinal Study

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Bone and Musculoskeletal Research Programme, University of Aberdeen

Background: Assessment of osteoarthritis (OA) progression is difficult over short time periods. Dual Energy X-ray Absorptiometry (DXA) provides bone mineral density (BMD) information. Active Appearance Modelling (AAM) extends Active Shape Modelling (ASM) by including variation of image intensity. In this study, we explored the ability of ASM and AAM of hip DXA images to detect changes over 6-12 months in OA patients. **Methods:** Sixty-two participants were recruited and Kellgren-Lawrence Grades (KLG) measured from pelvic radiographs. DXA was acquired at baseline, six and 12 months and used to build an AAM (GE Lunar iDXA). Relation to KL and changes over time were tested using repeated measures ANOVA with KLG as a between-subjects factor in 54 participants with a complete image set. **Results:** Shape Mode 4 and Appearance Mode 4 both changed significantly with increasing KLG ($P < 0.01$), and over time ($P < 0.001$). Shape 4 captured osteophytes, joint space narrowing (JSN) and widening of the femoral head and neck; whilst Appearance 4 showed sclerosis, JSN, widening of the femoral neck and reduced curvature of the superior femoral neck. No significant changes in KLG scores were observed over one year. **Conclusions:** These results demonstrate the ability of iDXA ASM and AAM of the hip to visualize and quantify anatomical features indicative of OA progression and detect significant changes in a 6-12 month period in the absence of changes in KLG. Shape and Appearance modelling hold promise as reliable biomarkers in the early diagnosis of hip OA, monitoring its short-term progression and possibly assessing response to disease modifying drugs.

This study was supported by an award (REF: WHMSB_AU_068-71) from the Translational Medical Research Collaboration – a consortium made up of the Universities of Aberdeen, Dundee, Edinburgh and Glasgow, the four associated NHS health boards (Grampian, Tayside, Lothian and Greater Glasgow & Clyde), Scottish Enterprise and Wyeth Pharmaceuticals.

Addendum

Please note that the affiliations of the authors for the Scottish Society of Rheumatology abstract on Clinical Presentation of Biopsy Positive Giant Cell Arteritis in Fife and Audit of Internal Management (page 50 of the November 2009 edition of the Scottish Medical Journal), was accidentally omitted. They are as follows: CLM. Allan, The University of Dundee, Dundee; J Lyall, Oral and Maxillofacial Surgery, Victoria Hospital, Dunfermline; S Brannan, Ophthalmology, Queen Margaret Hospital, Dunfermline; M Rahilly, Pathology, Victoria Hospital, Kirkcaldy; JS McLaren, Fife Rheumatic Diseases Unit, Whyteman's Brae Hospital, Kirkcaldy.

ABSTRACTS OF SOCIETIES

Scottish Society of Physicians

51st Annual General Meeting

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Invited Speaker Presentations

Challenges of Rural Health Provision

D Godden

Co-Director, Centre for Rural Health, Inverness

Rural and remote areas face challenges of geography, demographics and peripherality. Although rural health indicators in the UK are generally positive, there are particular rural health problems and reconfiguration of the NHS has presented new challenges for rural communities, including equitable provision of emergency care, chronic disease management, and cascading of responsibility to health professionals and local people with lower levels of training than previously pertained. Among the particular health problems are zoonoses and occupational hazards, mental health problems and mountain and road traffic accidents, although the common chronic diseases dominate healthcare needs.

The recent government report "Delivering for Remote and Rural Healthcare" sets out a number of policy objectives including extended community care, community resilience, strategies for emergency response and the use of technology to support delivery. How might these work in practice and how will they impact on current models of medical care? This demands understanding of the burden of disease, the resources available within communities to support healthcare, and implementation of available and emerging technologies.

Prevalence of common diseases in rural communities mirrors urban settings, although patients are more dispersed. Willingness of rural people to take up preventive and screening services is high, assuming travel barriers can be overcome. Communities vary in their acceptance of schemes such as "first responders", recently the subject of much public debate. Emerging technologies offer opportunities to support individual health behaviour modification, provide tailored information and decision support to health workers in emergency situations, and enable home monitoring in chronic disease.

Acute Medical Receiving – an Update on the Paisley Pattern

A Dorward

Consultant Physician, Royal Alexandra Hospital, Paisley

This paper will portray the pressures on medicine in the mid 1990s in the Royal Alexandra Hospital that resulted in the development of the "Paisley Pattern" of acute medical receiving. This led to the formation of an Acute Medical Unit, at a time when few existed, and the development of specialty wards and consultant triage. Consultants led receiving for seven consecutive days and cancelled other duties, foreshadowing the development of acute medicine. The advantages and failures of the system and how this influenced other Scottish medical units will be discussed.

Over the last 15 years the pattern has evolved and developed due to rising admissions. Changes include the opening and failure of an "Acute Geriatric Unit." Finally the political, managerial and public pressures that have led to a controversial reinvention of the "Paisley Pattern" to support a small failing district general hospital will be described.

Imaging in Suspected Pulmonary Embolism: Old Myths and New Facts

J Reid

Consultant Radiologist, Borders General Hospital, Melrose

The development of multi detector array CT has improved clinical certainty in the diagnosis and management of pulmonary embolism to the extent that we can now re-evaluate some of the previously accepted facts surrounding this common and occasionally lethal condition.

The PLOPED II study, which was designed to test the diagnostic accuracy of CT pulmonary angiography, has provided fresh insight into the clinical characteristics and presentation of pulmonary embolism. Several other recent studies utilising MDCT have facilitated review of the incidence, morphology, pathophysiology and resolution rate of pulmonary emboli in detail which was previously unimaginable. The relative roles of CT, lung perfusion scintigraphy and pulmonary MRI have now been more clearly defined.

This presentation sets out to illustrate some of these recent developments and concepts.

FITZGERALD PEEL LECTURE

Systemic Lupus Erythematosus – Outcome and Origins

D Isenberg

Professor of Rheumatology, University College London

Systemic lupus erythematosus (SLE) is the most fascinating of diseases principally affecting women during the child bearing years. Although the joints (around 95%) and the skin (around 60%) are the organs most commonly affected, the kidneys, lungs, heart and central nervous system (20-45%) are also frequently involved. The outlook for SLE patients has improved from a 50% 4 year survival in 1955 to 85% 15 years survival today. However, morbidity remains a significant problem for lupus patients with an increased risk of infection, renal failure osteoporosis and atherosclerosis. The aetiopathogenesis of SLE is now much better understood. It is the result of a conspiracy between genes, hormones and environmental factors. In this lecture, I will use an analogy with a game of cards to try and explain how this interaction works. In common with other autoimmune conditions, the outlook for SLE patients is likely to improve further as biologic agents are used increasingly to target the cells and molecules which clearly contribute to its aetiopathology. For example, the use of B cell depletion first introduced in my unit in 2001, has been shown, in open label studies, to help around 90% of patients (n=50) who had failed conventional immunosuppression.

Trials and Tribulations of Lipid Therapy

R Collins

Director of Clinical Trial Services Unit, University of Oxford

Observational studies in different populations indicate a positive continuous relationship between vascular disease risk and blood LDL-cholesterol levels extending well below the range currently seen in Western populations, without any definite "threshold" below which lower LDL-cholesterol is not associated with lower risk. This relationship is approximately linear when the risk of vascular disease is plotted on a logarithmic scale, which implies that the proportional difference in risk associated with a given absolute difference in LDL-cholesterol is similar throughout the range studied. In randomized trials of statin therapy, lowering LDL cholesterol levels by an average of 1 mmol/l reduces the rates of heart attacks, ischaemic strokes and revascularisations by about one quarter among a wide range of individuals. As might be expected from the approximately log-linear association in observational

studies, lowering LDL-cholesterol by about 1 mmol/l reduces the rates of such major vascular events by about one-quarter, irrespective of the pre-treatment blood lipid concentrations, and larger absolute reductions in LDL-cholesterol produce larger proportional reductions in risk. Consequently, the absolute benefits of lowering LDL cholesterol depend chiefly on an individual's overall risk of major vascular events, rather than on their blood lipid concentrations alone, and on the absolute reduction in LDL-cholesterol (and more prolonged therapy would be expected to produce even larger benefits).

