Abstracts

The Ulster Society of Internal Medicine: 82nd -84th meetings, 2009-2010

82nd Ulster Society of Internal Medicine meeting: Friday 20th Nov 2009 at 2pm

ULSTER HOSPITAL

Combination therapy in essential hypertension: effects on insulin action of adding low dose thiazide to ACE inhibitor

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**Background:** Concern exists regarding metabolic effects of antihypertensive agents. Often more than one agent is required to meet blood pressure targets. Angiotensin converting enzyme (ACE) inhibitors, which are at least neutral in effect on insulin action, are recommended first line for many patients. We have previously shown that addition of low dose bendroflumethiazide to captopril has detrimental effects on insulin action compared with captopril alone in hypertensive type 2 diabetic patients. Our aim was to establish whether similar effects using this combination occur in non-diabetic hypertensive patients.

**Methods:** A randomised double blind placebo control crossover study was used. Following six weeks run-in, when regular antihypertensive medications were withdrawn and placebo substituted, patients received captopril 50mg twice daily with either bendroflumethiazide 1.25mg (CB) or placebo (CP) for twelve weeks. There was a six week washout between treatment periods. Insulin action was assessed by hyperinsulinaemic euglycaemic clamp following six week run-in and at the end of each treatment period.

**Results:** There were no differences between treatments in fasting glucose or insulin concentrations. Glucose infusion rates required to maintain euglycaemia were similar between treatments (CP 22.1±2.2 vs CB 22.2±2.2 µmol/kg/min). There was no difference in endogenous glucose production in the basal state (CP 8.9±0.5 vs CB 9.5±0.7 µmol/kg/min; p=0.23) or during hyperinsulinaemia (CP 2.2±0.6 vs CB 1.5±0.3 µmol/kg/min; p=0.30).

**Conclusions:** In contrast to the situation in type 2 diabetes, ACE inhibitor combined with low dose thiazide diuretic does not adversely effect insulin action when compared with ACE inhibitor alone in non-diabetic hypertensive patients.

Variation in left atrial anatomy in a Northern Irish population: a 64 multi-detector CT study.

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Pulmonary veins (PVs) are an important source of ectopic activity provoking atrial fibrillation (AF). This can be treated by PV isolation (PVI) but knowledge of the number and location of PVs is required for optimal outcome and treating complications. Access to the left atrium (LA) for PVI is facilitated by a “probe patent” foramen ovale (FO).

We studied PV and FO anatomy in 131 patients in sinus rhythm attending for 64 multi-detector coronary CT (64 MDCT) angiography. PV anatomy was graded according to a standard classification (1). FO was assumed to be “probe patent” if there was: 1. a septal aneurysm, 2. separate septal layers or 3. spillage of LA contrast into the right atrium.

55% of the study population were male (mean 56, range 21-81 years) and 45% female (mean 57, range 32-81 years). Overall; 2% had 2 PVs, 16% had 3, 70% had 4 and 12% had 5. PV anatomy associated with high risk of developing AF was seen in 13% (R3a, R4a, R4b, R5 classification). On the left; 20% had 1 and 80% 2 PVs. On the right; 5% had 1, 78% had 2 and 17% had 3 PVs.

“Probe patent” FO was seen in 28%; 7% with aneurysm, 13% with separate layers and 8% with contrast spillage.

PVs show significant anatomical variation in Northern Ireland. The excellent spatial resolution of 64 MDCT (0.625mm) facilitates detection of “probe patent” FO. 64 MDCT can provide useful anatomical information to the electrophysiologist performing PVI.

Marom EM, Herrndon JE, Kim YH and McAdams HP. Variations in pulmonary venous drainage to the left atrium: implications for radiofrequency ablation. Radiology 2004: 230; 824 -829.

Case report of Myo- and Hepatotoxicity following ingestion of an alternative remedy

AE Donaghy, RFR McCrory, S Walker, RP Convery.

