(p=0.0013) suggesting a compensatory anti-inflammatory response syndrome.
**Conclusion** HE relapse post-lactulose withdrawal is associated with derangements in bioenergetics, amino-acid, lipid and gut microbial metabolism as well as depression of the inflammatory response.

## P23 ABSTRACT WITHDRAWN

## P24 CYTOKINE BIOMARKER PROFILING IN ACETAMINOPHEN-INDUCED ACUTE LIVER FAILURE: IMPORTANCE OF MONOCYTE CHEMOTACTIC PROTEIN-1 IN PROGNOSIS AND HEPATIC ENCEPHALOPATHY

doi:10.1136/gut.2010.223362.50

H Antoniades, B Mathew, M McPhail, R Srirajaskanthan, P Berry, W Bernal, M Hussain, G Auzinger, J Wendon. *Hepatology and Transplantation, King's College London, UK*

**Introduction** Inflammatory cytokines have recently been described as reflecting severity of liver injury, grade of encephalopathy and prognosis in acute liver failure (ALF). The role of monocyte chemotactic protein-1 and peripheral monocyte count has not been well studied.
**Method** 35 consecutive patients admitted to our institution with a diagnosis of acetaminophen induced ALF were studied for the effect of a biomarker profile of inflammatory cytokines (IL-4, IL-6, IL-10, MCP-1, TNF-a, IFN-g) levels at admission on grade of hepatic encephalopathy (HE) and prognosis. Modified King's College Criteria (KCC) was used in deciding whether to perform ELT. Assessment of HE and prognostic markers was investigated using logistic regression and receiver operating characteristic (ROC) curve analysis.
**Results** MCP-1 levels were significantly correlated with standard markers of severity of liver injury (INR: R=0.737, p<0.001; lactate: R=0.772, p<0.001; AST:R=0.545, p<0.001) and with IL-6 (R=0.576, p=0.003) and IL-10 (R=0.679, p<0.001). MCP-1 levels were significantly reduced in spontaneous survivors (1149 (range 168–12 998) compared to patients who died/underwent orthotopic liver transplantation (OLT) (7925 (1694–30 625), p<0.001, Mann–Whitney U test. The area under the ROC curve (AUROC) for MCP-1 and prediction of poor outcome was 0.88 (95% CI 0.68 to 0.97, p<0.001). There was no significant difference in performance of MCP-1 compared with IL-4 (AUROC 0.80 (0.59–0.93)) IL-6 (AUROC 0.83 (0.63–0.95)) or IL-10 (AUROC 0.84 (0.64–0.95) p>0.05 for all; De Long method). MCP-1 performed better than peripheral monocyte count (AUROC 0.75 (0.57–0.85). TNF-α, TGF-β1 and IFN-γ levels did not predict outcome. IL-6 better predicted the development of severe (grade 3–4) HE (AUROC 0.91 (0.72–0.98) compared with MCP-1 (AUROC 0.71 (0.49–0.87), p=0.087 (De Long method)).
**Conclusion** MCP-1 has similar behaviour to IL-4, IL-6 and IL-10 in outcome prediction in acetaminophen induced acute liver failure and better reflects poor prognosis than peripheral monocyte count. IL-6 may better reflect the severity of HE suggesting different roles for interleukins and MCP-1 in the pathogenesis of the inflammatory milieu in ALF.

## P25 QUANTITATIVE COMPARISON OF MICROBUBBLE ULTRASOUND TECHNIQUES FOR THE ASSESSMENT OF HEPATIC FIBROSIS IN CHRONIC HEPATITIS C

doi:10.1136/gut.2010.223362.51

J Cobbold, D Patel, J F L Cobbold, J Fitzpatrick, M M E Crossey, N Patel, H C Thomas, S D Taylor-Robinson. *Robert Steiner MR Unit, Hammersmith Hospital, London, UK*

**Introduction** There is increasing interest in the development of imaging-based non-invasive markers for the assessment of chronic liver disease severity. Contrast enhanced ultrasound uses microbubbles as kinetic tracers to assess liver disease severity by exploiting the intra- and extra-hepatic haemodynamic changes accompanying fibrosis and cirrhosis. Transit times of a peripherally administered microbubble bolus are reduced with increasing disease severity. Transit times have previously been calculated to include intra- and extra- hepatic components (the hepatic vein transit time, HVTT) or just the intra-hepatic component (hepatic transit time, HTT), but diagnostic accuracy has not been compared directly.
**Aim** The aims of this study were: 1. to compare the diagnostic accuracy of HVTT and HTT in gauging the severity of chronic hepatitis C (CHC) and 2. to assess the inter- and intra-observer reliability of the microbubble technique.
**Method** 75 patients with biopsy-proven CHC were studied, staged using the Ishak system. Recordings of Doppler US scans performed using the microbubble contrast agent SonoVueTM, were retrospectively analysed by two independent observers, blinded to clinical data, to determine the HVTT, defined as the time taken for the microbubble to travel from the antecubital vein to the hepatic vein, and the HTT, defined as the difference between the hepatic vein arrival time and the hepatic artery arrival time. Each patient had two recordings (with separate microbubble injections) at a 10 min interval. Diagnostic accuracy was assessed using the area under the receiver operator characteristic (AUROC) curve. Inter- and intra-observer reliability and inter-injection reliability were assessed using the intraclass correlation coefficient (ICC).
**Results** 35 patients had mild fibrosis (stage 0–2), 23 had moderate-to-severe fibrosis (stage 3–4) and 17 had cirrhosis (stage 5–6). The diagnostic accuracy (95% CI) of HTT and HVTT for the diagnosis of cirrhosis (stage>4) were 0.78 (0.64–0.92) and 0.71 (0.55–0.86). Diagnostic accuracy (95% CI) of HTT and HVTT for the diagnosis of fibrosis stage >2 were 0.75 (0.65–0.86) and 0.71 (0.59–0.83). Inter-observer reliability (95% CI) for HTT and HVTT were 0.92 (0.87–0.95) and 0.94 (0.91–0.97). Intra-observer reliability for HTT and HVTT were 0.98 (0.97–0.99) and 0.99 (0.98–0.99); inter-recording reliability were0.97 (0.96–0.98) and 0.97 (0.95–0.98) respectively.
**Conclusion** HTT is more accurate than HVTT for the diagnosis of cirrhosis and moderate-to-severe fibrosis, while the reliability both of repeated recordings and of operators' assessment of recordings was very high. HTT reflects the intra-hepatic haemodynamic changes seen in more advanced chronic liver disease accounting for shorter transit times.

## P26 HEPATOCELLULAR CARCINOMA SURVEILLANCE IN PATIENTS WITH ESTABLISHED CIRRHOSIS: THE BIRMINGHAM EXPERIENCE

doi:10.1136/gut.2010.223362.52

[1]H Bridgestock, [1]R Desai, [2]J Neuberger. *[1]Birmingham Heartlands Hospital, UK; [2]Liver Unit, Queen Elizabeth Hospital, UK*

**Introduction** HCC causes approximately 1500 deaths per year in the UK and 95% of patients these have known established cirrhosis. Surveillance programme for patients with cirrhosis using six monthly α-fetoprotein (AFP) monitoring and ultrasound scanning (USS) is therefore recommended to ensure early identification of HCC at a stage when curative treatment is still possible. HCC identified by surveillance rather than incidental or symptomatic diagnosis results in better outcome and increased survival.
**Aim** Here we show the results of an audit of HCC surveillance at the Liver Transplantation Unit in Queen Elizabeth Hospital Birmingham against the British Society of Gastroenterology guidelines.