Current Problems in Liver Disease

A MacGilchrist

Consultant Gastroenterologist, Royal Infirmary of Edinburgh

Liver disease is a major killer in Scotland whose death rate, unlike that of heart disease, stroke and cancer, is rising. The principal cause is alcohol; therefore, measures to reduce Scotland's alcohol consumption are vital. Alcoholic hepatitis is a lethal condition, so a trial evaluating the efficacy of corticosteroids and/or pentoxifylline is welcome. Non-alcoholic fatty liver disease (NAFLD) affects a third of adults and is the explanation for most cases of "cryptogenic" cirrhosis. How to identify the minority of NAFLD patients at risk of progression to cirrhosis is a major problem; new, non-invasive methods of identifying fibrosis may help. The hepatitis C action plan has helped the identification and treatment of hepatitis C; hepatitis B, now readily treatable with new effective agents, is also becoming more common due to immigration.

Recent years have seen advances in the prevention and treatment of many of the complications of portal hypertension including bleeding oesophagogastric varices, ascites, spontaneous bacterial peritonitis and hepatorenal failure, though the last of these in particular still carries a high mortality.

The increase in cirrhosis is mirrored by an increase in primary liver cancer. There have been advances in its early detection and in therapies ranging from radiofrequency ablation to liver transplantation. The curability of early lesions has led to the implementation of surveillance programmes.

Liver transplantation is a successful option for treating some patients with liver failure and liver cancer, but is limited by the shortage of organ donors.

PMETB in 2010 – Balancing Service and Training

S Macpherson

Postgraduate Medical Education and Training Board, Lister Postgraduate Institute, London

PMETB took up statutory responsibilities as the stand-alone regulator for postgraduate medical education and training in September 2005. Since then we have developed a series of UK-wide standards and requirements for all training leading to a CCT. The Board has also developed equivalence routes to the GP and specialist registers for those doctors who have not completed their training in UK-approved posts.

PMETB's standards include, for the first time, standards for trainers which are tested through a comprehensive Quality Framework, including the National Surveys of Trainees and Trainers.

The Board is due to publish its wide-reaching Future Doctors Policy Statement on 1 October, the culmination of two years of research and engagement.

In April 2010 PMETB will merge with the GMC to form a 'cradle to grave' regulator for the medical profession.

Oral Abstracts

Quality of Care in the Management of Patients Admitted with Heart Failure in Scotland

SK Bhagra, M Barlow, S McKee, H Bilkhu, MC Petrie, HJ Dargie

On behalf of the Scottish Heart Failure Audit Advisory Group

The national audit is assessing the current management of patients admitted with heart failure with reference to the recommendations of the SIGN Guidelines. Baseline data show an interesting variability but, overall, reveal substantial room for improvement in the management of heart failure. These data are being reported back to each centre in order to direct the implementation of appropriate service redesign.

Methodology: The audit, partly funded by NHS Quality Improvement Scotland, included the first 10 consecutive patients discharged each month between February and June 2008 with select ICD10 coding for heart failure in the 1st diagnostic position. The methodology was agreed by an expert National Advisory Group and data were collected in all 31 acute hospital admission sites across Scotland and analysed using Microsoft Office Excel 2007 and SPSS 13.0. **Results:** Data from 1,234 event admissions was collected. Mean age was 77 years (men 74, women 79). Average stay was 14 days. Data included ECG, BNP and echocardiography; medical treatment, ICD and CRT device implantation; in hospital mortality and follow up arrangements. Full results which will interest healthcare professionals, managers and patients will be disclosed at the meeting.

WINNER OF FITZGERALD PEEL PRIZE

Chronic Endothelin - A Receptor Antagonism Reduces Proteinuria, Blood Pressure and Arterial Stiffness in Chronic Kidney Disease

N Dhaun, IM MacIntyre, D Kerr, V Melville, NR Johnston, J Goddard, DJ Webb

Queen's Medical Research Institute, University of Edinburgh

Summary: Six weeks treatment with the endothelin-A (ETA) receptor antagonist sitaxsentan, produces significant and clinically relevant reductions in proteinuria and blood pressure (BP) in subjects with chronic kidney disease (CKD). These effects appear, in part, to be BP independent. Arterial stiffness also improves. Overall, sitaxsentan is well tolerated. Larger longer-term studies are now warranted. **Patients/Methods:** BP and proteinuria reduction slow CKD progression. Acute ETA receptor antagonism lowers BP and proteinuria, whilst improving indices of arterial stiffness in CKD patients. This study investigated if these effects are maintained longer term. In a randomised double-blind, 3-way crossover study, 27 subjects received six weeks of placebo, sitaxsentan 100mg, a selective ETA receptor antagonist, and nifedipine 30mg. All subjects were optimally treated with renin-angiotensin system blockade. 24h proteinuria, protein:creatinine (PCR), 24h BP, and pulse wave velocity (PWV), as a measure of arterial stiffness, were measured at baseline and week six of each treatment period. **Results:** All subjects completed the study. Compared to placebo, sitaxsentan significantly reduced proteinuria (24h proteinuria: $-31 \pm 23\%$, $p < 0.005$; PCR: $-29 \pm 23\%$, $p = 0.01$), BP (24h mean arterial BP: -4 ± 6 mmHg, $p < 0.01$), and AS (PWV: $-5 \pm 9\%$, $p < 0.01$). Nifedipine matched the BP reduction with sitaxsentan ($p = 0.65$) and produced a similar fall in PWV. Despite this sitaxsentan reduced proteinuria to a greater extent than nifedipine (24h proteinuria: -31 ± 23 vs $10 \pm 46\%$, $p < 0.01$, PCR: -29 ± 23 vs $-5 \pm 33\%$, $p = 0.01$). Sitaxsentan did not cause clinically significant side effects, or weight gain.

Predicting Stroke Outcome Using ABCD2 and CHADS2 Scores

LD Ferguson, MR Walters

Summary: The ABCD2 score is an established prognostic tool to assess stroke risk after TIA. For those with atrial fibrillation, the CHADS2 score may be used. We investigated whether there was an association between ABCD2 and CHADS2 scores and stroke outcome in those with newly diagnosed ischaemic stroke. Outcome was defined by "home-time" – the duration of stay in patient's own home over the first 90 days since stroke. We hypothesised that increasing ABCD2 and CHADS2 scores would result in less time at home over the 90 day period. **Patients/methods:** Using the West Glasgow Stroke Registry, ABCD2 and CHADS2 scores were retrospectively calculated for 1,337 and 1,480 ischaemic stroke patients respectively, admitted to the Acute Stroke Unit, Glasgow Western Infirmary. Using one-way analysis of variance (ANOVA), these scores were compared with the patients' home-time over the 90 day period post-stroke. **Results:** There was a statistically significant relationship between ABCD2 score and home-time, with increasing ABCD2 scores resulting in a shorter home-time post-stroke ($p < 0.0001$ by one-way ANOVA). Median (IQR) home-time was 87 (10) days and 21 (83) days for patients with ABCD2 scores of two and seven respectively. A similar but weaker association was seen with CHADS2 scores. The results confirm the potential value of the ABCD2 score as a prognostic indicator post-stroke. Further work is needed to identify which ABCD2 criteria specifically affect home-time and differentiate this score from CHADS2.

HbA1c is a Useful Indicator of Postprandial Hyperglycaemia in Diet-Controlled Type 2 Diabetes

SC McGeoch, AM Johnstone, GE Lobley, DWM Pearson, P Abraham, I Megson, SM MacRury

Background: Postprandial hyperglycaemia has been shown to predict the risk of cardiovascular disease. The International Diabetes Federation recommends that 2h post-meal glucose should not exceed 7.8 mmol/l. Many patients with type 2 diabetes are managed in primary care and HbA1c alone is often used to monitor glycaemic control. There are few data regarding the extent of postprandial hyperglycaemia in those with well controlled type 2 diabetes. **Patients/methods:** Twenty-three volunteers with type 2 diabetes managed by diet underwent a three day period of continuous blood glucose monitoring (CGMS) at home. **Results:** Mean HbA1c was 6.7% (SD 0.55). Volunteers spent on average 534min (8.9h) with glucose greater than 8mmol/l in a 24h period, volunteers with HbA1c $\leq 6.5\%$ spent less time with glucose greater than 8 mmol/l compared with those with HbA1c $> 6.5\%$ (342 v 709 min, $P = 0.032$). Regression analyses showed that HbA1c correlated strongly with time spent with glucose greater than 8 mmol/l ($R^2 = 0.60$, $P < 0.0001$). These results illustrate that HbA1c was a good indicator of postprandial hyperglycaemia. Unexpectedly, even volunteers with well controlled, diet-managed type 2 diabetes spent a large proportion of the day with glucose levels greater than 8 mmol/l, suggesting that implementation of the IDF guidelines will be challenging in normal clinical practice.