General Internal Medicine, Craigavon Hospital, SHSCT.
We report a case of a 26 year old lady who presented with thigh swelling, proximal myopathy and myoglobinuria following ingestion of a herbal remedy prescribed by an alternative medicine practitioner for weight loss. The remedy contained multiple constituents including Agaricus and Kava mushroom extracts.

The serum creatine kinase was 148,000 IU/L with elevated transaminases [AST 2427 U/L; ALT 670 U/L]. She was treated with aggressive fluid hydration. Following cessation of the remedy, serial monitoring demonstrated a prompt decline in the figures quoted above, consistent with the circulating half life of these bio-markers.

There have been no reported cases of concomitant hepatotoxicity and rhabdomyolysis in humans as a consequence of ingestion of alternative therapies containing Agaricus and Kava extracts. Case series have highlighted isolated hepatotoxicity with Kava in humans. Reports stipulate potential myotoxic effects of Agaricus extract in animal studies only. To our knowledge there have been no publicised effects in humans, however other mushroom species have been implicated.

This case demonstrates the potential serious side-effects that may accompany alternative remedies particularly in the absence of regulation for these products.

1. Nieminen P, Kärjä V, Mustonen AM. Myo- and hepatotoxic effects of cultivated mushrooms in mice. Food Chem Toxicol. 2009 Jan;47(1):70-4. Epub 2008 Oct 14
An unusual cause of haemobilia: pancreatic neuroendocrine tumour
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2 Department of Hepato-biliary Surgery, Mater Hospital, Belfast

Haemobilia is a rare cause of upper gastrointestinal haemorrhage which can be difficult to diagnose, source and treat. We present the case of an 81 year old man who presented with epigastric pain, haematemeses, weight loss, pyrexia and obstructive liver blood tests. Abdominal ultrasound identified common bile duct (CBD) dilatation. This was confirmed on MRCP which also raised the possibility of a mass lesion in the distal CBD. The patient subsequently developed melaena associated with a drop in haemoglobin. ERCP identified significant haemobilia associated with a suspected malignant stricture of the lower CBD and a biliary stent was inserted to decompress the biliary system. Mesenteric angiography failed to demonstrate the source of bleeding. Following CT staging, a pancreatic mass was successfully resected by Whipple’s procedure. Pathology demonstrated a neuroendocrine tumour of the pancreas as the cause of symptoms.

We offer a review of the available literature and discuss the difficulties in diagnosing and managing non-iatrogenic haemobilia. We suggest that when associated with symptoms of pancreatitis or cholangitis, hepatobiliary malignancy should be considered early in the absence of other clearly identified pathology.

A difficult pregnancy: Arthritis, TNF inhibitors, and infection
TU Wazir and AP Cairns.

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We present the case of a 35 year old woman with severe juvenile idiopathic arthritis and primary infertility. She had required left hip and knee replacements. She achieved disease remission with the soluble TNF receptor Etanercept along with Methotrexate.

She discontinued all drugs including contraception in an attempt to conceive, but was unsuccessful after three years and recommended treatment. She presented 8 weeks pregnant on Methotrexate 7.5 mg weekly and Etanercept 50mg weekly, which were immediately stopped. At 11 weeks she presented with right hip and knee pain. Ultrasound confirmed effusions of hip and knee, both of which were aspirated and injected with steroid with resolution of symptoms. Culture of hip fluid was positive for MRSA. The hip effusion resolved, swabs from other sites were negative, and she remained well. Antibiotics were not given.

At 27 weeks she presented with a flare of arthritis, Ultrasound confirmed effusions of the right hip and both ankles. These were aspirated and injected with steroid with good effect. All cultures were negative. She was commenced on Prednisolone 10mg/day. She remained well and delivered a healthy baby by elective caesarean section at term. She recommenced Etanercept and Methotrexate 1 month after delivery with further contraceptive advice.

This case highlights a number of issues including the use of potentially teratogenic drugs in women of childbearing age, the role of TNF inhibitors in the management of infertility, TNF inhibitors and infection, the use of clinic based musculoskeletal ultrasound, and the interpretation and management of unexpected laboratory results.

