FATAL PARAQUAT POISONING: THE WEST OF IRELAND EXPERIENCE

K Feeley, C E C Connolly, J Callaghan

Department of Pathology, University College Hospital, Galway.

A review of fatal paraquat poisoning in the West of Ireland over an 18-year period from 1977 to 1995 is presented. There were 44 cases in total, 41 of which were apparently suicidal, 40 of these involving oral ingestion of paraquat (Gramoxone), with 1 case of intramuscular injection. Two accidental cases involved droplet ingestion while spraying, with a third case of Gramoxone being mistaken for an alcoholic beverage. 86% were male, with 52% married; 57% were farmers by occupation. The average volume of Gramoxone ingested was 40 ml, ranging from <1 ml to >1000 ml. The average survival time was 56-72 hours, ranging from <6 hours to 22 days. The survival time was inversely proportional to the volume taken, and to spot urine measurements of paraquat taken shortly after ingestion. At autopsy, the organs involved were lungs (100%, showing intra-alveolar haemorrhage, with 9 cases of fibrosing alveolitis), liver (66%, showing centrilobular necrosis, fatty change and cholestasis), kidneys (62%, ranging from mild nephritis to massive acute tubular necrosis), adrenals (34%, showing massive cortical necrosis, with particular involvement of the zona fasiculata), and heart (9%, showing toxic myocarditis).

PENICILLIN RESISTANT PNEUMOCOCCI

C E Goldsmith, J E Moore, P G Murphy

Molecular Epidemiology Unit, N.Ireland Public Health Laboratory, Bacteriology Department, Belfast City Hospital

Pneumococcal disease is the only infectious disease to rank in the top ten list of fatal conditions in the Western world. *Streptococcus pneumoniae* is the commonest cause of pneumonia in general and of fatal pneumonia in particular. It is also the commonest cause of adult meningitis and childhood bacteraemia. Pneumococcal otitis media affects at least 25% of all children. The emergence of penicillin and multi-resistant pneumococci (PRP) threatens to inflate these already significant mortality and morbidity figures to those of the pre-antibiotic era.

Recently there has been a dramatic increase in the number of PRP isolated at the Northern Ireland Public Health Laboratory. In a study of 488 consecutive isolates of pneumococci here in 1988, only 4 (0.82%) isolates were resistant to penicillin. The figures for 1993 and 1995 were 2% and 18% respectively and 79% PRP were of the identical serotype '9V'. 36% of isolates demonstrated high-level penicillin resistance which cannot usually be treated by increased dosage. Of further concern, 94% were cross-resistant to cefotaxime compared to an expected UK rate of 69%.

The possibility of a clonal outbreak in Northern Ireland following importation of PRP from tourists returning from Spain is currently being investigated using the molecular typing technique of Arbitrary Primed Polymerase Chain Reaction (AP-PCR).

MESENTERIC LYMPH NODE CAVITATION SYNDROME AND COELIAC DISEASE – CASE REPORT

P Lim, M Madden, F A O’Connor

Departments of Gastroenterology and Pathology, Altnagelvin Hospital, Londonderry, Northern Ireland.

Patients with coeliac disease are at higher risk of developing gastro-intestinal malignancy e.g. small bowel lymphoma. In addition, other less common complications of coeliac disease have been described. We report a case of a rare complication of coeliac disease – mesenteric lymph node cavitation syndrome, to draw attention to the unusual lymph node abnormalities. This syndrome is characterised by three features:
cavitation of mesenteric lymph nodes, flat small intestinal mucosa and splenic atrophy.

The patient reported had malabsorption. A jejunal biopsy showed subtotal villous atrophy. She was initially unresponsive to gluten withdrawal but eventually responded when maintained on oral steroids and gluten free diet. She had developed strictures in her jejunum and at laparotomy was found to have large cavitating lymph nodes in the small intestinal mesentery. Subsequent investigations showed that she also had an atrophic spleen.

Review of literature showed 16 previously reported cases of mesenteric lymph node cavitation syndrome. The pathogenesis is unknown and the mortality is about 50%.

A HISTOPATHOLOGICAL AND IMMUNOHISTOCHEMICAL ASSESSMENT OF DIRECTIONAL AHERECTOMY SPECIMENS

D M O’Rourke, M M Khan, J M Sloan

Department of Pathology and Regional Cardiology, Royal Group of Hospitals Trust, Grosvenor Road, Belfast, Northern Ireland.