Self Blood Pressure Monitoring – the New Gold Standards

N McGowan, R Warren, P Padfield

Brief summary: Blood pressure management protocols assume that BP can be measured accurately. We demonstrate that routine office measurements are inadequate for this purpose. Self-monitoring (SBPM) is at least as good as ABPM and has the potential to be much more accurate. **Method and results:** We analysed four datasets: Routine office blood pressure (OBP) from a renal diabetes clinic ($n = 38$), OBP measurements from the placebo arm of the MRC Mild Hypertension Trial ($n = 5222$), drug-naïve patients with two episodes of ABPM ($n = 512$) and 87 patients undertaking both ABPM and SBPM. We calculated the

within patient variability (coefficient of variation/CV) to elucidate which methodology would give the least variation. Routine OBP was the most variable with a CV of 12%. Clinical-trial standard OBP was equivalent to repeated episodes of ABPM (7.2% and 6.1% respectively). SBPM was not significantly different to ABPM (CV 5.2%) but preferred by 87% of patients. **Implications:** More measurements are needed with OBP to ensure measured BP reflects true BP rather than a difference occurring by chance, e.g. a CV of 6.1% means ≥ 5 measurements are required for 80% confidence that an estimate is accurate to ± 5 mmHg. Using routine OBP, the same accuracy requires >10 measurements. **Conclusion:** An impractical number of measurements are needed for an accurate estimate of true BP using routine office measurements alone. Self-monitoring has the potential to give the number of measurements needed to be sure that any measured change in blood pressure reflects the true response to antihypertensive drugs.

High Dose Allopurinol: A New Anti-Ischaemic Therapy for Angina Pectoris

A Noman, DSC Ang, CC Lang, AD Struthers

Brief summary: Experimental data in heart failure suggests that allopurinol reduces myocardial oxygen consumption for a given stroke volume. If such an effect also occurred in man, the patients who might benefit most are those with angina pectoris. We therefore sought to see if this was the case. Our results show that high dose allopurinol produces a highly significant improvement in total exercise time, time to ST depression and time to chest pain symptoms. Thus, allopurinol is a new anti-ischaemic therapy in angina with considerable advantages over current therapy since it is cheap, effective, safe in the long term, free of side effects and does not drop BP or heart rate. **Method and results:** Sixty-five patients with stable angina pectoris were randomized to either allopurinol 300 mg BD or placebo, after which an ETT was performed. Allopurinol increased total exercise time to 393 seconds [QR 280-519] from a baseline value of 301 [251-447] and a placebo value of 307 [232-430] ($p < 0.001$). Allopurinol also increased time to ST depression to 298 seconds [211-408] from a baseline value of 232 [182-380] and a placebo value of 249 [200-375] seconds ($p < 0.001$).

An Audit of One Year of CTPA Imaging Results at the Borders General Hospital

V Li, R Murray Park, S Watkin, J Reid, J Faccenda

Summary: A retrospective audit of CTPA scans over one year at the Borders General Hospital was performed. Results were analysed. **Patients/methods:** Cases were selected through the WebPACs electronic radiology imaging system. We identified all CTPA's performed in 2008. **Results:** 520 cases were identified. Seven were excluded for a variety of technical reasons. 218 scans (42.4%) were negative; 73 scans showed PEs (14.2%). The remaining 220 scans (42.8%) showed other pathologies. These pathologies were further broken down into subgroups. Pulmonary pathologies; pneumonia (9%), pleural effusion (4%) and fibrosis (1.5%). Malignancies - Lung (3%), breast and renal. Ten scans (1.9%) showed bony metastases, unknown primary. Other pathologies accounted for 23.6% of scans. **Discussion:** The BTS guidelines states CTPA is the preferred initial investigation for non-massive PE and may potentially identify the true alternate diagnosis in patients who are negative for PE. We wanted to analyse how many other pathologies were identified. However, given the relatively low prevalence of PE in the CTPAs analysed in this study, we must also consider the impact on hospital resources and identify appropriate use of CTPA.

Can DXA Images be Used to Diagnose and Assess Osteoarthritis?

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²Discovery Translational Medicine, Wyeth Research, Collegeville, PA

Brief summary: Both Kellgren-Lawrence grading (KLG) and new quantitative Active Shape Models (ASM) can be applied to hip dual-energy X-ray absorptiometry (DXA) images to assess OA severity, making DXA an attractive dual-purpose, low radiation, and cost-effective tool in musculoskeletal research and service. **Method and results:** Sixty-two subjects with a range of radiographic osteoarthritis severity were recruited based on pelvic radiographs taken in the last year. DXA images of both hips were obtained using iDXA (GE). A subset of radiographs and DXA images from the same participants (50 hips) were graded independently twice, at least one week apart by three observers applying KLG - except for observer three who scored a subset. ASM uses coordinates of landmark points to quantify variation in hip shape (modes of variation). Two ASM models (proximal femur and hip) were applied to all DXA images acquired and the relationship to KLG was explored. Intraobserver and interobserver reliability achieved from DXA images showed good agreement (QWK 0.85-0.95 and 0.66-0.86), comparable to radiographs. Intraobserver KLG reliability between radiograph and DXA images revealed QWK range 0.80-0.89. In the proximal femur ASM, Mode 6, associated with OA progression and hip replacement previously using radiographs, correlated significantly with KLG ($P < 0.001$). In the hip ASM, Modes 1 and 6 were correlated with KLG ($P < 0.001$). Low Shape Mode 6 scores were associated with OA features such as joint space narrowing and osteophytes visible on iDXA images.

Poster Abstracts

Does the use of Bilevel Positive Pressure Ventilation at the Borders General Hospital follow recommended guidelines?

LC Barr, SW Watkin, JF Faccenda

Reconciling the Truth: Improving Drug Histories in Medical Receiving

J McNally, C Bisset, D Anderson, D MacIntyre

A Survey of Patient and Medical Staff Experience on the General Medical Unit, St John's Hospital, Livingston

A Bonsall, J Walker

Frequent flyers, revolving doors and dubious discharges: Readmissions to an acute geriatric service

CV Bostock

Presentation of lung cancer in Grampian

K Carter, L Callaghan, S Watt, J McLay

Rising tide of lung adenocarcinoma

K Carter, L Callaghan, K Kerr, S Watt and J McLay

Chronic Endothelin-A receptor antagonism reduces proteinuria in chronic kidney disease through effects on renal haemodynamics

N Dhaun, IM MacIntyre, D Kerr, V Melville, NR Johnston, J Goddard, DJ Webb

Foundation Year 1 (FY1) led tutorials improves final year medical students' confidence and competence in prescribing

S-J Emerson, F Wallace, P Burton, G Mckay, M Field

Exercising With Computers In Later Life (EXCELL) – Qualitative Analysis of Pilot Study