83rd Ulster Society of Internal Medicine meeting:
Friday 14th May at 2pm

MID-ULSTER HOSPITAL

Moss Killer’s Lung – A vitriolic reaction to a common and garden task
G Lewis and RP Convery

Department of Respiratory Medicine, Craigavon Area Hospital

A 50 year old male lorry driver with an unremarkable past medical history was admitted with a week long history of cough, wheeze and green sputum. He was an ex-smoker and had had no improvement with antibiotics and steroids in the community. CXR demonstrated no acute changes and he had never had these symptoms previously. On admission, he was in severe respiratory distress and required invasive ventilation in the ICU where he remained for a total of nineteen days, with very high airway pressures and copious secretions complicating weaning. Haematobiochemical, autoimmune, vasculitic, viral, atypical pathogen and allergen screening revealed no cause for his respiratory distress. His partner mentioned he had sprayed, without a facemask, a lawn treatment solution containing the active ingredient ferrous sulphate heptahydrate the day before his initial symptoms and then, when raking the lawn a week later, developed florid wheeze.

Ferrous sulphate heptahydrate, or green vitriol, is a compound known from antiquity and functions as a reducing agent in some moss killers. Precautions in avoiding inhalation and skin contact are advised on product packaging. While there are no published reports of inhalational toxicity, individuals who aspirate ferrous sulphate tablets develop cough, wheeze with necrosis and granuloma formation demonstrated on bronchoscopy. Production of cytotoxic free radicals likely underlies the observed lung damage.

The case report highlights the need to take a detailed environmental history in those presenting with acute respiratory distress as, in this case, use of a common garden product induced an unusually severe

© The Ulster Medical Society, 2011. www.ums.ac.uk
1. Kim ST, Kaisar OM, Clarke BE et al. ‘Iron lung’: Distinctive bronchoscopic features of acute iron tablet aspiration. *Respirology* 2003;8:541-543.

2. Lamaze R, Tréchot P, Martinet Y. Bronchial necrosis and granuloma formation induced by the aspiration of a tablet of ferrous sulphate. *Eur Respir J* 1994;7:1710-1711.

**Comparison of efficacy of tenecteplase and reteplase in ST elevation myocardial infarction**

SL McQuillan, CH Adgey

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Abstract

Throughout the Northern Trust, two different thrombolytic agents, either reteplase or tenecteplase, are used as part of the treatment of acute ST elevation myocardial infarction. Having found no other comparative studies, this retrospective study was designed to compare the efficacy of the two drugs using rate of follow-up on emergency angioplasty as the primary outcome. The study retrospectively recruited 40 patients who had received reteplase and 40 who had received tenecteplase. Of the patients who received reteplase, 5 required emergency angiography. Of those who received tenecteplase, 15 required further intervention. This was a significant difference with a ratio of 37:5:12.5% (p=0.01; significance was assumed to be p<0.05). Both groups contained 32 men and 8 women. There was no significant difference in the age distribution of the two groups (p=0.678). The secondary outcome was frequency of significant haemorrhage following administration of the two drugs. There was no significant difference found between the two groups (p=0.09). A further secondary outcome was 30 day mortality rate. There was one mortality, which had occurred in the tenecteplase group. To conclude, the study found that there is a significant difference between reteplase and tenecteplase, when considering the frequency with which further intervention is subsequently required for each of the two drugs. Patients in the study who received tenecteplase were more likely to require further emergency management than those who received reteplase.

**Investigation of subtle changes in haemoglobin may allow earlier detection of colorectal cancer.**

I Carl, S Bhat, A Lakhanpal, P Lynch, A Varghese

Department of medicine, Causeway Hospital, Coleraine, Co. Londonderry

Introduction: Colorectal carcinoma (CRC) may present as iron deficiency anaemia (IDA). Guidelines advocate gastrointestinal (GI) investigation in certain groups of patients with IDA in an attempt to detect CRC early. Some patients may initially have an insidious drop in haemoglobin (Hb) within the normal range. GI investigations at this point may allow earlier CRC detection and improve survival.

