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Abstracts

Ulster Society of Internal Medicine
96th (Spring) Meeting
Friday 18th May 2018

Altnagelvin Hospital

ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF GLASGOW

PROGRAMME

2.00 pm **Assessing the vitamin B12 status of adults with type 2 Diabetes Mellitus on metformin.**

GE Aldworth, JS Hamilton, JV Woodside. Belfast HSC Trust and Queen's University, Belfast.

2.15 pm **A Northern Ireland First**

J Growcott, N McKeag, L Campbell, N Divine, D McCall. Pulmonary Arterial Hypertension Service, Belfast Health and Social Care Trust

2.30 pm **Spontaneous Pneumothoraces as a Presenting Feature of Birt-Hogg-Dubé Syndrome**

R McMullan, D Eedy, R Convery. Craigavon Area Hospital, Southern Health & Social Care Trust, Northern Ireland, UK

2.45 pm **Guest Lecture: "Role of the Royal College of Physicians and Surgeons of Glasgow in Modern Medicine."**

Dr. Richard Hull, Hon Secretary, RCPSG.

3.15 pm **Afternoon Tea** and **Poster Viewing**

Refreshments sponsored by ***Pfizer*** **(Representative: Claire Stewart-Frew).**

Poster 1 **Right Antibiotic, Right Patient, First Time: Using quality improvement methodology to improve antibiotic prescription practice within acute medical unit.**

SL McKenna, C Gormley, S Prabhavalkar. Altnagelvin Area Hospital, Londonderry.

Poster 2 **Two cases of Dermatomyositis with a variable clinical course**

S McDonald, JA Henderson, R Friel, W Yau and P Gardiner. Department of Rheumatology, Western Health and Social Care trust, L'Derry, UK

Poster 3 **Epidemiological studies of idiopathic intracranial hypertension and national obesity prevalence.** Gavin McCluskey, Mark O. McCarron. Departments of Neurology, Royal Victoria Hospital, Belfast and Altnagelvin Hospital, Derry

3.40 pm **Grand Rounds: Cases from Altnagelvin Hospital.**

3 quick-fire cases

4.10 pm **Variable Diagnostic Accuracy In Reading ECGs In A Nurse-Led Primary Pci Pathway**

Canning A, McNeill AJ, Aleong G, Bond RR, Finlay DD, Peace A. Department of Cardiology, Altnagelvin Hospital and Ulster University, Belfast

4.25 pm **Pericardiocentesis in a tertiary cardiology centre**

PF Brennan, C McQuillan, J Crawford, NA Herity, MS Spence. Royal Victoria Hospital, Belfast Health and Social Care Trust, Belfast, UK

4.40 pm **Guest Lecture: "Cardiac MRI – what the general physician needs to know."**

Dr Monica Monaghan, Consultant Cardiologist, South West Acute Hospital.

5.10 pm Presentation of prize for the best abstract.

2PM ORAL

ASSESSING THE VITAMIN B12 STATUS OF ADULTS WITH TYPE 2 DIABETES MELLITUS ON METFORMIN.

GE Aldworth[1], JS Hamilton[1], JV Woodside[2], Clinical Biochemistry, Belfast HSC Trust, Belfast[1]; Nutrition Group, Queen's University, Belfast[2].

Peripheral neuropathy is common in diabetes and in the B12-deficient. There is no gold standard for laboratory assessment of B12.[1] Serum methylmalonic acid (MMA) and holotranscobalamin (HTC) are second line tests recommended by British guidelines.[2] The hypoglycaemic agent, metformin, causes B12 deficiency by reducing absorption.

The aim was to compare 3 methods for assessing B12 using samples from diabetes patients on metformin, to improve the detection of patients with metformin-induced deficiency.

200 participants were recruited and samples frozen at -70°C within 24 hours. 60.6% were female. Ages ranged between 30 and 90 years. Average daily dose of metformin was 1.8g and average duration of the drug was 9 years. Immunoassay was used for serum B12 and HTC analysis and LCMS/MS (liquid chromatography and tandem mass spectrometry) for serum MMA. All methods validated before sample analysis.

10.6% were considered B12 deficient by serum B12, 8.9% by HTC and 12.2% by MMA.

Statistical analysis was by Kappa statistic and McNemar's Chi-squared. The tests did not always agree which patients were deficient. 50% of those with low serum B12 had low HTC, and 41.2% with low B12 had high MMA. 42.9% of those with low HTC had elevated MMA and 28.6% of high MMA samples had low HTC.

More people with B12 deficiency were diagnosed in this study using 3 tests than would have been by using one test alone. It may be beneficial to measure B12 as first line, then add in a second to confirm (HTC or MMA).