MA Fraser, CV Bostock, RL Soiza, A McE Jenkinson, A Stewart

Patients in the last year of life referred to the Acute Receiving Unit*J Gray, C Stewart, K Boyd***Acute Kidney Injury in Raigmore: 6 month experience***M Greig, N Joss***The ABCD2 risk stratification instrument is strongly associated with severity of stroke***SL Hunt, M Walters***One year retrospective account of patients admitted to Aberdeen Royal Infirmary (ARI) Infection unit (IU) with a Skin and Soft Tissue Infection (SSTI)***PA Lilburn, C McGoldrick, RBS Laing***Are we investigating patients appropriately for the development of Chronic Thromboembolic Pulmonary Hypertension (CTEPH) following pulmonary embolus (PE) at the Borders General Hospital***AF Lithgow, SW Watkin, JH Reid, JF Faccenda***'Get Randomised'***IS Mackenzie, L Wei, D Rutherford, EA Findlay, W Saywood, MK Campbell, TM MacDonald***Food diaries to compare dietary macronutrient composition and glycaemic index in diet-managed type 2 diabetes and controls***SC McGeoch, AM Johnstone, G Holtrop, C Fyfe, GE Loblely, DWM Pearson, P Abraham, I Megson, SM MacRury***Closed pleural biopsy to diagnose mesothelioma: dead or alive?***K McLaughlin, L McKinlay, K Kerr, G Currie***The fast and the furious: Time taken by healthcare workers to assemble pre-filled emergency drug syringes***LRR Davidson, DR Miller, KG Carter, GP Currie***Are we compliant with Generic Medical Record Keeping standards***N Naqvi, V Srivastava, M Szygula***Scottish use of monoclonal anti-CD20 B cell depletion (rituximab) in connective tissue diseases: 'real life' experience of the first 40 patients***ME Perry, C Lavelle, N Maguire, Z McKinstry, D Paton, E Murray, M Field***Reliability of the Modified Rankin Stroke Scale – a Systematic Review***TJ Quinn, J Dawson, KR Lees, MR Walters***Functional stroke outcomes in the longer term - a systematic review***TJ Quinn***Acute Island Medicine – the Orkney model***J Webster, C Siderfin*

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ABSTRACTS OF SOCIETIES

Scottish Radiological Society

Meeting held November 2009, Ardoe House Hotel, Aberdeen

Staging Patients with Prostate Cancer – Who Should Have an Isotope Bone Scan?

N Rose, L Kurban, K Wardlaw

Aberdeen Royal Infirmary, NHS Grampian

Introduction: Accurate staging of prostate cancer is important in order to determine appropriate treatment and prognosis. Isotope bone scan (IBS) remains the most sensitive method of assessing bone metastases. The Royal college of Radiologists (RCR) guidelines advocate IBS in staging of high risk patients (HRP), but not in low risk patients (LRP). Previous studies have shown conflicting results regarding the role of IBS in staging of intermediate risk patients (IRP). The main aim of this study is to evaluate its role in staging of IRP. **Methods:** Retrospectively, all newly diagnosed prostate cancer patients in NHS Grampian between 5 January 2009 and 23 March 2009 were identified. These patients were divided into three risk groups based on risk stratification developed by D'Amico et al; LRP have a PSA <10 and Gleason 5-7, IRP – PSA 10-19.9 and Gleason 6 or 7 and HRP – Gleason 8-10 or PSA ≥ 20. The IBS results were reviewed and correlated with each risk group. **Results:** 309 patients with prostate cancer were identified. **Conclusion:** Our results support the RCR Guidelines that IBS is useful in staging of HRP (positive scan rate of 13 %). Our findings suggest that IBS can be safely omitted in IRP (positive scan rate of 0%). The role of IBS in staging patients with somewhat poorly differentiated prostate cancer of Gleason 4+3 remains unclear as the number of patients included in our study is small (seven patients). Serum PSA ≥20 ng/ml is the most important indicator of bone metastases.

Assessment of Accuracy of MRI for Prediction of Disease-Free Circumferential Resection Margin in Staging of Rectal Cancer in NHS Grampian (2004-2008)

A Vosough, SR Yule

Aberdeen Royal Infirmary

Background: Accurate prediction of involvement of the circumferential resection margin (CRM) in rectal cancer staging is important in determining the treatment plan. An involved margin (disease 1mm or less from mesorectal fascia) generally requires intensive pre-operative chemo-radiotherapy to prevent local recurrence and improve survival. An uninvolved margin can allow a patient to proceed directly to surgery or short-course pre-operative radiotherapy. Rectal MRI is an established method of assessing CRM involvement and was introduced in NHS Grampian in 2004. The aim of our review was to determine the accuracy of this method compared with the published standard. We used Mercury Study group's findings as our standard. Mercury study group's prospective observational study of rectal cancers treated by colorectal Multidisciplinary teams between January 2002 and October 2003 in 11 colorectal units in four European countries showed that magnetic resonance imaging predicted clear margins accurately in 94% of the patients. We also used post-operative histopathology findings as gold standard for assessing the accuracy of the MRI reports. **Method:** We reviewed all rectal cancer patients who proceeded to surgery with either no pre-operative treatment or short course radiotherapy between 2004 and 2008 (total 41 patients) and compared the pre-operative MRI findings with post-operative histopathology reports. The scans were obtained with 1.5 Tesla Signa Nvi-Cvi GE high-resolution scanners using the rectal MRI protocol (Sagittal and axial T2 pelvis and high resolution (3mm) T2 perpendicular to long axis of tumour and repeated along the long axis). All MRI examinations were reported by a single radiologist.

Results: Our results indicate that in NHS Grampian the MRI accuracy for predicting a disease-free CRM is 97.5 %, which has exceeded the published standard (94%). **Conclusion:** We have been able to reproduce the Mercury study Group's results locally and established that MRI can be used accurately in prediction of the involvement, or otherwise, of the surgical resection margin by tumour, allowing the subgroup of patients at least risk of local tumour recurrence to proceed directly to surgery or short-course pre-operative radiotherapy.

Diagnostic Accuracy of 18 FDG PET-CT in the Assessment of Indeterminate Pulmonary Nodules in the High Risk Scottish Population

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Aim: To evaluate the accuracy of PET-CT in characterizing indeterminate pulmonary nodules in patients at high risk of lung cancer in the Scottish population. **Methods:** This is a retrospective study of 175 patients who underwent PET-CT for indeterminate lung nodules during April 2008 - 2009 at West of Scotland PET Centre. All patients were at high risk for either primary or secondary lung cancer. 102/175 had pathological analysis but 5/103 was non-diagnostic, 9/103 was non-core tissue samples, achieving a total of 88 patients for our study. All nodules except one were of size ≥ 1cm. Maximum Standardised Uptake Value (SUVmax) was obtained for each nodule and SUVmax 2.8 was taken as the cut-off (by ROC analysis). **Results:** For SUV max of 2.8 and above, there were 64 true positives, 13 true negatives, five false positives and six false negatives. Sensitivity, specificity, positive predictive value and negative predictive value of PET/CT were 91%, 72%, 92% and 68% respectively. **Conclusion:** The study demonstrated relatively high false negatives for malignancy based on SUVmax analysis, although the nodules were suspicious for malignancy, morphologically. Assessment of pulmonary nodules in the high risk group therefore needs multidisciplinary team-approach, along with imaging follow-up if pathological confirmation is not possible.

Changing the Referral Criteria for Bone Scan in Newly Diagnosed Prostate Cancer Patients in a District General Hospital

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Background: There remains a lack of consensus regarding referral criteria for staging bone scan (SBS) in low risk patients with prostate cancer. **Aim:** To correlate PSA and Gleason sum with SBS results in patients with a new diagnosis of prostate cancer, in order to establish the feasibility of implementing European Association of Urology (EAU) recommendations in this respect. **Methods:** Newly diagnosed patients undergoing SBS between March 2005 and November 2008 were retrospectively identified. Data was gathered on age, PSA level, Gleason sum and SBS result. In the case of an equivocal SBS, subsequent imaging was taken into consideration or the initial SBS was reviewed to allow a final decision to be made with respect to the likely presence of bony metastases. **Results:** Of 532 patients aged 48-93 (median 71 years), 45 (8%) had evidence of bony metastases. PSA and Gleason sum were significant predictors of SBS result and their predictive value was additive $p < 0.01$. None of the 287 patients with both PSA <20 and a Gleason sum of <8 had a positive SBS. Using EAU guidelines, 285 (54%) scans could have been avoided, allowing for two patients with bone symptoms. **Conclusion:** Staging bone scan in newly diagnosed patients with prostate cancer with PSA <20 and Gleason sum <8, in the absence of bony symptoms, can be safely omitted.