Aims: To assess if patients diagnosed with CRC had evidence of iron deficiency and/or a >10% drop in Hb without anaemia at least 12 months prior to diagnosis.

Method: 219 patients with CRC were selected retrospectively from histopathological records between Jan 2003 & Dec 2007. Laboratory data was then collected on each patient.

Results: Median age of patients was 72 years (Range 31-94). 148 patients (68%) had laboratory evidence of anaemia prior to diagnosis of CRC. 36% were microcytic. Iron status was checked in 30 of the 53 (57%) with microcytic anaemia and 43 of the 95 (45%) with normocytic anaemia. Median delay between detection of anaemia & diagnosis was 89 days. 28% of non-anemic patients had a greater than 10% drop in haemoglobin in the 12 months prior to diagnosis.

Conclusion: The median time from detection of anaemia to diagnosis of CRC was nearly three months. Investigation of iron status was poorly performed in patients with anaemia. A quarter of patients with CRC had a >10% drop in haemoglobin without anaemia prior to diagnosis. Improving investigation of iron deficiency and of subtle drops in haemoglobin may allow earlier detection of CRC.

**Long Term Outcome of Percutaneous Coronary Intervention in Octogenarians 2007-2009**

Scott PJ, Smith B, Manoharan G, Johnson PW

Regional Medical Cardiology Centre, Royal Victoria Hospital

Objective: To determine the clinical risks and procedural outcomes for elderly (age > 80 years) patients undergoing Percutaneous Coronary Intervention (PCI) and compare results with previous analysis in a similar population.

Method: A retrospective analysis on all patients greater than 80 years, undergoing PCI at a single tertiary referral centre, between 2007 and 2009. Patient demographics, procedural details and in-hospital complications were obtained from patient notes. 30-day, 6 month and 1 year mortality were obtained from analysis of the death registry. Results were compared with a similar study performed previously from 2003-2005 at the same centre.

Results: A total of 118 procedures were carried out in 106 patients over the two year study period, 2007-2009. This compares with 55 procedures performed over a similar time period 2003-2005. Mean age was 82.5 years, with 35% female cases. Mean TIMI risk score for Acute Coronary Syndromes was 5, overall mean logistic Euroscore was 16.75% (additive score 8.8) and BCpCI (British Colombia Percutaneous Coronary Intervention 30 day mortality) mean score was 7.44%. Actual 30-day, 6 month and 1 year mortality was 2.75%, 7.3% and 10.1% respectively. Cardiac related mortality (as per cause of death on death registry) was 2.75% at 30 days, 4.6% at 6 months and 4.6% at one year. This compares with 21.2% (18.2% cardiovascular) 1 year mortality in the 2003-2005 cohort. The use of radial access for procedure increased from 9.8% in 2007 to 37% in 2008.

Conclusion: The number of elderly patients undergoing PCI is increasing at our centre. The patient group is high risk as per TIMI, Euroscore and BCpCI risk calculators. Despite this, overall outcomes appear better than expected and superior to the previous 2003-2005 cohort.

1. SJ Walsh, K McAuley, PW Johnston. Percutaneous Coronary Intervention in the Elderly. *Ulster Med J* 2007; 76 (1) 18-21

**Comparison of radiation dose in femoral and radial arterial access coronary procedures; the effect of operator experience**

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Radial access (RA) coronary procedures are associated with fewer access site complications compared with femoral access (FA). There is controversy regarding greater radiation exposure to both patient and operator using RA. We compared radiation dose during coronary procedures for both access routes and assess the effect of RA experience on radiation dose.

