

inflammatory markers (high sensitivity CRP, interleukins-6 and -8, TNF- $\alpha$  and adiponectin) were available for all patients. Liver stiffness measurement (LSM) by transient elastography was performed in 39 and liver biopsy in 29 patients. Histological lesions were evaluated blindly by a single liver histopathologist (Brunt's classification).

**Results:** Among anthropometric and body composition indices, MedDietScore was inversely correlated with waist circumference ( $r = -0.269$ ,  $p = 0.047$ ) and tended to correlate with visceral fat ( $r = -0.242$ ,  $p = 0.075$ ). With regard to biochemical and inflammatory markers, MedDietScore was positively correlated with log-HDL ( $r = 0.287$ ,  $p = 0.034$ ) and log-adiponectin ( $r = 0.304$ ,  $p = 0.024$ ) and negatively with insulin levels ( $r = -0.369$ ,  $p = 0.006$ ) and insulin resistance index-HOMA ( $r = -0.381$ ,  $p = 0.004$ ). MedDietScore tended to correlate also with interleukin-8 concentrations ( $r = -0.241$ ,  $p = 0.089$ ). The above correlations with biochemical and inflammatory markers remained significant after adjustment for waist circumference. MedDietScore inversely correlated with LSM ( $r = -0.353$ ,  $p = 0.028$ ), histological stage ( $\rho = -0.554$ ,  $p = 0.007$ ) and histological severity of steatosis ( $r = -0.518$ ,  $p = 0.013$ ). Patients with simple fatty liver reported significantly higher MedDietScore compared to those with steatohepatitis-NASH ( $34.3 \pm 4.6$  vs.  $28.9 \pm 3.2$ ,  $p = 0.003$ ).

**Conclusions:** Greater adherence to the MD is associated with lower insulin resistance and higher HDL and adiponectin levels and is also associated with less hepatic steatosis and most importantly less liver fibrosis, estimated by both transient elastography and liver histology. Moreover, lower adoption of the MD is observed in patients with NASH compared to those with simple fatty liver.

### 1306

#### METABOLIC SYNDROME AND SUROGATE MARKERS OF INSULIN RESISTANCE IN NONALCOHOLIC FATTY LIVER DISEASE (NAFLD), CHRONIC HEPATITIS C (CHC) AND B (CHB) IN BULGARIA

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It is well known that insulin resistance (IR) and metabolic syndrome (MetS) correlated with the progression of liver disease in patients with NAFLD and chronic hepatitis C (CHC), but the comparison between both diseases, as well as with chronic hepatitis B (CHB) is not established yet. In this study we compared the prevalence and signs of MetS and surrogate markers of IR in patients with NAFLD, CHC and CHB, and healthy volunteers. The parameters of MetS, fasting and during OGTT glucose and insulin were investigated in patients with NAFLD ( $n = 250$ ), genotype 1 CHC ( $n = 366$ ), CHB ( $n = 334$ ), and 211 healthy volunteers. The risk for coronary heart disease according Framingham Risk Score (FRS) was also assessed. MetS was more frequent in NAFLD (52%) and CHC (50.5%) compared to CHB (33%) and healthy volunteers (31%,  $p < 0.01$ ). The mean fasting glucose level was higher in NAFLD cases, but frequency of DM was similar in NAFLD group (32%), and CHC (30%), and lower – in CHB (20%). Impaired fasting glucose, impaired glucose tolerance and diabetes mellitus as well as increased levels of the fasting insulin and those on OGTT, and HOMA-IR were presented mostly in patients with steatosis, and those patients with CHC ( $p < 0.001$ ). The mean FRS was significantly higher in NAFLD ( $p < 0.001$ ) and CHC with metabolic steatosis ( $p < 0.01$ ) compared to CHC without fatty liver, CHB and healthy volunteers.

In conclusion the metabolic disturbances of patients genotype 1 CHC with steatosis are similar to those in NAFLD, and more frequent and intensive than in CHB.

### 1307

#### HIGH LEVELS OF URSODEOXYCHOLIC ACID ACT AS FXR ANTAGONIST AND DEplete LIVER CHOLESTEROL DUE TO INCREASED BILE ACID SYNTHESIS IN MORBIDLY OBESE PATIENTS

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**Aim:** Ursodeoxycholic acid (UDCA) was shown to improve insulin resistance and steatosis in mice. The efficacy and possible modes of action of UDCA treatment in human non-alcoholic fatty liver disease (NAFLD) have been debated. We aimed to explore potential mechanism of UDCA action in patients with morbid obesity awaiting Roux-en-Y gastric bypass surgery.

**Methods:** Forty morbidly obese patients were randomized to UDCA (20 mg/kg/day three weeks before surgery) or no treatment (controls). Serum liver function tests, lipids, bile acids and markers of insulin resistance/diabetes (OGTT, HOMA) were obtained before and after treatment. During surgery, biopsies were taken from the liver for histology and gene as well as protein expression studies.

**Results:** Three patients dropped out; UDCA 1 (diarrhea), controls 2 (pregnancy, bleeding). Completers of both groups were well matched by gender (female, 68.4 vs. 77.7%), age ( $42.8 \pm 12.3$  vs.  $38.5 \pm 10.1$  years), BMI ( $41.9 \pm 4.6$  vs.  $40.6 \pm 3.9$  kg/m<sup>2</sup>), HOMA ( $5.1 \pm 2.5$  vs.  $6.6 \pm 3.9$ ) and OGTT (IGT or T2DM, 37% vs. 50%). NAS scores were: no, 11 vs. 13; borderline, 4 vs. 4; definite, 4 vs. 1. UDCA despite significantly ( $p < 0.05$ ) expanding the BA pool  $10.6 \pm 7.6$  fold ( $\leq 55.3$   $\mu$ mol/L; UDCA  $> 90\%$ ) increased bile acid synthesis as measured by serum C4 (7 $\alpha$ -hydroxy-cholest-4-ene-3-one), CYP7A1 gene expression, and serum levels of primary bile acids CDCA and CA. Circulating FGF19 decreased by 18% ( $p = 0.05$ ). Significant increases in gene expression levels of key regulators of lipid turnover (SREBP2, SCD, HMGCR) were reflected by significantly decreased serum LDL-cholesterol and increased triglycerides. UDCA significantly decreased ALT, AST and  $\gamma$ GT but did not affect HOMA, glucose tolerance, adiponectin and lectin.

**Conclusion:** Changes in serum lipid and gene expression profiles in UDCA treated, morbidly obese patients indicate hepatic cholesterol depletion as a result of increased bile acid formation due to FXR-antagonistic effects of very high UDCA levels in noncholestatic livers.

### 1308

#### THE FIB-4 SCORE RELIABLY EXCLUDES ADVANCED FIBROSIS IN A DIABETIC COHORT WITH NAFLD

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**Background:** 20–30% of the population are estimated to have NAFLD. Amongst these, type 2 diabetics are recognised to be at highest risk of advanced steatohepatitis. The EASL position statement on NAFLD supported screening diabetics for NAFLD. There is a need for a non-invasive tool to screen diabetics for advanced fibrosis. The FIB-4 score has been shown to be effective in a general NAFLD cohort; however, the relative merits of this and similar scores have not been determined in a diabetic population.

**Aim:** To assess performance of simple non-invasive tests for fibrosis in diabetic patients with biopsy-proven NAFLD.

**Methods:** Patients who were reviewed in our hospital fatty liver clinic between 1999–2009 were included. Liver biopsies were assessed using the Kleiner score. The FIB-4 and NAFLD fibrosis scores were calculated from blood tests taken within 6 months of liver biopsy.