

Abstracts

Ulster Society Of Internal Medicine,
90th Autumn Meeting,
Friday 18th October 2013

Belfast City Hospital



PROGRAMME:

- 2.00 pm **Treatment adherence and health outcomes in patients with bronchiectasis infected with *Pseudomonas aeruginosa*: a one-year prospective study.** AR McCullough, CM Hughes, MM Tunney, JS Elborn, AL Quittner, JM Bradley. Queens University Belfast, University of Miami, University of Ulster.
- 2.15 pm **Cardiac arrest outcomes after therapeutic hypothermia: experience in a district general hospital with no interventional cardiology services.** Ryan Boyle, Linda-Jayne Mottram, Lynn Cromie, Intensive Care Unit, Ulster Hospital, Dundonald, Belfast, UK.
- 2.30 pm **In Hot Water! A near fatal case of ‘Hot Tub Lung’.** C King¹, N Chapman¹, RMcConville², CMcAllister³ & RPConvery¹ Dept of Respiratory Medicine, Radiology & Intensive Care, Craigavon Hospital.
- 2.45 pm **Guest Lecture: “Heart Failure: Pumps and Pacers.” Dr Eng Wooi Chew, Consultant Cardiologist, Belfast HSC Trust.**
- 3.15 pm Afternoon Tea and Poster Viewing
- Poster 1 **Diabetic Ketoacidosis Audit.**
E Wright; N Harrison; GM Magee, Daisy Hill Hospital, Newry
- Poster 2 **Findings of a regional neurology referrals audit.**
C M Doherty, S Hughes, J Craig. Department of Neurology, Royal Victoria Hospital, Belfast.
- 3.40 pm **Grand Rounds: Cases from Belfast City Hospital**
Facilitator: Dr Nicholas Magee, Consultant Respiratory Physician, Belfast HSC Trust.
- 4.10 pm **No association between vitamin D and insulin resistance in healthy overweight people**

at high risk of cardiovascular disease. IR Wallace, CT McEvoy, LL Hamill, CN Ennis, PM Bell, SJ Hunter, JV Woodside, IS Young, MC McKinley. Royal Victoria Hospital, Belfast and Nutrition and Metabolism Group, Centre for Public Health, QUB.

4.25 pm **Audit of the Belfast Trust outpatient parenteral antibiotic therapy service, 2012.**

W Beynon, SA Hedderwick, Department of Infectious Disease, Royal Victoria Hospital, Belfast.

4.40 pm Presentation of prize for the best abstract

4.45 pm **Guest Lecture: “Sepsis for the General Physician.” Dr Sara Hedderwick, Consultant in Infectious Diseases, Belfast HSC Trust.**

2PM Oral

TREATMENT ADHERENCE AND HEALTH OUTCOMES IN PATIENTS WITH BRONCHIECTASIS INFECTED WITH *PSEUDOMONAS AERUGINOSA*: A ONE-YEAR PROSPECTIVE STUDY.

AR McCullough¹, CM Hughes¹, MM Tunney¹, JS Elborn², AL Quittner³, JM Bradley⁴.

¹Clinical & Practice Research Group, School of Pharmacy, Queen’s University Belfast, UK. ²Centre for Infection and Immunity, School of Medicine, Dentistry and Biomedical Sciences, Queen’s University Belfast, UK. ³Department of Psychology, University of Miami, Coral Gables, Florida, USA. ⁴Centre for Health and Rehabilitation Technologies (CHaRT), Institute of Nursing and Health Research, University of Ulster at Jordanstown, UK.

Little is known about treatment adherence in bronchiectasis. The aim of this study was to determine the association between treatment adherence (inhaled antibiotics, other respiratory medicines, airway clearance [ACT]) and health outcomes.

Seventy-five patients (mean age 64yrs, 24M/51F, FEV₁ 61% predicted) with confirmed bronchiectasis prescribed inhaled

antibiotics for *Pseudomonas aeruginosa* infection for ≥ 6 weeks were recruited. Adherence to inhaled antibiotics and other respiratory medicines was categorised as collecting $\geq 80\%$ of prescribed medication (based on prescription refill data collected 6 monthly). Adherence to ACT was defined as scoring $\geq 80\%$ on the modified Self-reported Medication-taking Scale (collected quarterly). Quality of Life Questionnaire–Bronchiectasis (QOL-B) and spirometry were completed (6 monthly). T-tests were used for between-group analyses and backward linear regressions were used for associations between adherence and health outcomes.