Fluoroscopy time (FT), and Dose Area Product (DAP) were recorded for all RA and FA procedures during 3 phases; default FA, transition phase (FA and early RA) and default RA.
49 patients were studied. Six had echoes. Mean \( \text{la} \) \( V \) was
contemporaneous echocardiographic parameters of DD were noted
between \( \text{la} \) \( V \) and: age (\( n = 49 \), \( r = 0.39, * \)), \( \text{IVM} \) (\( n = 49 \), \( r = 0.76, ** \)), \( \text{IVM index} \) (\( n = 49 \), \( r =
0.71, ** \)), e/a ratio (\( n = 6 \), \( r = 0.87, * \)).

For diastolic dysfunction.

Cardiac CT measurement of left atrial volume is a useful indicator of
diastolic dysfunction.

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Department of Cardiology, Altnagelvin Hospital, Western HSC
Trust, Londonderry.

Cardiac CT is considered a static imaging technology unable to
measure flow or dynamic parameters. Echocardiographic
measurement of static left atrial volume (LAV) is however clinically
useful and correlates with markers of diastolic dysfunction (DD). An
increased LAV index is associated with risk of acute vascular events.

We prospectively measured LAV and LAV index using a validated
technique [1] in consecutive patients attending for routine coronary
CT angiography. Age and gender were recorded along with
dimensions for calculation of left ventricular mass (LVM) and LVM
index. Measurements were taken at 75% of the ECG R-R interval.

Contemporaneous echocardiographic parameters of DD were noted
if available.

Forty-nine patients were studied. Six had echoes. Mean LAV was
greater in males (\( n = 28 \), 83 mls) than females (\( n = 21 \), 72 mls)
(\( p = \text{NS} \)). Mean LAV index was similar in both (40 mls). Statistically
significant correlations (* \( p < 0.05 \) and ** \( p < 0.001 \)) were seen
between LAV and: age (\( n = 49 \), \( r = -0.39, * \)), septal wall thickness
(\( n = 49 \), \( r = -0.68, ** \)), LVM (\( n = 49 \), \( r = -0.76, ** \)), LVM index (\( n = 49 \), \( r =-0.71, ** \)), E/A ratio (\( n = 6 \), \( r = 0.87, * \)).

Measurement of LAV during cardiac CT shows weak correlation
with age and fair to strong correlation with LVM mass parameters and
some echo parameters of DD. Recording LAV during routine cardiac
CT may identify patients with DD.

1. Mahabadi AA, Truong QA, Schlett CL et al. Axial area
and anteroposterior diameter as estimates of left atrial size
using computed tomography of the chest: comparison with
3-dimensional

An unusual case of hypertension and hypokalaemia

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Hospital, Portadown

A 51yr old man presented with a10 day history of profound weakness
and hypotonia and 4 days of diarrhoea. He had a past history of
hypertension treated with lisonopril and bisoprolol. He denied
alcohol excess. Initial investigations showed a serum potassium of
1.8 mmol/l. and a metabolic alkalosis with pH 7.6 and bicarbonate

50.3mmol/l.

Subsequent investigations confirmed urinary potassium loss
(300mmol/l for a prevailing serum potassium of 2.9mmol/l). Urinary
pH was 8.5. Renin was 0.3ng/ml/hr and aldosterone 98pmol/l (off
interfering medications). Gastrintestinal hormone levels showed
a raised gastrin consistent with proton pump inhibitor therapy. CT
adrenals was normal.

During follow up he remained well with a varying serum potassium
level (2.9–3.6mmol/l) off potassium supplementation. He denied use
of non-prescription medication or regular consumption of liquorice.
On discussion with his general practitioner it materialised that he
had an undisclosed history of kaolin monophosphate. At the time of
admission, he was consuming over 600mls daily.

Kaolin morphine can be purchased without prescription. It
contains kaolin 20g/100ml, sodium bicarbonate 5g/100ml,
morphine hydrochloride 9.2mg/100ml and liquorice extract
4.5g/100ml. Liquorice has a mineralocorticoid effect due to its
content of glycyrrhizinic acid. We believe that the combination of
liquorice extract and sodium bicarbonate resulted in the profound
hypokalaemia and hypertension in this patient. Two similar cases
have been reported of severe hypokalaemia associated with kaolin
morphine use, one of which was fatal. This case highlights the
importance of a careful medication history and the danger of
unmonitored use of kaolin and morphine.