The Clinical Benefit from Respiratory Gated Radiotherapy (RGRT)

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Background and Aims: Respiration gated radiotherapy (RGRT) in radical lung cancer radiotherapy, involves treatment delivery at selected phases of the respiratory cycle. Although there is a great deal of interest in the implementation of RGRT, there is currently no published literature on the possible clinical benefits. We aim to use the standard toxicity parameters as surrogates for clinical benefit to assess the potential clinical benefit of RGRT. **Methods:** Fifteen patients had planned target volumes (PTVs) and treatment plans drawn up using continuous radiotherapy PTVs and both end-inspiration and end-expiration PTVs with set-up margins of 5mm and 10mm. The reduction in V20 (lung), V5 (lung), MLD and V50 (oesophagus) were noted. A correlation between tumour motion and clinical benefit was calculated. **Results:** The largest mean reduction in V20 was 2% (range -0.19% – 6.2%). The largest mean reduction in MLD was 2.12Gy (range -0.1Gy - 7.1Gy). End-inspiration RGRT reduced toxicity parameters by more than end-expiration RGRT. There was a statistically significant correlation between tumour motion and lung toxicity parameters in end-inspiration RGRT. **Conclusion:** The clinical benefit of RGRT is limited and should be considered in a very small minority of patients. This minority could be selected by measuring tumour motion which we have shown, correlates with clinical benefit.

Do Elderly People Place a Disproportionate Burden on a Knee MRI Service? A Comparative Study of Pre-Arthroscopy Knee MRI Referral Rate and Therapeutic Impact of MRI in Young and Older People

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Aims: To determine whether ageing affects confidence in clinical assessment of knee disorders or the therapeutic impact of knee MRI scanning. **Methods:** Using regional surgery and radiology databases, all patients having knee arthroscopy and knee MRI within defined timeframes were identified. Those who fell into younger (age 25-34) and older (age 60 and over) age groups were selected. The proportion being referred for MRI within six months prior to knee arthroscopy was determined for the two age groups. The proportions having arthroscopy or knee arthroplasty within six months following MRI were determined for the two age groups. **Results:** 880 patients who had undergone knee arthroscopy were identified. Sixty-four patients were aged 25-34. Of these, 37 (58%) had arthroscopy without prior MRI and 27 (42%) had arthroscopy only after MRI. 132 patients were aged 60 and over. Of these, 94 (71%) had arthroscopy without prior MRI and 38 (29%) had arthroscopy only after MRI. 894 patients who had undergone knee MRI were identified. 141 patients were aged 25-34. Of these, 110 (78%) had no surgical treatment and 31 (22%) had arthroscopy within six months of MRI. 149 patients were aged 60 and over. Of these, 95 (64%) had no surgical treatment, 35 (23%) had arthroscopy and 19 (13%) had a knee replacement within six months of MRI. **Conclusion:** Ageing does not appear to affect confidence in clinical assessment of knee disorders as elderly patients are no more likely than young patients to be referred for MRI prior to arthroscopy. A similar proportion of young and elderly patients will proceed to arthroscopy following knee MRI, but MRI is more likely to affect management in elderly than in young patients, largely due to its ability to demonstrate significant OA that was not suspected clinically. Elderly patients benefit from knee MRI and do not place a disproportionate burden on an MRI service.

Outcomes and Impact of GP Direct Access CT for the Investigation of Chronic Headache

GC Simpson, K Forbes, E Teasdale, A Tyagi, C Santosh

Objective: Chronic headache is a major health care problem with significant resource implications for specialist services. Since 1999 General Practitioners in Greater Glasgow have had direct access to CT (DACT) for investigation of chronic headache. The purpose of this study is to assess significance of pathology, impact of the service, and GP satisfaction. **Design:** We reviewed the DACT findings in patients between 1999-2007 who were identified from a database. Radiological reports were reviewed for abnormal findings by a radiologist. A neurologist reviewed those cases with abnormalities to assess their potential causation in presenting symptoms. A questionnaire was sent to the referring GP for every patient referred for DACT. Data from the Information Services Division of NHS National Services Scotland was used to estimate potential cost benefits. **Results:** 4,404 CTs were performed. Abnormal findings were reported in 461 (10.5%), and the reported abnormalities were considered a potential causative factor for the presenting symptoms in 60 patients (1.4%). Incidental abnormalities mostly resulted from established cerebrovascular disease and atrophy. 986 GP questionnaires were analysed. The majority of GPs (460/47%) indicated that DACT was their preferred choice for referral of chronic headache. If DACT was not available, neurology (448/45%) and general medicine (379/38%) would be the commonest referral choices. 86% did not require further specialist referral. Projecting the GP questionnaire data to the study group gave an approximate cost saving of at least £86,681.81. **Conclusions:** Direct Access CT is now the preferred choice of management for patients with chronic headache in primary care. Patients and General Practitioners are reassured by a normal scan in the majority of cases. There may be cost savings, although confirmation of cost-effectiveness would require further study.

Evaluation of Pulsatility Index and Resistive Index as Predictors of Long Term Renal Allograft Dysfunction

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Background: Renal transplantation is the treatment of choice for end-stage renal failure. Resistive index (RI) and pulsatility index (PI) can be used in the early transplant period to reflect the progress of transplant dysfunction. **Aim:** To correlate PI and RI measured at specific time intervals following transplantation with one-year estimated glomerular filtration rate (eGFR) and death-censored graft survival (DCGS) to assess their prognostic significance with respect to long term transplant function. **Methods:** 182 consecutive patients undergoing renal transplantation between 1997 and 2000 were identified from a prospectively maintained database. Spectral Doppler analysis was performed within one week in 180 patients and at one week - three months in 124 patients. Average PI and RI were determined from measurements at upper, lower and interpolar regions. **Results:** When measured within one week there was a significant association between PI and one-year eGFR when analysed as tertiles: <1.39, 1.39-1.74 and >1.74 ($p = 0.02$). Neither PI nor RI correlated with DCGS. When measured at one week - three months, there was a significant relationship between PI and RI and one-year eGFR comparing the highest and lowest tertiles: PI<1.26, 1.26-1.49 and >1.49; RI<0.69, 0.69-0.74 and >0.74; ($p = 0.01$ and 0.03 respectively). Both PI and RI were independent predictors of DCGS at three years on multivariate analysis ($p < 0.001$ and 0.02 respectively). **Conclusion:** PI and RI measured in the early post-transplant period correlate with long term transplant function. They can potentially be used as early prognostic markers to aid risk stratification for future transplant dysfunction.

ABSTRACTS OF SOCIETIES

Scottish Paediatric Society

St Andrew's day Symposium held on 25th november 2009 at RCPE, Edinburgh

SCIENTIFIC PRESENTATIONS

Intranasal Diamorphine: A Description of Concentration-Time Profiles of Metabolites, and Comparison to IV Diamorphine

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¹Department A&E, Royal Hospital for Sick Children, Edinburgh