Thirty-five out of 66 (53%) and 39/73 (53%) participants were adherent to inhaled antibiotics and other respiratory medicines, respectively. Adherence was lowest for airway clearance, with 31 (41%) participants adherent to this treatment. Adherence to inhaled antibiotics was associated with having fewer pulmonary exacerbations ($B=-0.33$, $R^2=11\%$, $p=0.01$; adherers 2.6 vs non-adherers 4.0, $p=0.00$). Being adherent to other respiratory medicines was associated with worse QOL-B Physical Functioning, Role Functioning and Treatment Burden scores. Being adherent to ACT was associated with better QOL-B Physical Functioning ($B=0.22$, $R^2=5\%$, $p=0.05$).

Treatment adherence had an impact on important health outcomes, including pulmonary exacerbations and quality of life. Strategies should be developed to improve adherence to treatment in this population, with the aim of reducing pulmonary exacerbations.

CARDIAC ARREST OUTCOMES AFTER THERAPEUTIC HYPOTHERMIA: EXPERIENCE IN A DISTRICT GENERAL HOSPITAL WITH NO INTERVENTIONAL CARDIOLOGY SERVICES

Ryan Boyle, Linda-Jayne Mottram, Lynn Cromie, Intensive Care Unit, Ulster Hospital, Dundonald, Belfast, UK.

Introduction: Induction of therapeutic hypothermia in the cardiac arrest patient is now routine in most critical care facilities as part of an evidence based approach to improved survival and neurological outcomes. However, outcomes of cardiac arrest patients of mixed aetiology who are deemed not suitable for cardiac intervention are poorly defined and we sought to examine the use of therapeutic hypothermia in this group.

Methods: Using our electronic record system we retrospectively identified all cardiac arrest related admissions to our intensive care unit over a two year period from December 2010 to December 2012. Inclusion criteria were a diagnosis of in- or out-of-hospital cardiac arrest regardless of initial rhythm. Exclusion criteria were those patients without a complete data set and those who were transferred to another unit for ongoing treatment. Where necessary, data was verified from electronic discharge letters or notification of death documentation. Where stated, mortality is at time of discharge from hospital.

Results: 76 patients were identified, 4 of whom were excluded due to transfer to another unit and 1 for missing data. Of the remaining 71 patients included in the analysis, 30 were female and 41 male with a mean age of 64 (SD 16.4).

Sex	Male 57.7% (n=41)	Female 42.2% (n=30)
Initial rhythm	VF/VT 32.1 % (n=18)	Non-VF 67.9% (n=38)
Location prior to ICU	Out of hospital 60% (n=42)	In hospital 40% (n=29)
Outcome	Survivors 32.3% (n=23)	Non-survivors 67.6% (n=48)

Sixty of the 71 patients were treated with therapeutic hypothermia, all of whom had an external warming device applied. Where the initial rhythm was documented (n=48), the more common indication in our unit for therapeutic hypothermia was Non-VT/VF (66.6% v 33.3%). Overall survival for non-VT/VF treated with therapeutic hypothermia was 18.7%. In our cohort of patients there were no survivors for out of hospital (OOH) non-VF/VT arrest.

Conclusion: The role of therapeutic hypothermia in non-VT/VF cardiac arrest continues to be debated. The commonest indication for therapeutic hypothermia in our Unit was non-VT/VF but survival for this rhythm when occurring OOH was zero in this cohort. Larger studies are needed to verify the exact circumstances in which therapeutic hypothermia is clearly NOT beneficial. As the use of this treatment modality increases, we advise caution in applying it broader indications.

IN HOT WATER! A NEAR FATAL CASE OF 'HOT TUB LUNG'.

C King¹, N Chapman¹, RMcConville², CMcAllister³ & RPConvery¹

Dept of Respiratory Medicine, Radiology & Intensive Care, Craigavon Hospital.

Co Armagh BT63 5QQ

A non-smoking 38yr old marathon runner was admitted with rapidly progressive pulmonary infiltrates. He had a short history of dry cough, fever & progressive dyspnoea. Quickly deteriorating, he was ventilated & treated with broad spectrum antibiotics. Oxygen & inotrope requirements increased with radiographic & CT evidence of widespread alveolitis & nodule formation. Bronchoscopic samples and biopsies ruled out standard bacteriological & viral agents. There was no evidence of vasculitis or sarcoid. A poor outlook was anticipated

High dose steroids (500mg methylprednisolone for 3 days) reduced FiO_2 from 0.8 to 0.3 & allowed successful weaning over a 9 day period. Detailed questioning of the patient & spouse revealed installation of an indoor hot tub 2months prior with inadequate cleaning routines. The patient confirmed daily use for several hours during the summer heatwave.