84th Ulster Society of
Internal Medicine meeting:
Friday 15th Oct 2010, 2-5pm,
BELFAST CITY HOSPITAL

Phenotypic variability in a three-generation Northern Irish family
with Sotos Syndrome

Deirdre E Donnelly, Vivienne PM McConnell

Abstract

Sotos syndrome is a relatively common overgrowth disorder,
following autosomal dominant inheritance, caused by mutations and
deletions in the nuclear receptor Set domain containing protein-1,
NSD1 gene. Affected individuals generally have advanced bone age,
macrocephaly, characteristic facial gestalt and learning difficulties.
Other features include scoliosis, seizures, cardiac defects and
geritourinary anomalies. Tumours are a rare occurrence. Genotype-
phenotype correlations are unclear, though those with a deletion
appear to have more severe mental retardation. Full penetrance is
seen, although familial Sotos syndrome is extremely rare. The low
vertical transmission rate, which is not fully explained by cognitive
impairment, is of great importance, particularly for mildly affected
patients. Here we report a 3-generation pedigree with 7 affected
individuals shown to harbour the NSD1 missense mutation c.6115C>T.
To our knowledge this is the largest Sotos family to be
reported. The phenotype is extremely variable, thus highlighting the
clinical heterogeneity that may occur. Detailed study of individuals
with NSD1 gene abnormalities will be invaluable for further
clarification of the phenotype and may lead to NSD1 gene analysis
having prognostic value. Long-term follow up of these rare cases of
familial Sotos syndrome should make an important contribution to
the clarification of these uncertainties.

Key words – Sotos syndrome, three-generation, familial, phenotypic
variation

Potassium supplementation in patients with increased risk of cardiovascular disease

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3 Centre for Public Health, Queen’s University, Belfast

There is limited evidence of the effect of potassium (K+)- supplementation on endothelial function with three studies suggesting a beneficial effect in healthy volunteers and mild hypertensives. It is known however that potassium increases aldosterone levels due to a direct effect on the adrenal gland and there is evidence that aldosterone excess is detrimental to cardiovascular health. Studies on the effect of aldosterone on endothelial function have been conflicting. We aimed to determine the effect of K+ supplementation on: endothelial function 2. the RAAS and vascular inflammation.

K+ supplementation improved systolic blood pressure (p=0.013) but did not affect endothelial function or high sensitivity CRP (hsCRP). Plasma renin activity (p=0.048) and serum aldosterone (p=0.001) both increased significantly with K+ supplementation compared to placebo. Serum K+ increased with supplemental K+ vs placebo (4.1 vs 3.9mmol/l; p=0.012) but hyperkalaemia did not develop.

These data show that K+ supplementation lowered systolic blood pressure as reported previously. Interestingly K+ supplementation was associated with an increase in both renin and aldosterone suggesting that K+ may also stimulate the RAAS via the juxtaglomerular apparatus. Despite this K+ supplementation did not affect global PWA or hsCRP.

Mycobacterium tuberculosis infections diagnosed and treated in the

Royal Victoria Hospital, Belfast 2008-2010.

M Hunter, S Hedderwick, C Donnelly.

Department of Infectious Diseases, Royal Victoria Hospital, Belfast

Northern Ireland has the lowest TB incidence in the UK and Ireland. Traditionally pulmonary disease is the most common clinical manifestation, with a smaller proportion of extra-pulmonary cases. The purpose of this study is to review the current epidemiology and clinical presentation of TB cases to the infectious diseases service. The purpose of this study is to review the current epidemiology and clinical presentation of TB cases to the infectious diseases service.

Forty patients with ≥10% ten year cardiovascular risk were included in a randomised placebo controlled crossover study with 6 weeks of 64mmol KCl daily/6 weeks placebo and a 6 week washout period. Endothelial function was assessed using global pulse wave analysis (PWA) involving the detection of a change in augmentation index to salbutamol (endothelial dependent) and GTN (endothelial independent) induced vasodilatation.