Re-stenosis is a relatively common complication of both coronary angioplasty and directional coronary atherectomy (DCA) with an approximate rate of 25-30%. Prediction of those patients more likely to develop re-stenosis would possibly allow therapeutic or surgical intervention and thorough post-procedure monitoring of those at risk. This study was undertaken in an attempt to predict re-stenosis using histological and immunohistochemical markers. The retrieved tissue in 101 DCAs from 98 patients (83 male and 15 female with a mean age of 56.3 years) was formalin fixed for 24 hours embedded in paraffin and 5um sections were cut and stained with H&E, Von Kossa and Masson trichrome. Immunohistochemistry was carried out using monoclonal antibodies to Ki-67(MIB-1) p53, CMV, and smooth muscle actin. The presence of thrombus, intima, media and adventitia was assessed. Semiquantitative grading of calcification (0-3+) was performed. Computerised image analysts was used to accurately count immunopositive staining cells.

Repeat angiography in those patients with recurrence of symptoms showed re-stenosis in 28 (27%). Five patients underwent coronary artery bypass grafting due to procedure failure and one patient died following surgery. Of the 93 patients who had successful DCA, histology revealed thrombus in 48% arterial media in 27% and adventitia in 0.9%. There was no correlation between these and re-stenosis or other complications. Re-stenosis was more common in female patients. DCAs with extensive calcification were more likely to require surgery post-procedure and most of the re-stenosis cases had calcific deposits. Thirty two cases stained positively with Ki-67 and the labelling indices varied between 0.3 and 4%. There was, however, no significant correlation with re-stenosis. P53 immunostaining was only positive in 7 cases, 2 of which were also positive for CMV although the results do not reach statistical significance.

In conclusion, the presence of heavy calcification within the atherectomy plaques correlates with an increased risk of surgical intervention, and re-stenosis is also more common in these cases. At present no immunohistochemical marker seems to predict patients more likely to develop re-stenosis.

APOLIPOPROTEIN AI CONTAINING LIPOPROTEINS IN PATIENTS WITH PRIMARY BILIARY CIRRHOSIS

P L M Lynch, M J O’Kane, M E Callender, G S Nesbitt, E R Trimble

Department of Clinical Biochemistry, Liver Clinic, Royal Victoria Hospital, Grosvenor Road, Belfast.

Primary Biliary Cirrhosis (PBC) is a chronic progressive cholestatic disorder associated with an increased serum total cholesterol concentration. Despite this PBC patients do not appear to be at increased risk of cardiovascular disease. There has been recent interest in the role of apoAl containing lipoprotein particles (LpAI and LpA1: AII) in protecting against cardiovascular disease. There is no information on such particles in PBC patients.

Aim: To define the lipoprotein profile and the apoAI containing lipoprotein particles in patients with PBC.
Subjects:
31 patients with biopsy proven PBC [30F, IM; age 59.5 yrs (SD 11.6)] were compared with 27 control subjects [26F, IM; age 53.7 yrs (SD 11.6)].

Methods:
LpAI and LpAII: AII were measured by differential electroimmunoassay. Other analytes were measured by standard laboratory techniques. ApoAI containing particles were sized by gel permeation chromatography of serum.

Results:
Data from patients with advanced PBC (stage 4) was analysed separately from those with stage 1/2/3 disease. Total cholesterol and HDL cholesterol were increased in the PBC stages 1/2/3 group compared with controls [total cholesterol: 6.27mmol/L (1.74) vs 5.17 (1.01) mean (SD) p<0.02; HDL: 1.90 mmol/L (0.61) vs 1.33 (0.36) p<0.0005] while triglycerides remained unchanged [1.28 mmol/L (0.45) vs 1.48 (0.64) p=0.48]. Although total apoAI was unchanged [174.4 mg/L (38.5) vs 174.1 (18.1) p=0.97], LpAI was increased in the PBC group [108.1 mg/L (23.5) vs 62.6 (9.4) p<0.0001]. LpAII: AII was decreased in the PBC stages 1/2/3 group [36.7 mg/L (10.1) vs 44.6 (6.0) p<0.005]. ApoB levels were unchanged [121.3 mg/L (32.7) vs 137.7 (35.0) p=0.97]. Lipoprotein abnormalities were dependent on PBC stage, with advanced PBC (stage 4) associated with reduced total and HDL cholesterol, apoAI, LpAI and LpAII: AII with respect to controls and stage 1/2/3 patients. There were no differences in the size profile of apoAI containing particles between PBC patients (n=7) and controls (n=8).

Conclusion:
The lipoprotein abnormalities in PBC are dependent on the stage of disease. Stages 1/2/3 PBC are associated with an increase in the supposedly anti-atherogenic LpAI particles.

BREAST CARCINOMA IN YOUNG WOMEN: A CLINICOPATHOLOGICAL REVIEW

S Curran, K Barry, O Clinton, J Callaghan
Department of Histopathology, Department of Surgery, University College Hospital, Galway.

A retrospective study is reported of all cases of breast carcinoma in women aged 40 years or younger 1982-1994 at U.C.H.G. Comparison was made with a random group of women aged over 40 years with breast carcinoma. There was a trend towards a higher incidence of ductal carcinoma and of high grade tumours in the young women. Thirty-five per cent of the tumours occurring in young women were oestrogen-receptor negative whilst only 8% were oestrogen-receptor rich. Amongst the older women 46% of the tumours were oestrogen-receptor rich (p<0.01). There was a positive family history of breast carcinoma in 42% of the young women compared with 8.5% of the older women (p<0.01). The most significant differences between the two groups were in terms of family history and oestrogen-receptor status.