²Department Child Life and Health, University of Edinburgh

³Department of Forensic Medicine (Toxicology), University of Glasgow

Background: The current best practice for treating acute severe pain in children is intravenous (IV) or intranasal (IN) opioid (College of Emergency Medicine guidelines 2004). IN diamorphine offers potentially less traumatic analgesia than the sometimes difficult and distressing IV route. However, there has been no direct comparison of IN and IV diamorphine nor are there pharmacokinetic data for IN diamorphine in children. **Objectives:** To describe and compare diamorphine metabolite concentration-time profiles following IN and IV diamorphine; an observational study in a city-centre paediatric teaching hospital A&E department. **Population:** 24 children, aged 3-13 years, with isolated deforming limb fracture. **Methods:** An IV catheter was sited in all children and base-line blood taken. The first 12 children received IV diamorphine (0.1mg/kg), and the subsequent 12, IN diamorphine (0.1mg/kg) in 0.2 ml sterile water drops. Subsequent samples were taken at 2, 5, 10, 20, 30 and 60 minutes. Diamorphine, 6-monoacetylmorphine, morphine, morphine-3-glucuronide and morphine-6-glucuronide were measured by solid phase extraction and liquid chromatography tandem mass spectrometry. **Results:** Initial early peaks of diamorphine (2 minutes for both IN and IV) and 6-monoacetylmorphine (2 minutes IV, 5 minutes IN) rapidly fell as they were metabolised to morphine and then to the glucuronides. Morphine was thus produced early with median peak levels at 2 minutes following IV and 10 minutes following IN diamorphine. Thereafter, morphine levels fell gently towards one hour. The glucuronides increased slowly in parallel, with higher morphine-3-glucuronide than morphine-6-glucuronide, both starting to plateau by 20 - 30 minutes in the IV group, with a later, almost plateauing but slowly increasing drift in the IN group at one hour. While the patterns of metabolite variation were similar in the two groups, the concentrations were markedly different. Results for diamorphine, 6-monoacetylmorphine, morphine, morphine-6-glucuronide and morphine-3-glucuronide: median maximum concentrations following IV diamorphine (397, 221, 33, 358, 21ug/l) were approximately 25, 25, 7, 4, and 3 fold those following IN diamorphine (16, 9, 5, 86, 8ug/l). The median corresponding IV 'area under the curve' calculations were correspondingly high (2795, 1223, 710, 17833, 943ug/l/h) compared with IN (131, 123, 221, 2881, 200ug/l/h). **Conclusions:** We have carried out a productive and useful pharmacokinetic study in the clinical setting, producing the first pharmacokinetic data for IN diamorphine in children. Our evidence supports the wider use of diamorphine by nasal drops in children, showing that adequate plasma levels of diamorphine's active metabolites are usually achieved. However, we showed significantly attenuated and delayed peak plasma metabolite levels with lower levels at one hour compared to IV diamorphine

H1N1 Influenza: the Yorkhill Experience

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Objectives: The emergence of H1N1 will increase winter pressures on acute paediatric services significantly. This is not only because of increased numbers of children presenting with respiratory illness, but also because of the additional precautions required in managing suspected cases while awaiting laboratory confirmation. The current HPS clinical case definition is seriously lacking in specificity. Thus major problems during the period when viruses such as RSV and parainfluenza are circulating are anticipated. The aim of this study was to review the clinical characteristics of those presenting with H1N1 in light of the HPS definition. **Population & methods:** Retrospective case note review of 44 patients with PCR-confirmed H1N1 influenza managed in the Royal Hospital for Sick Children, Glasgow, 29/5/09 - 28/8/09. **Results:** The majority of patients (59%) were over five years of age and only 11% were < 1 year. 59% were male. 43% had significant underlying medical conditions, most commonly asthma (n=8), neurodevelopmental problems (n=5) and immunosuppression (n=3). 91% presented with a temperature > 38°C and 68% were > 38.5°C. This was despite 61% of children receiving an antipyretic in the six hours prior to attendance. The median duration of symptoms at presentation was 24 hours. The frequency of occurrence of symptoms & signs listed in the HPS case definition was as follows: cough 82%, sore throat/pharyngitis 73%, coryza 68%, vomiting 39%, headache 32%, myalgia 11% and diarrhoea 7%. In children > five years of age, 46% complained of headache and 12% complained of myalgia. Wheeze was only documented in one child, who had a background of asthma. 15 children (34%) were admitted. The median length of stay was three days (range 1 - 9). Of these, six required oxygen and two had evidence of co-existent bacterial infections (one Streptococcal pharyngitis and one aspiration pneumonia). Oseltamivir and antibiotics were prescribed for 41% and 36% of children respectively. 19% received both. Two children required admission to intensive care, of whom one suffered from severe neurodisability and chronic lung disease and died. **Conclusions:** Compared with respiratory admissions in previous years, school aged children were over-represented in our study. We were unable to identify any clinical features to distinguish between H1N1 and other viruses, although the rarity of wheeze is noteworthy. While the current threshold temperature lacks specificity our data suggest that a higher threshold would lack sensitivity. Efficient management is likely to depend on the rapidity with which laboratory confirmation can be obtained.

Drug Misuse in Pregnancy – Losing Sight of the Baby?

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¹Princess Royal Maternity

²Royal Hospital for Sick Children, Glasgow

Objectives: There are growing concerns regarding visual outcome of infants exposed to opiates in *utero*.^{1,2} We describe the ophthalmological and visual electrophysiological findings in 20 infants and children who had been exposed to substitute methadone in *utero*. **Population and methods:** This is a descriptive case series of 20 patients, all of whom had been referred to a paediatric visual electrophysiology service because of concerns regarding visual function, and all of whom had been exposed to methadone in *utero*. All children underwent ophthalmic and orthoptic examination and visual electrophysiology testing as deemed appropriate. A review of paediatric case notes was undertaken and maternal drug use, including antenatal urine toxicology, was recorded. **Results:** Most cases had been exposed to illicit drugs in addition to methadone, including benzodiazepines (10/20, 50%) and heroin (7/20, 35%). Twelve infants (60%) received pharmacological treatment for neonatal abstinence syndrome (NAS). Ophthalmic abnormalities included reduced visual acuity (19/20, 95%), nystagmus (14/20, 70%), delayed visual maturation (10/20, 50%), strabismus (6/20, 30%) and refractive errors (6/20, 30%). 25% of children had evidence of cerebral visual impairment. Significantly more infants with a history of treated NAS developed nystagmus than those without NAS: 11/12 (92%) versus 3/8 (38%): p=0.017. Visual electrophysiology was abnormal in 12 (60%) and associated neurodevelopmental abnormalities were present in 5 (25%) of the children. **Conclusion:** We provide further evidence of the adverse effects of opiate exposure on the

developing infant visual system and describe for the first time cerebral visual impairment in these children. Nystagmus may be associated with a history of receiving treatment for NAS. Children with a history of *in utero* opiate exposure may benefit from a vision screening programme.

Non-Accidental Head Injury – a Consequence of Deprivation?

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³Royal Aberdeen Children's Hospital, Aberdeen

Objectives: Non-accidental head injury is a significant personal and public health problem, with considerable mortality and morbidity. The evidence base for risk factors specific for NAHI is limited due to difficulties with case definition and study design. We evaluated the risk factors associated with NAHI in infants in Scotland and addressed the extent to which indices of deprivation influence this health problem.

Population and Methods: A 10-year prospective study was conducted in Scotland involving all paediatric hospitals and other general hospital departments admitting children. Subjects were children 2 years of age, with a diagnosis of 'suspected NAHI'. Socio-economic characteristics of the index cases were compared to the general population, using the Scottish Index of Multiple Deprivation (SIMD) 2006. **Results:** There were highly significant differences ($p < 0.001$) between the SIMD rank scores of the NAHI cases and scores for the whole Scottish population. For the cohort, SIMD ranks ranged from 34 – 6253 (median 1210; mean 1577) compared to the population range of 1 – 6505 (median and mean = 3253). Similar differences were found for each of the component domains of income, employment, health, education, crime and housing ($p < 0.001$). In contrast, the scores for 'geographic access' (to essential services) were higher than for the whole population ($p < 0.001$), indicating that the deprivation was not due to lack of local services. Maternal ages were available for only 64 cases, but compared to the general population, mothers in the cohort were significantly younger (22.8 ± 6.0 vs. 22.8 years, $p < 0.001$). The prevalence of twins (8%) was also higher than that found in the general population. ($p < 0.05$). **Conclusion:** In Scotland, children who present with suspected NAHI originate predominantly from the most deprived areas of the community. Public health and intervention strategies should be focussed in these areas.