When compared with historical data, extra-pulmonary TB and HIV co-infection are becoming increasingly common clinical features. International migration, drug resistant TB, the HIV epidemic, and ease of intercontinental travel mean that TB will undoubtedly remain a clinical and public health concern. Our study reiterates the importance of clinician awareness of TB in this region of low prevalence. The current epidemiology of TB in Northern Ireland suggests that this infection will continue to cause disease which will present to various clinical specialties.

1. Epidemiology of Tuberculosis in Northern Ireland. Annual surveillance report 2006. Health Protection Agency, London: 2006. http://www.cdseni.org.uk/publications/AnnualReports/pdf/TBReport2006.pdf (accessed 16th September 2010)
2. Bonmarin I. Surveillance of Tuberculosis in Northern Ireland from 1992-1998. Communicable Diseases Surveillance Centre, Belfast: 2002. http://www.cdseni.org.uk/publications/AnnualReports/pdf/TBReport1992-98.pdf (accessed 16th September 2010)

The effect of adolescent sugar intake on glucose metabolism in adulthood: a prospective longitudinal, observational study.

Lewis AS1, McCourt HJ2, Boreham CA3, Courtney CH1, McKinley MC4, Murray LJ5, Woodside JV2, Young IS2, Hunter SJ1.

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2 Nutrition and Metabolism Group, Queens University Belfast
3 School of Physiotherapy and Performance Science, University College Dublin
4 Centre for Public Health, Queens University Belfast

There is conflicting evidence concerning carbohydrate type, insulin resistance and the development of diabetes.

We examined the effect of sugar intake in early teenage years on glucose tolerance and insulin resistance in early adulthood.

A detailed dietary history was performed in subjects aged 12 – 15y between 1989-1990. At follow-up (1997-1999) 489 patients had an oral glucose tolerance test, from which HOMA-IR was calculated. Univariate analysis was performed to assess the relationship between dietary sugar intake and outcome measures with adjustment for sex, height, weight, BMI, social class, physical activity level, total calorie intake, total fat intake and skinfold thickness.

In early teens mean dietary proportions of carbohydrate, fat and protein were 52±0.2%, 39±0.2% and 11±0.1% and mean total daily sugar intake (expressed as % of total energy) was 22±0.3%. Mean fasting plasma glucose (FPG) in early adulthood was 4.4±0.02mmol/L, median fasting serum insulin (FSI) level was 10.0mU/L (IQR 8.0, 14.0) and median HOMA-IR score was 2.0 (IQR 1.5, 2.9). There was a linear relationship between sugar intake and FPG with a 0.01mmol/L increase for every % increase in dietary sugar (p<0.01).

Higher dietary sugar in early teenage years independently affects longer term glucose metabolism and is associated with insulin resistance.

Rates of acute coronary syndrome post rapid access chest pain clinic attendance

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The aims of rapid access chest pain clinics (RACPCs) are to identify patients at risk of adverse cardiovascular outcomes, and to prevent unnecessary hospital admissions. Recent NICE documentation has suggested that the format of RACPCs should change away from exercise stress tests (ESTs) to computerised tomography.\(^1\)

The purpose of this study was to evaluate the RACPC at the Ulster Hospital (UH) and the results that EST produced. From September 2007 to September 2009, 2,182 patients attended the RACPC. 1,555 were diagnosed as not having ischaemic heart disease (IHD). From September 2007 to July 2010 there were 2,703 UH admissions with acute coronary syndrome (ACS). These cohorts were cross referenced using the microsoft programme access. Of the ACS admissions 170 had previously attended the RACPC. The average length between RACPC attendance and admission was 582 days, although 54 patients were admitted within 90 days. Of the 170 admissions 55 were previously diagnosed as not having IHD, with 8 of these patients admitted within 90 days of clinic attendance. The results show that the vast majority of patients who attended the RACPC have been diagnosed and treated properly. However about 3.5% of patients who attended the RACPC and had been diagnosed as not having IHD, developed ACS which is a similar rate to previous studies.\(^2\) The average duration of RACPC attendance to ACS admission was 582 days which raises the question of how long a negative test is valid for, especially as little is known about the rate of coronary disease progression.