4.5litres of the water were analysed by the BCH Environmental Health Lab with evidence of high counts of Pseudomonas, E.Coli, B. Cereus & Penicillium Moulds. Non-Tuberculous Mycobacteria are usually the underlying organisms but the high bacterial load would suggest a mixed pattern with subsequent Hypersensitivity Pneumonitis. Heat, aerosolisation & poor use of peroxide/chlorine mixtures all predicate to this condition in apparent immunocompetent patients.

NO ASSOCIATION BETWEEN VITAMIN D AND INSULIN RESISTANCE IN HEALTHY OVERWEIGHT PEOPLE AT HIGH RISK OF CARDIOVASCULAR DISEASE.

IR Wallace^{1,2}, CT McEvoy², LL Hamill², CN Ennis^{1,2}, PM Bell¹, SJ Hunter¹, JV Woodside², IS Young², MC McKinley².

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Observational studies suggest reduced vitamin D levels are associated with an increased incidence of type 2 diabetes mellitus (DM). We examined the relationship with insulin resistance (assessed using a two-step euglycaemic hyperinsulinaemic clamp technique) in 92 overweight, non-diabetic individuals with no history of cardiovascular disease - mean age 56 years (range 40 -77 years), 64% males, 36% females, body mass index 30.9 kg/m² (range 26.4 – 36.9 kg/m²), fasting plasma glucose 5.8 mmol/L (range 4.9 – 7.0 mmol/L).

Vitamin D was measured using an ultra performance liquid chromatography technique (UPLC) with tandem mass spectrometry. Statistical analysis was performed using Pearson's correlation coefficients and partial correlation.

Mean total vitamin D concentration was 32.2 nmol/L. Thirty-three per-cent were deficient (< 25 nmol/L), 47% insufficient (26-50 nmol/L), 20% adequate (> 50 nmol/L) in vitamin D. Pearson's correlation coefficients for vitamin D and GIR step 1 were -0.003 (p=0.98), GIR step 2 -0.036 (p=0.73) and HOMA-IR -0.163 (p=0.13). Partial correlation analysis did not elicit any significant correlations after correction for potential anthropometric, seasonal or gender confounders. Further subgroup analysis of deficient, pre-diabetes and impaired glucose tolerance subgroups did not detect any significant correlations.

Using gold standard techniques we did not detect any association between vitamin D and measures of whole-body, peripheral or hepatic insulin resistance in healthy overweight individuals at high risk of cardiovascular disease. We suggest that if vitamin D is associated with a reduced risk of DM, this may be due to effects on the beta-cell rather than on insulin resistance.

AUDIT OF THE BELFAST TRUST OUTPATIENT PARENTERAL ANTIBIOTIC THERAPY SERVICE, 2012.

W Beynon, SA Hedderwick, Department of Infectious Disease, Royal Victoria Hospital, Belfast.

Since 2009, Belfast Trust patients, well enough to be at home but requiring intravenous antibiotics, have been enrolled into the outpatient parenteral antibiotic therapy (OPAT) service. The team comprises an infectious disease doctor, clinical in-reach nurse (CNIR) and pharmacist. OPAT can be delivered locally to all Northern Ireland addresses.

The OPAT service during 2012 was audited. Data was collected retrospectively from hand-written records contemporaneously kept by CNIR during 2012, and compiled into an electronic database. Demographic data, referring service, clinical diagnosis and complications were gathered and analysed using Microsoft Excel.

Overall, 7174 bed days (19.75 bed days/day), were saved across four sites and 22 specialties in 2012. 776 referrals resulted in 588 patients accepted to the OPAT service (75.6%). Reasons for refusal included: no need for intravenous antibiotics (71), medically unfit for discharge (43), no capacity available (19) and patient preference (5). Of those accepted for OPAT, 92.3% completed OPAT as planned. 45 patients (7.7%) experienced a significant complication. These included adverse drug reaction, line related complication and failure of treatment (15, 4, 26, respectively). 60% of savings were made across just 5 acute specialties.

Comparison of the OPAT service from 2010 is shown:

	Referrals for OPAT	Patients accepted	Total bed days	Bed days saved/day
2010	335	309	3521	9.64
2011	367	313	2575	8.2
2012	776	588	7174	19.65

OPAT is both safe and cost effective and increasing numbers of patients are benefiting over time.

DIABETIC KETOACIDOSIS AUDIT.