Trends in Incidence and Survival of Childhood Cancer in Scotland: 1981 to 2007

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Objectives: Cancer is the second commonest cause of death in childhood. Previous studies with different populations have shown that incidence of childhood cancer has been rising by 1.1% per annum since the early 1980s, with a steady increase in 5 year survival rate. However, few studies have focussed specifically on these trends in Scottish children. This research aims to rectify this. **Population and Methods:** This study uses data contained in the Scottish Children's Tumour Register (SCTR) to elucidate the trends in Scotland between 1981 and 2007. 2941 diagnoses were coded and split into 12 groups based upon the International Classification for Childhood Cancer. Calculation of age-standardised incidence rates per annum and Kaplan-Meier survival analysis was carried out for each individual group, followed by inter- and intra-group comparisons. **Results:** Analysis revealed a mean overall age-standardised incidence of 12.36/100 000, with no significant trends over the study period. Leukaemias have the greatest incidence of cancer groups, followed by CNS tumours and lymphomas. 1 and 5 year survival rates showed a promising gradual increase, with a statistically significant difference ($p \leq 0.001$) between individuals diagnosed in 1981–1985 and those in 2001–2006. Overall current 5 year survival rates are 74.2%. **Conclusions:** Trends in incidence were not

revealed, possibly owing to relatively small patient numbers in each individual group. Survival rates, conversely, show a clear relationship to the period of diagnosis, with 5 year survival rates increasing in more recent times and are comparable to those reported elsewhere. The information gained from this study could be used in resource allocation by the devolved Scottish government. In addition, the wealth of information contained within the SCTR could be used to elucidate more specific trends, including helping with long-term cancer survivor studies.

Children with Persistent Asthma Require Less Rescue Medication if Prescribed Long-Acting β_2 -Agonists and Inhaled Corticosteroids in Fixed Dose Combination. Retrospective Observational Study

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Background: Data on the efficacy and safety of long-acting β_2 -agonists (LABA) in children is limited and current guidelines recommend that LABA should always be used with inhaled corticosteroids (ICS).

Objectives: To compare asthma control, assessed by rescue medication use, between children prescribed LABA and ICS as a fixed dose combination (LABA/ICS) and those prescribed same medications concurrently via separate inhalers (LABA+ICS). **Population and Methods:** Retrospective observational survey of asthma medications prescribed for children 0-18 years between years 2002 and 2006 in 40 practices participating in the Scottish practice team information project. Asthma control as reflected in the requirement for courses of oral corticosteroids (OCS) and/or six or more short-acting β_2 -agonists (SABA) canisters per year were assessed. **Results:** 10454 (8% of all registered children) received at least one prescription of an asthma medication over the study period. Prescribing of LAB/ICS increased over the study period with a concomitant decrease in the prescribing of LABA+ICS. The proportion of children prescribed a medication for asthma and at least one course of OCS increased significantly from 7% ($n=373$) in 2002 to 11% ($n=658$) in 2006 an increase of almost 60% ($P < 0.001$) with a higher proportion of children under 5 yrs receiving OCS courses 11% in 2002 and 16% in 2006. The lowest use of OCS was observed in children only using short acting β_2 -agonists, and the highest in those prescribed LABA. After accounting for potential confounders children prescribed LABA/ICS were less likely than those prescribed equivalent doses in separate devices to require courses of OCS and or ≥ 6 repeat prescriptions for SABA inhalers (OR, 1.6; 95% CI, 1.1-2.2; $P = 0.04$ and OR, 1.7; 95% CI, 1.1-2.5; $P = 0.005$ respectively for the year 2005-2006). **Conclusions:** Against a background of increasing OCS use children prescribed fixed-dose LABA and ICS combination devices achieve better asthma control as reflected in reduced requirements for short acting β_2 -agonist and courses of oral corticosteroids than equivalent doses in separate devices. These findings lend further support for LABA and ICS in fixed dose combination rather than in separate devices. Routinely acquired health care data may usefully contribute to a better understanding of medicines efficacy and safety in the post licensing period.

CLINICAL CASE PRESENTATIONS

Treatment with Pegylated Interferon in Two Siblings with Chronic Hepatitis C Infection

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Objectives: SIGN guideline 92 states that children with moderate or severe liver disease resulting from chronic hepatitis C infection should be considered for treatment with pegylated interferon and ribavirin. In children with hepatitis C infection (genotype 2 or 3), the likelihood of successful treatment is between 80-90%. In children who are asymptomatic, the benefits of treatment need to be balanced against

the risk of side effects. The Paediatric Infectious Diseases and Gastroenterology services have jointly developed and commenced a treatment service for chronic hepatitis C infection, genotype 2 and 3 at RHSC, Yorkhill. **Population and methods:** Two siblings were identified for treatment with pegylated interferon and ribavirin for a period of 6 months. Both had acquired genotype 3a hepatitis C via vertical transmission and their mother had previously been successfully treated. Pre-treatment work up included assessment of liver function, exclusion of co-morbidity, autoimmune status, counselling and discussion with the families. Following detailed discussion of the treatment regime and potential side effects, treatment was commenced as per protocol. The treatment protocol involved weekly subcutaneous injection of pegylated interferon (100mcg/m² weekly) and twice daily ribavirin (15mg/kg/day) for a total of 24 weeks. The protocol also required regular review and blood tests including FBC, differential counts, LFTs, TFTs and HepC quantitative PCR at set time points. The common side effects were recorded in the notes, together with basic observations, weight, height, dose of medication and missed doses of ribavirin. **Results:** By week 4 of treatment, sibling 1 had a viral PCR load of <50 IU/ml and thereafter remained completely virally suppressed. By week 4, sibling 2 became and remained completely virally suppressed. Both siblings developed neutropenia, which necessitated a dose reduction in pegylated interferon. Side effects that were noted during the 24 week treatment included emotional lability, anorexia and slow linear growth but otherwise both siblings tolerated treatment very well. **Conclusion:** Two siblings with Hepatitis C who have been successfully treated with pegylated interferon and ribavirin resulting in eradication of chronic hepatitis C infection. Two months after cessation of treatment both siblings remain free of hepatitis C infection and we will continue to monitor their progress and status. Paediatric chronic hepatitis C is treatable and children in Scotland should be assessed for treatment.

The Lord of the Ring

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Case Presentation: A three year old boy presented to his local A&E after swallowing two 10mm by 10mm cylindrical pieces of plastic Meccano®. He vomited soon after, regurgitating one at home. The other was not found. A CXR demonstrated no foreign body. He managed oral fluids and was discharged. He continued to have discomfort and poor fluid and food intake, returned to A&E a week later and was again reassured it should settle. His parents never saw the second piece in vomit or stool. Five months after the initial presentation they consulted with ongoing dysphagia, vomiting after meals and weight loss. Examination was normal. He was referred to the local ENT consultant, then referred for further assessment at RHSCE. Upper endoscopy revealed a red plastic Meccano® cylinder in a transverse orientation in the oesophageal inlet, obstructing the lumen and removed under direct vision by the surgical team using a rigid scope. There was significant anatomical distortion, oedema and extensive granulation in the area of impaction with friability and ulceration of the oesophagus. He was treated with Omeprazole and brought back a month later for repeat endoscopy. This revealed post-cricoid scarring and stenosis and a second stricture more distally. The proximal narrowing was dilated through the scope (TTS) with a balloon under direct vision. Domperidone was commenced. A further dilatation of the upper stricture was performed with better food toleration and weight gain but he had persistent difficulty tolerating larger food pieces. He was referred to RHSCG and had laser division of strictured areas on three occasions resulting in a marked improvement in symptoms. **Discussion:** Foreign body ingestion is common and may cause significant morbidity and mortality; ulceration, inflammation, infection or respiratory distress and obstruction from unstable high objects. Other complications include oesophageal stricture or perforation, retropharyngeal or para-oesophageal abscess, empyema, mediastinitis and aorto-oesophageal

fistula. **Conclusions:** An accurate history and high index of suspicion is paramount to diagnosis and prevention of complications. X-ray may help but only if the object is radio-opaque - plastic may not be! A contrast study or endoscopy will help identify non-radio-opaque objects in this area. Persistent symptoms must be taken seriously and warrant further investigation.

OFC Measurement – Why Bother?