Yetley EA, Pfeiffer CM, Phinney KW, Fazili Z, Lacher DA, Bailey RL, et al. Biomarkers of vitamin-B12 status in NHANES: A roundtable summary. American Journal of Clinical Nutrition. 2011; 94 (suppl): 313S–321S.

Devalia V, Hamilton MS, Molloy AM. Guidelines for the diagnosis and treatment of cobalamin and folate disorders. British Journal of Haematology. 2014; 166: 496-513.

2.15PM ORAL

A NORTHERN IRELAND FIRST

J Growcott, N McKeag, L Campbell, N Divine D McCall.

Pulmonary Arterial Hypertension Service, Belfast Health and Social Care Trust.

Pulmonary arterial hypertension (PAH) is characterised by an occlusive vasculopathy of small pulmonary arteries. This process increases pulmonary vascular resistance and is associated with significant mortality due to right ventricular failure [1].

Heritable PAH has been described and may be linked to pathogenic mutations of the bone morphogenetic protein receptor 2 gene (BMPR2) [1]

We describe a brother and sister who within 12 months of each other had identical clinical presentations with PAH. The proband was shown to be heterozygous for a pathogenic mutation in BMPR2, a finding replicated in his sister. This is Northern Ireland's first family with PAH due to a BMPR2 mutation.

A further sibling (MME) presented with shortness of breath but resting 12 lead ECG, serum NTproBNP and transthoracic echocardiogram were all normal. In line with ESC/ERS guidelines[2], we concluded there was a low probability of PAH. However, this individual was shown to carry the familial BMPR2 variant and we proceeded to right heart catheterisation. Findings were consistent with PAH (Table 1). We initiated pulmonary vasodilator therapy with subsequent improvement in the patient's symptoms and 6 minute walk distance.

The availability of genetic testing in this family has provided a novel paradigm for early diagnosis of PAH which is beyond that outlined in recent international guidelines.

Table 1.

Right heart catheterization findings for patient MME.

Mean pulmonary artery pressure (mmHg)	28
Mean pulmonary wedge pressure (mmHg)	11
Cardiac Index (L/min/m^2)	2.6
Pulmonary Vascular Resistance (Wood Units)	4.4

REFERENCES

1. Sztrymf B, Coulet F, Girerd B, Yaici A, Jais X, Sitbon O, Montani D, Souza R, Simonneau G, Soubrier F, Humbert M.. Clinical Outcomes of Pulmonary Arterial Hypertension in Carriers of BMPR2 Mutation. *American Journal of Respiratory and Critical Care Medicine* 2008; **177**:1377-1383.

2. ESC/ERS Guidelines for the diagnosis and management of pulmonary hypertension. *European Heart Journal* 2016; **37**:67-119.

230PM ORAL

SPONTANEOUS PNEUMOTHORACES AS A PRESENTING FEATURE OF BIRT-HOGG-DUBÉ SYNDROME

R McMullan, D Eedy, R Convery

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Birt-Hogg-Dubé Syndrome (BHDS) is a complex genetic condition classically involving the lungs, kidneys and skin. It is exceptionally rare with only 600 families worldwide identified. It is named after the three physicians who initially described the syndrome in 1977.

BHDS is inherited in an autosomal dominant manner and is caused by constitutional mutations in the *FLCN* gene. *FLCN* is a tumour suppressor gene which codes for the protein folliculin (1). Aberrant folliculin predisposes individuals to fibrofolliculomas in the skin, multiple lung cysts with associated spontaneous pneumothoraces and an increased risk of renal cancer.

Lung cysts are evidenced in approximately 67%-90% of patients with BHDS. It is estimated that 40% will develop a spontaneous pneumothorax; a significant number of these patients will experience recurrent pneumothoraces. Studies have identified a pneumothorax recurrence rate as high as 75% (2).

We report on two confirmed cases of BHDS who presented to our unit with pulmonary manifestations. Both patients presented with spontaneous pneumothoraces; one patient had a family history of BHDS, whereas the other was an

index case. Due to the risk of recurrent pneumothoraces both patients elected to undergo pleurectomy, bullectomy and pleural ablation. Patients' family members have been referred for genetic counselling. Moreover, the patients have been referred for regular imaging of their renal tracts due to the increased risk of renal cancer.

Due to the significant clinical sequalae of this condition, it is important that a diagnosis of BHDS is considered in patients with cystic lung disease and spontaneous pneumothoraces.

REFERENCES

1. Hudon V, Sabourin S, Dydensborg AB, Kottis V, Ghazi A, Paquet M, et al. Renal tumour suppressor function of the Birt-Hogg-Dube syndrome gene product folliculin. *J Med Genet 2010* Mar;47(3):182-189.
2. Jensen DK, Villumsen A, Skytte A, Madsen MG, Sommerlund M, Bendstrup E. Birt–Hogg–Dubé syndrome: a case report and a review of the literature. *European Clinical Respiratory Journal* 2017;4(1):1292378.