CLINICAL ALGORITHMS – HEPATITIS

C McCaughey, H J O’Neill, D E Wyatt, P V Coyle
Regional Virus Laboratory, Royal Hospitals Trust, Grosvenor Road, Belfast BT12 6NB.

The Regional Virus Laboratory computer system is based on a relational database. Clinical details on request forms are entered and are accessible for searching. All requests in which the clinical details indicated that the patient was suspected to have hepatitis were analysed for the calendar year 1995 (9009 tests) and revealed:

1. There were no cases of hepatitis C without risk factors.
2. There were no acute cases of hepatitis C.
3. Hepatitis B coreAg IgG reactivity was often present in patients with acute hepatitis of non HBV origin.
4. No acute or chronic HBV infections were HBcoreAg IgG negative.
5. EBV & CMV were frequent causes of acute hepatitis.
6. Atypical pneumonia screening indicated causes of cases of acute and chronic hepatitis.

These findings were used to construct a proposed algorithm for testing specimens:

Acute Hepatitis:¹ Chronic Hepatitis:
Hepatitis B surface  Hepatitis B surface
Hepatitis B coreAgG² Antigen

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Hepatitis A IgM  Hepatitis C antibody  
EBV IgM  
CMV IgM  
Atypical pneumonia screen

1 A report is issued to indicate this is an acute screen and that if additional tests are required (e.g. hepatitis C) then this would require direct contact with the laboratory.

2 A further 1–2 year audit with HBsAg/HBcAg IgG as front line assays for acute hepatitis with the intention of dropping either HBsAg or HBcAg IgG.

3 If respiratory symptoms stated on request form.

THE ROLE OF POULTRY IN THE MOLECULAR EPIDEMIOLOGY OF HUMAN CAMPYLOBACTER INFECTION IN NORTHERN IRELAND BY CYTOTOXICITY ASSAY, ISOENZYM E ELECTROPHORESIS PROFILE TYING AND DNA FINGERPRINT POLYMORPHISM

J E Moore, L O’Riordan, M McCarron, T Stanley, B C Millar, D R A Wareing, T S Wilson, P G Murphy

Molecular Epidemiology Research Unit, Northern Ireland Public Health Laboratory, Belfast City Hospital, Department of Microbiology and Immunobiology, The Queen’s University of Belfast, Preston Public Health Laboratory, Royal Preston Hospital.

Campylobacter infections are the most commonly reported cause of acute bacterial enteritis in man both in Northern Ireland and Gt. Britain. Although food and various environmental sources have been implicated in human infection, sub-species typing methods have lacked the ability to discriminate at this level, in order to help elucidate sources of infection and routes of transmission. There is strong epidemiological data that chicken is a major source of human Campylobacter infection. As the majority of poultry consumed in Northern Ireland is produced locally, this allows for a controlled epidemiological study to be carried out in order to ascertain whether chicken is a major source of human infection locally. Campylobacter spp. (n=275) representing C. jejuni (78%), C. coli (20%) and C. lari (2%), were isolated from neck skin of freshly slaughtered chickens at local processors by a selective enrichment technique. Isolations from poultry were carried out from 9 May to 1 July 1994. Clinical Campylobacter isolates (n=62) were obtained from subjects (35 male and 27 female) presenting with acute enteritis over the period, 16 May to 8 July 1994 and were sporadic in nature. All strains were speciated and a representative population (n=30 chickens isolates and n=30 human isolates) were selected for comparison, by phage-typing [Preston biotyping, MAST disc-typing and phage-typing techniques] and by genotyping [multilocus enzyme electrophoresis (MEE) technique and 16S = 235 rRNA typing]. Phenotypically the 30 chicken isolates gave 20 Preston biotypes and 51% of isolates were non-typeable by the Preston phage-typing technique. The 30 human isolates gave 17 different biotypes and 17.7% of isolates were non-typeable by phage-typing. On examination of the preliminary MEE and ribotyping data, there were two distinct clusters, each containing a mixture of human and chicken isolates, indicating a common association between chicken and human Campylobacter spp. Results demonstrated that there were common shared phenotypes and genotypes in chickens and man, indicating chickens’ role in the aetiology of this infection. However a lactate dehydrogenase (LDH) release assay with porcine aortic endothelial cells showed that there was a significant difference in the cytotoxic response between strains uniquely seen in chicken and those commonly observed in humans, indicating that not all Campylobacter spp. may be pathogenic for humans and thus parallel the situation with many other Gram-negative enteric pathogens such as E.coli and Salmonella spp.