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Introduction: Arachnoid cysts are benign congenital malformations of the central nervous system. They are thought to have an incidence of 0.75% but in many cases are asymptomatic and therefore remain undiagnosed. Most remain static throughout life, but occasionally they expand and cause symptoms through mass effect, obstruction of CSF flow, haemorrhage or rupture. We describe two cases of arachnoid cysts presenting in the neonatal period with enlarging head circumference. **Case 1:** A baby boy born at term with birth weight 4.3kg (>90th centile) and OFC 38cm (>97th centile) was discharged from hospital on day 1 of life. By day 10 his OFC had increased to 40cm although he remained clinically well. MRI head showed a large arachnoid cyst displacing much of the left cerebral hemisphere. On review at 4 weeks of age his OFC had further increased to 43.8m, and on examination his anterior fontanelle was full, sutures splayed, and a prominence of his left parieto-occipital region was noted. A left-sided cystoperitoneal shunt was inserted the following day. Repeat MRI confirmed a reduction in cyst size but demonstrated left-sided periventricular cystic encephalomalacia and loss of deep white matter. At 18 months of age he was meeting developmental milestones appropriately but was noted to have mildly increased tone in his right leg. **Case 2:** A baby girl born at term in good condition was reviewed at 2 hours of age due to concerns that she was lethargic and slow to start feeding. On examination she appeared to have a left-sided skull defect in the temporo-occipital region and dysmorphic features including midfacial crowding. Skull x-ray was normal, but cranial ultrasound demonstrated a large cystic structure in the left posterior fossa. MRI confirmed a 7x7x6 cm left-sided temporo-parietal arachnoid cyst with associated midline shift. Over subsequent days her OFC increased from 35cm (50th centile) to 37.6cm (97th centile) and a cystoperitoneal shunt was therefore inserted. Post-operatively her OFC measurements gradually decreased and repeat cranial ultrasound showed a significant regression of the cyst. **Discussion:** Neonatal arachnoid cysts, even if a substantial size, can present in a subtle manner. Affected neonates often have normal neurodevelopmental function and increasing head circumference, reflecting either cyst enlargement or the development of obstructive hydrocephalus, may be the only diagnostic clue. The above cases highlight the importance of serial OFC measurement in the neonate in order to detect enlarging arachnoid cysts.

“He’s Got This Funny Lump, Doctor”

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A 14 month old boy presented to the surgical team with a swelling on the right side of his chest which had first been noticed by his parents three days previously. He was afebrile and systemically well. Examination revealed a 4cm mass which was smooth, round and tender. It was non-fluctuant, non-mobile and there were no overlying skin changes. This child was one of non-identical twins conceived by intracytoplasmic sperm injection (ICSI). The pregnancy was uneventful and mother’s booking serology was all negative. The parents were

originally from Pakistan and had lived in the UK for over five years. The twins were delivered by elective caesarian section in Glasgow. Both children had enjoyed good health and were fully immunised including BCG given in the neonatal period. Initial investigations included a chest x-ray, white cell count and CRP (all normal). Ultrasound demonstrated a lesion within the 8th rib suggestive of a bony tumour. MRI confirmed that this lesion was arising within the rib and expanding the cortex, with an estimated volume of 8ml. The rim of the lesion enhanced with contrast. Fluid and thick septations were noted within. There was no local infiltration, but the right lobe of liver was indented by the mass. The working diagnosis remained a bony tumour, with mesenchymal hamartoma felt to be most likely. The child was admitted for biopsy and by this time the lesion had become fluctuant. It was incised and drained, yielding 4ml pus which was sent for culture; Ziehl-Neelsen staining was negative. Six weeks later the child was reviewed in the surgical clinic. The wound had not healed and was still draining significant volumes of pus, requiring dressing changes twice daily. Culture was positive for Mycobacterium TB complex (BCG strain), clinching the diagnosis of BCG osteomyelitis of the rib. Initial immune function testing was normal; results of IL12 and interferon gamma receptor testing are awaited. The child was commenced on triple therapy (isoniazid, rifampicin, ethambutol). He remains under close review. The BCG immunisation programme is a risk-based programme which includes targeted neonatal immunisation for infants born to parents from countries where the prevalence of tuberculosis (TB) is high.¹ Complications are rare (<1 per thousand local, <1 per million disseminated²) but this case is not isolated.³ BCG osteomyelitis must be considered in the differential diagnosis of unusual bony lesions in vaccinated children.

Plasmodium Vivax in a Child with Thrombocytopenia!!!

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Introduction: Malaria is common in certain parts of the world but rare in the UK, particularly in Scotland. We present an interesting case of a child living in Edinburgh who presented with abdominal pain and vomiting and found to have malaria. **Presentation:** An eight year old boy of Indian origin, presented with abdominal pain, fever and vomiting. He had no previous episodes of unexplained fever. At presentation he was afebrile but tender in his left iliac fossa. He was admitted as a surgical abdomen and discharged the following day having been afebrile and pain free. Urinalysis showed presence of blood. Three days later, he returned with persisting abdominal pain and recurrent spikes of fever. Again he was afebrile but had tenderness in the epigastric area. Urine microscopy showed some red blood cells but no bacteria. He had thrombocytopenia which prompted a blood film. This revealed Plasmodium vivax. Abdominal ultrasound was normal. Anti malarial medication was started. He developed recurrent self-resolving epistaxis. Initial coagulation screen was slightly prolonged but self corrected. Initial low platelet count and haemoglobin also improved. His temperature improved by day four of treatment. Blood film on discharge was clear of parasites. Two weeks following completion of treatment, he had normal platelet count and mild resolving anaemia. **Learning points:** High level of suspicion is necessary to diagnose malaria in children from endemic areas. There may not be a history of recent travel or previous episodes of unexplained fever. The incubation period of Plasmodium vivax ranges from twelve days to several months. It forms a dormant hypozoite in the liver, which can reactivate weeks to years after the initial infection, leading to a relapse. Thrombocytopenia can be a feature of malaria.

The Perils of Immunosuppression; a Case of Glandular Fever Gone Bad

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Case: A 13 year old girl with long standing Crohn's disease maintained

on Azathioprine, presented to A&E with a 2 week history of fever, rash, headache, anorexia and vomiting. Clinical examination revealed mild jaundice, severe pharyngitis, and a polymorphic rash on her trunk. Blood investigations showed a pancytopenia, transaminitis with raised bilirubin, hypoalbuminaemia and low fibrinogen. Monospot test was positive, and EBV PCR confirmed the presence of 210,000 copies/ml. Cytometry revealed lymphopenia, with low B cell numbers and absent Natural Killer (NK) cells. Bone marrow trephine demonstrated a hypercellular marrow in keeping with lymphoproliferative disease and early haemophagocytic lymphohistiocytosis (HLH). She was treated with high dose steroids, rituximab, IVIG and acyclovir. This precipitated a rapid fall in EBV viral load and a gradual but full clinical recovery. **Discussion:** Azathioprine, and other cytotoxic drugs are commonly used in paediatrics for a wide range of illnesses. Paediatricians must be aware of the need for monitoring, and of the potential for complications associated with their use. By the age of 25 years, almost 90% of the UK population is estimated to have had EBV infection. HLH is a rare complication, characterised by diminished NK cells and T-Cell cytotoxic capacity. Although it is often fatal, this case exemplifies how prompt recognition and novel treatment strategies can be life saving.

POSTER PRESENTATIONS

PECOC – Paediatric Emergency Care Observation Chart

Judith Hanlon, Una MacFadyen
Stirling Royal Infirmary, Stirling

How should patients with Slipped Capital Femoral Epiphysis be screened for endocrine disorders?

Raju Sunderesan, Caroline Oren, Benjamin Jacobs, Aresh Hashemi-Nejad
Stirling Royal Infirmary, Stirling

Mitochondrial Basis for a Fatal Neonatal Dentato-Olivary Dysplasia Associated with Hypertrophic Cardiomyopathy: Importance of Local Pathology Input

Rodie M, Cordeiro NJV, Kinmond S, McWilliam R, Stewart W, McFarland R, Taylor RW, Nairn ER
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Factors that influence the decision to perform a karyotype in suspected disorders of sex development: lessons from the Scottish Genital Anomaly Network Register

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Malarial Anaemia in Malawian Children Under Five Years Old

Jed Bamber, Elizabeth Hennessy, Barbara Golden, Hugh Bishop
Royal Aberdeen Children's Hospital

The Scottish Borders Eycat Team – Did the Cat get the Cream?

Sarah Burns, Jane MacDonell
Borders General Hospital

What is the role of a Skeletal survey in the diagnosis of suspected non-accidental injury in infants aged two years and under?

Owen Forbes (FY2), Jean Herbison, Andrew Watt
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Neonatal Airway Assessment in Scotland

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Retinopathy of prematurity: an audit of screening practices and comparison with current guidelines

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