4.10PM ORAL

VARIABLE DIAGNOSTIC ACCURACY IN READING ECGS IN A NURSE-LED PRIMARY PCI PATHWAY

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The Electrocardiogram (ECG) remains as the crucial tool to diagnose acute ST-elevation myocardial infarction (STEMI). Activation of the cardiac catheterization team to perform Primary Percutaneous Coronary Intervention (PPCI) largely depends on the interpretation of the ECG at the time of first medical contact with the patient.

We sought to ascertain the impact ECG based decisions have on the PPCI pathway and specifically on clinical outcomes.

ECG and clinical data were retrospectively reviewed for consecutive patients referred to the PPCI pathway over a 12-month period as part of a continuous audit.

A total of 579 patients were referred to the PPCI pathway over the 12-month period. 383 referrals (66%) were turned down for PPCI, predominantly on the basis of lack of diagnostic criteria. All turndowns were considered appropriate. The ECG machine suggested an ischaemic diagnosis in 164/169 (Sensitivity=97%) of patients with STEMI and 174/302 (1-Specificity=58%, Specificity=42%) of the turndown cases (patients with a final diagnosis of ACS/angina were excluded from the turndown group when calculating machine specificity). The STEMI group were significantly younger that the turndown group (62 ± 13 vs. 67 ± 17, $p<0.01$) with higher mortality in the turndown group at 12 months (15.2% vs. 10.7%).

ECG interpretation by referrers in this nurse-led primary PCI pathway is sub-optimal. The high rate of false positives in ECG machine diagnoses in the turndown group could be an influencing factor in the human-decision making. There is a need to find ways to improve ECG interpretation, particularly in a time critical PPCI pathway.

425PM ORAL

PERICARDIOCENTESIS IN A TERTIARY CARDIOLOGY CENTRE

PF Brennan[1], C McQuillan[1], J Crawford[1], NA Herity[1], MS Spence[1]

[1]Royal Victoria Hospital, Belfast Health and Social Care Trust, Belfast, UK

Pericardiocentesis is an essential diagnostic and therapeutic intervention for both acute and chronic pericardial effusions and should be performed in a controlled environment with appropriate imaging guidance.

All 40 consecutive pericardiocenteses, performed in 2016 in our interventional cardiology unit, with on-site cardiac surgery, were reviewed.

60% (n=24) were performed during normal working hours with 40% (n=16) occurring out of hours. 75% (n=30) were performed within 24hours of referral. 90% (n=36) of patients had signs of cardiac tamponade prior to pericardiocentesis.

45% (n=18) patients had developed a pericardial effusion post either cardiac surgery or an interventional procedure. Recent cardiac surgery or complex PCI represented the majority of these cases (n= 7, 5 respectively).

Pre-existing use of oral anticoagulation (OAC) was associated with the largest effusion diameter at 35.9mm (overall mean 29mm, IQR 20-38mm).

22.5% (n=9) of patients had a neoplastic aetiology, confirmed by pericardial cytology, with lung cancer being the most commonly seen malignancy (n=5).

27.5% (n=11) of pericardial effusions were presumed to be inflammatory in aetiology although all effusion samples sent for microbiological or viral analysis were negative.

The mean amount of pericardial fluid drained initially was 563ml (IQR 250-750ml). Fluoroscopy and TTE was used for all patients.

One patient died after right ventricular perforation, despite attempted rescue cardiac surgery. There were no other major complications observed.

In conclusion, pericardiocentesis was performed safely, under appropriate procedural settings, in our centre with only one major complication. The majority of pericardiocenteses were performed with therapeutic intent, in patients with signs of tamponade.

POSTER 1

RIGHT ANTIBIOTIC, RIGHT PATIENT, FIRST TIME: USING QUALITY IMPROVEMENT METHODOLOGY TO IMPROVE ANTIBIOTIC PRESCRIPTION PRACTICE WITHIN ACUTE MEDICAL UNIT.

SL McKenna[1], C Gormley[2], S Prabhavalkar[3], Acute Medical[1], Pharmacy[2] and Renal[3] Department, Altnagelvin Area Hospital, Western HSC Trust, Londonderry.

Antimicrobial agents are amongst the most commonly prescribed medications in hospital[1]. Their inappropriate prescription poses a significant risk to patients, increasing morbidity and mortality. It also leads to drug resistant organisms which can be challenging and expensive to treat[2].

Using the Western Trust's Antimicrobial Policy as a standard, we aimed to improve our antibiotic prescribing practice and achieve 100% compliance by June 2016. We adopted a multidisciplinary team approach to generate ideas and implement various quality improvement PDSA (Plan-Do-Study-Act) interventions.