\(^1\) Cooper A, Calvert N, Skinner J, et al. *Chest pain of recent onset: Assessment and diagnosis of recent onset chest pain or discomfort of suspected cardiac origin*. National Clinical Guideline Centre for Acute and Chronic Conditions, London 2010.

\(^2\) Taylor GL, Murphy NF, Berry C et al. Long-term outcome of low-risk patients attending a rapid-assessment chest pain clinic. *Heart* 2008;94:628-632.

**B12 deficiency without macrocytosis- A case series of difficult to manage skin disease.**

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Vitamin B12 deficiency is typically diagnosed following further investigation of macrocytic anaemia. We report 6 cases of difficult to manage skin disease where significant B12 deficiency was identified. In 4 of these cases, there was no evidence of macrocytosis or anaemia, whilst 2 cases showed a raised mean cell volume. In all 6 cases of intractable skin disease there was dramatic improvement upon B12 replacement and simple topical therapies.

This suggests that macrocytosis is a poor indicator of Vitamin B12 deficiency and that a lack of B12 is associated with an impaired skin response to topical therapy. There are no previous reports of skin disease in association with B12 deficiency without macrocytosis and only several reports relating a normal mean cell volume with a B12 deficient state. One study analysed 141 consecutive patients presenting with neuropsychiatric abnormality due to B12 deficiency and found that 28% had no anaemia or macrocytosis.\(^1\)

We suggest that this is an important area for further study since it appears that this could be an under recognised condition. There can be marked, often reversible cognitive and neurologic sequelae. The measurement of Vitamin B12 levels is simple, relatively inexpensive and perhaps more importantly simple and cheap to treat in an ever cost conscious health service. Should this become a routine investigation for patients whose skin disease responds poorly to usual therapies and in other specialties?

\(^1\) Lindenbaum J, Heathon EB, Savage DG et al. Neuropsychiatric disorders caused by cobalamin deficiency in absence of anaemia or macrocytosis. *N Engl J Med* 1988; 318(26): 1720-1728.

**Decision Making in Stroke Thrombolysis: Is it Straightforward?**

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Delivery of thrombolysis for acute stroke remains a significant challenge for healthcare providers. Even when patients arrive on time, many are not treated due to restrictions in guidelines based on the eligibility criteria of randomised trials. Our aim was to determine how often treatment decisions in everyday clinical practice were straightforward and within guidelines. Methods: We reviewed records of consecutive patients treated between April 2006 and April 2010. We recorded standard clinical data and all factors affecting the decision making process. Results: 31 patients (19 male) received intravenous thrombolysis - mean age 69y (SD 11y). Mean onset-to-treatment time was 157min (SD 37min). Median pretreatment National Institute of Health Stroke Scale (NIHSS) score was 14 (range 3-23). 3 month outcomes were as follows: mortality, 10%, modified rankin score 0-2, 38%. One patient suffered intracerebral haemorrhage and one developed angioedema. Treatment decisions were straightforward and within guidelines in 6 patients (19%). 10 patients were treated outside guidelines: 4 aged >80y, 4 >3h from onset, and 2 with minor deficit. In the remaining 15 patients treatment decisions were complicated by one or more factors: uncertain of medication (1), consent issues (2), underlying neurological disorder (2), severe hypertension (1), established ischaemic change on neuroimaging (5), improving (1), recent oesophageal biopsy (1), known aortic aneurysm (2), large pleural effusion/likely lung cancer (1), cancer/chemotherapy induced colitis (1), dual antiplatelet therapy (1), recent coronary stent/dissection (1). Conclusions: It is important that clinicians responsible for thrombolysis develop sufficient expertise to facilitate appropriate and rapid decision making in complex situations.