

that regulate hepatocyte permissivity to HCV infection. Indeed, conditioned media from VEGF treated LSEC significantly reduced the ability of hepatoma cells to support HCV replication, demonstrating that LSEC modulate expression of a soluble factor that reduces HCV infectivity in response to activation via VEGFR-2.

**Conclusion** In summary, these data demonstrate a new role for VEGF in endothelial-epithelial cell interactions in the liver that regulate HCV replication and highlight new areas for therapeutic intervention in chronic hepatitis C and other liver diseases.

OP25

### CHRONIC HEPATITIS B VIRUS INFECTION IN THE UK: A MULTICENTRE STUDY OF CLINICAL AND VIROLOGICAL CHARACTERISTICS

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**Introduction** Hepatitis B virus (HBV) infection is an important health problem in the UK where 180 000 to 326 000 people are estimated to be chronic carriers of the virus and at increased risk of cirrhosis and hepatocellular carcinoma.

**Aim** To establish a national register of chronic HBV patients for long-term follow-up to provide comprehensive data on demographic, clinical, and virological characteristics of chronic HBV infection in the UK.

**Method** Adult patients with chronic HBV infection (HBsAg positive >6 months) under active follow-up in 15 UK liver centres were eligible. Patient recruitment commenced in February 2007. Demographic and clinical data were recorded for all patients. Serum samples were collected on a subset of patients to determine HBV genotype and presence of mutations by sequencing.

**Results** 1147 patients have been registered. Their mean age was 43±13 years; 57% were male. The most common ethnicities were Chinese (26%), white (22%) and Pakistani (18%). The majority (81%, 676/831) were born outside the UK primarily in Pakistan (15%), Hong Kong (12%) and China (10%). 22% were HBeAg positive. Cirrhosis was present in 17% of cases that had a liver biopsy (n=447). 63% were HBV antiviral treatment naïve. 33% were currently on treatment of which 53% were on monotherapy primarily with either lamivudine (53%) or entecavir (28%). HBV DNA was currently undetectable in 53% (193/362) of treated subjects. The prevalence of HBV genotypes in those sequenced (n=293) was as follows: A (14%), B (17%), C (18%), D (42.7%), E (8%) and G (0.3%). HBV genotypes differed according to ethnicity (p<0.001): whites were predominantly genotypes A (46%) and D (46%), Chinese genotypes B (44%) and C (46%), black Africans genotypes A (21%) and E (53%) and Pakistanis genotype D (97%). Precore and basal core promoter region mutations (BCP; T1762/A1764) occurred in 45% (127/280) and 15% (42/280) of those tested, respectively. 20% (56/280) of the samples carried both precore and BCP mutations. HBsAg mutations indicative of altered antigenicity and could potentially be involved in vaccine escape were detected in 19% (54/286). Polymerase mutations associated with antiviral resistance were identified in 23% (18/77) (only those currently/ previously on treatment).

**Conclusion** We have established the first nationwide chronic HBV register in the UK. In our study population, chronic HBV infection was predominant in immigrants born in countries with high HBV prevalence. A strong association was found between HBV genotypes and ethnicity. Precore mutations were more common than BCP mutations and one-fifth of those tested carried both mutations.

The cross-sectional data have enabled exploration of epidemiological associations with chronic HBV infection, the use of antivirals, molecular typing and emergence of novel resistance strains in clinical practice which may differ from clinical trial results. Prospective follow-up of the cohort will allow further characterisation of long-term outcomes.

## Transplant

OP26

### PREDICTING THROMBOTIC COMPLICATIONS AFTER LIVER TRANSPLANTATION IN PATIENTS WITH BUDD CHIARI SYNDROME

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**Introduction** Myeloproliferative disorders (MPD) are the commonest cause of Budd Chiari syndrome (BCS). A somatic mutation of the tyrosine kinase JAK2 gene (JAK2V617F) is present in a large proportion of patients with MPD and is used as a screening tool to detect occult MPD. Recently a germline 46/1 haplotype block and mutations in the TET2 gene have also been implicated in the pathogenesis of MPD. We evaluate whether these underlying genetic abnormalities are relevant to the occurrence of thrombotic complications post liver transplantation (LT).

**Method** Samples of DNA were extracted from total blood or bone marrow. Real-time PCR was performed to screen for JAK2 mutations. TET2 mutations were analysed by next generation high throughput DNA sequencing (Roche 454). DNA was analysed by pyrosequencing for two SNP's which tag the 46/1 haplotype. Histology of liver biopsies performed for graft dysfunction were reviewed for evidence of veno-occlusive disease (VOD). The INR post LT and patient outcomes were recorded.

**Results** 36 patients underwent LT for BCS between 1995 and 2008. Median duration of follow-up after LT was 40 months (1–195 months) and 1-year survival was 84%. Pro-coagulant conditions were identified in 22 patients (MPD n=17, Protein C Deficiency n=2, Behcet's n=2 and lupus anti-coagulant n=1). The remaining 14 patients were classed as idiopathic. Overall, 22/36 (61%) were positive for the JAK2 mutation, 6/27 (22%) for the TET2 mutation and 19/26 (73%) for the 46/1 haplotype. In the idiopathic cohort, 8/13 (63%) tested positive for JAK2 suggesting latent MPD. All patients were treated with warfarin following LT. Thrombotic complications occurred in 12/36 (33%) and included hepatic artery thrombosis (n=3, 2/3 being late), VOD (n=7), splenic vein thrombosis (n=1) and portal vein thrombosis (n=1), at a median time of 40 months post LT (range 1–164 months). Re-transplantation was more common in those with thrombotic complications (7/12 (58%) vs 1/24 (4%), (p=0.0006)) and mortality was higher (4/12, (25%) vs 3/24, (13%)), but this did not reach statistical significance (p=0.2). The presence of a JAK2 mutation was associated with the development of a thrombotic complication post LT (11/12 vs 1/24, p=0.01). Neither the 46/1 haplotype nor the TET2 mutation was associated with an increase in post LT thrombotic complications or morbidity. Mean INR was not significantly different in those patients who developed a thrombotic complication (2.73 vs 2.70, p=NS).

**Conclusion** A JAK2 mutation appears to be associated with an increased risk of recurrent BCS and other thrombotic complications post LT. Thrombotic complications following LT are associated with an increase in morbidity and mortality. In patients with a JAK2 mutation, the role of additional anticoagulation or JAK2 inhibitor therapy needs to be investigated to try and prevent thrombotic complications.