E Wright; N Harrison; GM Magee,

Daisy Hill Hospital, Newry

AIM

Diabetic Ketoacidosis (DKA) is defined by the biochemical triad of ketonaemia, hyperglycaemia and acidaemia. This audit assessed the management of adults with DKA using the current protocol in Daisy Hill Hospital.

METHODS

DKA episodes were identified using the 'Filemaker' administration system between 1/11/2010 to 1/11/2011. Twenty-seven DKA's were identified (23 patients). Primary

outcomes assessed included whether the diagnostic criteria was met, early fluid and electrolyte management, subsequent monitoring of electrolytes, insulin prescription and length of stay.

RESULTS

Fifteen patients (56%) met the diagnostic criteria for DKA. 92% had fluid prescribed as per protocol in the first hour and this fell to 48% in subsequent hours. Potassium replacement followed protocol in 52% and dextrose was used appropriately in 48%. Long acting basal insulin was continued in 81% and electrolytes rechecked in 70%. The median length of stay was 4 days.

CONCLUSION

Almost half of patients treated for DKA didn't meet the diagnostic criteria and many deviations from the current treatment protocol were identified. Following this, all DKA patients are now nursed in the same area. Staff have received further training on DKA management and with the introduction of a Northern Ireland adult DKA protocol, we aim to re-audit and demonstrate improvements

FINDINGS OF A REGIONAL NEUROLOGY REFERRALS AUDIT.

C M Doherty, S Hughes, J Craig. Department of Neurology, Royal Victoria Hospital, Belfast.

Current neurology services in Northern Ireland follow a hub and spoke model. Consultants in the regional centre and district general hospitals provide inpatient and outpatient services.

A twenty-four hour on-call service is provided to healthcare professionals by the neurology registrar on call. The Royal Victoria hospital liaison service and local out of hours thrombolysis services are also provided. Increasing pressures on outpatient services in all specialties are reflected in an increased requirement for unscheduled or emergent care, recognised in the ABN document "Local Adult Neurology Services for the next decade." Currently data regarding the use of the unscheduled service are non-existent, yet this area represents an evolving part of the workload.

Six neurology registrars gave information about referrals received over a seventeen day period. A total of 206 consultations we made regarding 157 patients. 15 of these were thrombolysis referrals. There were 32 patients with headache, 5 of whom were pregnant. The commonest consultation was regarding seizures or blackouts (n=40); 22 had known epilepsy. During working hours there were 29 referrals from district general hospitals, 9 of which came from

hospitals with resident neurology services.

We present information and analysis regarding the timing, origin and nature of these referrals, which will inform future service planning and provision. The commonest consultations were regarding headache and seizure investigation or management, acute resources may need to be focused on these areas

ACCURACY OF ENDOSCOPIC ULTRASOUND IN PREDICTING EARLY OESOPHAGEAL NEOPLASMS.

Judith Storm, *Shatrughan Sah, *Damian McManus, Michael Mitchell, Inder Mainie Pathology Department, Belfast City Hospital. Belfast. Gastroenterology Department, Belfast City Hospital. Belfast.

Background: Adenocarcinoma of the oesophagus has the fastest rising prevalence of any malignancy in the Western world. The majority arise from specialized intestinal metaplasia in the oesophagus, Barrett's oesophagus. Endoscopic ultrasound (EUS) accurately demonstrates the layers of the oesophageal wall, and is believed to be accurate for local T-staging of malignant oesophageal disease. With the introduction of conservative therapies including radiofrequency ablation, photodynamic therapy and endoscopic mucosal resection for Barrett's oesophagus, accurate staging has become increasingly important.

Aim: To determine whether endoscopic ultrasound is accurate for T staging of high grade dysplasia /early neoplasia compared with pathology specimens obtained using endoscopic mucosal resection or surgery.

Methods: Retrospective review of patients evaluated by EUS for assessment of early oesophageal dysplasia, between December 2008 and June 2012 in the Belfast City Hospital.

Analysis: Findings are compared with subsequent surgical pathology, or endoscopy and biopsy follow up.

Results: This study included 38 patients (30 men) with a median age of 66. 1 patient was omitted due to an incorrect scope being used during EUS. EUS accurately predicted T status in 34 of 37 patients (92%). 2 patients thought to have submucosal carcinoma during EUS proved to have mucosal carcinoma on EMR specimens. 3 patients thought to have mucosal carcinoma during EUS were found to have submucosal carcinoma on EMR specimens.

Conclusions: Endoscopic ultrasound was accurate in the staging of T1 oesophageal lesions. EUS should be increasingly used in the assessment of early oesophageal neoplasms.