Data was collected prospectively on the first Thursday of each month and included all patients receiving antibiotics on that day. A detailed review of case-notes and drug charts was made to check for compliance with the policy and a run-chart was used to display the trend of results along with various interventions.

A baseline compliance level of 58% was observed indicating a strong need for improvement. We subsequently introduced various PDSA cycles of interventions including weekly microbiology team ward rounds, periodic departmental education sessions and development of a check-list as part of the ward-round proforma.

Overall we observed a positive trend with each intervention and we found that incorporating the checklist on our ward-round proforma was most significant in consistently ensuring compliance above 80%.

This project shows that a multi-pronged approach is required to improve antibiotic prescribing practices.

REFERENCES

1. Brauer et al. 2016. Prevalence of antibiotic use: a comparison across various European health care data sources. *Pharmacoepidemiology and Drug Safety*. Suppl 1: 11-20
2. Safdar N, Maki DG. The commonality of risk factors for nosocomial colonization and infection with antimicrobial-resistant Staphylococcus aureus, enterococcus, gram-negative bacilli, Clostridium difficile, and Candida. *Ann Intern Med* 2002; 136:834–44.

POSTER 2

TWO CASES OF DERMATOMYOSITIS WITH A VARIABLE CLINICAL COURSE

S McDonald, JA Henderson, R Friel, W Yau and P Gardiner. Department of Rheumatology, Western Health and Social Care trust, L'Derry, UK

Dermatomyositis and Polymyositis are an infrequent presentation with an incidence of two per 100,000 annually in the general population[1]. Our two simultaneous cases serve to highlight the heterogeneity of the disease in terms of aetiology and clinical course.

Case 1.

A 73 year old female was transferred from the Cayman Islands with a three week history of profound muscle weakness, impaired swallow and a rash. Creatinine Kinase levels were above 20,000. An MRI and muscle biopsy was consistent with an inflammatory myopathy. An extended myositis panel showed Mi2 antibody positivity. She had already been treated with intravenous methylprednisolone and commenced on 60mg prednisolone. She had persistent core and bulbar weakness, along with elevated creatinine kinase levels. She was treated with Rituximab. Ten days post treatment she developed clinical heart failure and chest sepsis. An Echocardiogram was unremarkable but her BNP was 3749. She was admitted to ICU requiring ventilator support.

Case 2.

A 78 year old man was admitted with a three week history of proximal muscle weakness and a rash. Creatinine Kinase levels were 2316. An MRI and muscle biopsy was consistent with an inflammatory myopathy. He developed type one respiratory failure and was commenced on optiflow. He received intravenous methylprednisolone and subsequently oral prednisolone 60mg. His respiratory function, rash and muscle weakness all normalised. A CTCAP showed a right upper lobe lung carcinoma. Further treatment is planned post bronchoscopy and histology. He was discharged on a reduced dose of prednisolone at 40mg until review.

REFERENCE

1. Jacobson. (1997). Epidemiology and estimated population burden of selected autoimmune diseases in the United States. Clinical immunology. 84 (3), 223-243

POSTER 3

EPIDEMIOLOGICAL STUDIES OF IDIOPATHIC INTRACRANIAL HYPERTENSION AND NATIONAL OBESITY PREVALENCE

Gavin McCluskey MRCP, Mark O. McCarron MA, MD, FRCP

Depts of Neurology, Royal Victoria Hospital, Belfast and Altnagelvin Hospital, Derry

Background: Idiopathic intracranial hypertension (IIH) is positively associated with obesity, mostly in young women. The global increase in obesity may influence the burden of IIH.

Methods: Using PubMed, Embase, Medline and Web of Science databases a meta-analysis and systematic review of epidemiological studies of IIH was performed up to June 2017. Temporal changes in IIH incidence were measured and

incidence rates of IIH were correlated with country-specific WHO obesity rates. Prevalence data and shunting rates of IIH were recorded. The quality of epidemiological studies was assessed using the STandards of Reporting Of Neurological Disorders (STROND) criteria.

Results: In 15 identified studies there were 889 patients (87% women), mean age 29.8 years. The incidence of IIH ranged from 0.03 to 2.36 per 100,000 per year. Pooled incidence of IIH was 1.20 per 100,000/year although there was very high heterogeneity (I^2 98%). The incidence rates of IIH were correlated with country-specific prevalence of obesity (Spearman's correlation 0.82, $p < 0.01$). Prevalence of IIH was rarely recorded. A shunting procedure was reported in 8% of patients. STROND criteria were variably reported, median of 26.5 of 43 (range 16 to 33).

Conclusions: IIH is a public health concern as increased obesity prevalence is associated with increased incidence of IIH. Better quality of epidemiological studies is required to improve understanding of IIH and inform health policy for IIH management and prevention.