The AASLD Liver Meeting 2017
October 20-24, Washington DC, USA

**Oral and Posted Communications on**

FibroScan®
FibroMeter™
The abstracts contained in this document represent uses of the FibroScan® in published literature, and Echosens does not intend to make any of the specific claims found in these articles. The FibroScan is a tool to aid in the clinical management of liver disease, and is not intended for the treatment of any specific liver disease or condition. The intended use/indications for use for the FibroScan are as follows:

The FibroScan® system is intended to provide 50Hz shear wave speed measurements and estimates of tissue stiffness as well as 3.5 MHz ultrasound coefficient of attenuation (CAP: Controlled Attenuation Parameter) in internal structures of the body.

FibroScan® is indicated for noninvasive measurement in the liver of 50 Hz shear wave speed and estimates of stiffness as well as 3.5 MHz ultrasound coefficient of attenuation (CAP: Controlled Attenuation Parameter).

The shear wave speed and stiffness, and CAP may be used as an aid to clinical management of adult patients with liver disease. Shear wave speed and stiffness may be used as an aid to clinical management of pediatric patients with liver disease.

FibroMeter™ is marketed by Arup Laboratories in the United States. FibroMeter was developed and its performance characteristics determined by ARUP Laboratories. The U.S. Food and Drug Administration has not approved or cleared this test; however, FDA clearance or approval is not currently required for clinical use. The results are not intended to be used as the sole means for clinical diagnosis or patient management decisions. For more information contact ARUP laboratories at (800) 522-2787 or at www.aruplab.com.
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58* SHOULD SCREENING FOR FATTY LIVER BE CONDUCTED AT PRIMARY CARE CLINICS?

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Background: Fatty liver is quite prevalent among individuals living in developed countries. It correlates with the increase in prevalence of obesity, diabetes mellitus, and metabolic syndrome. Screening for fatty liver has been dependent on ultrasonography, which is not sensitive nor specific in assessing the degree of fat deposition or liver fibrosis. Over the last few years, hepatic elastography using FibroScanR has been gaining popularity in assessing hepatic fibrosis. More recently, fibroscans are capable to estimate the degree of fat deposition in the liver using controlled attenuation parameter (CAP). We initiated a screening program for fatty liver and liver fibrosis using FibroScanR in a primary care facility in Southern California. Patients attending primary care clinic who have no known history of liver disease were offered screening using the FibroScanR device. Aim: To estimate the prevalence of fatty liver and liver fibrosis in patients with no known history of liver disease in a primary care setting.

Methods: Between March 6, 2017 and May 29, 2017, 1650 patients attending a primary care clinic were asked to participate in the screening program. 856 individuals agreed to be screened and their demographics, past medical history and current medications were recorded, as well as their laboratory tests. Results: Of the 856 patients, 554 (65%) were females; 302 (35%) were males. The mean age was 44.6 ± 16.8 years. Hispanics were 77.1%, whites 6.4%, Asian 4.2% and others 1.6%. Twenty-three percent had a BMI >35 and 20% had BMI between 30-35. Diabetes was found in 12.9% and 13.4% of males and females; 302 (35%) were males. The mean age was 44.6 ± 16.8 years. Hispanics were 77.1%, whites 6.4%, Asian 4.2% and others 1.6%. Twenty-three percent had a BMI >35 and 20% had BMI between 30-35. Diabetes was found in 12.9% and 13.4% had hyperlipidemia. 282 patients (33%) had significant fatty infiltration with a CAP >290 of which 4.3% had fibrosis score over 15 kPa; 12.0% between 7-15 kPa. Summary: In patients with no known history of liver disease attending a primary care clinic, 33% had significant fat infiltration of the liver; 16.7% had significant liver fibrosis. In Conclusion; 1) Obesity (BMI >30) is prevalent (>40%); 2) fatty liver and liver fibrosis are prevalent (>30% and >16% respectively) among patients who are not aware of having liver disease; 3) FibroScanR is a powerful tool for screening individuals for chronic liver disease in the primary care setting.

59 PREVALENCE AND CLINICAL CHARACTERISTICS OF NONALCOHOLIC FATTY LIVER DISEASE IN LEAN SUBJECTS IN COMPARISON WITH OVERWEIGHT OR OBSESE INDIVIDUALS: A CROSS-SECTIONAL STUDY

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Background/Aims: Although nonalcoholic fatty liver disease (NAFLD) is frequently diagnosed in obese or overweight subjects, approximately 10-20% of lean individuals also develop NAFLD. However, data on lean patients with NAFLD are scarce. The Aim was to investigate the prevalence, clinical characteristics, and risk factors of NAFLD across populations with different body habitus. Methods: Out of 16,398 health check-up examinees between 2008 and 2016, we enrolled 12,002 subjects without known liver disease or significant alcohol consumption. The diagnosis of fatty liver was made using ultrasound examination. Results: Overall prevalence of NAFLD was 35.6% (n=4276). All subjects were categorized into three subgroups according to their body mass indexes; group 1 (BMI <23 kg/m2; n=5815), group 2 (23≤ BMI <25; n=2869) and group 3 (BMI ≥25; n=3318). The prevalence of NAFLD in each group was 13.3% (n=772) in group 1, 42.5% (n=1231) in group 2, and 68.5% (n=2273) in group 3, respectively (P<0.001). Risk factors for the development of NAFLD in each group included the followings: age, female sex, less than 3 times of exercise per week, impaired fasting glucose, metabolic syndrome, hematocrit, uric acid, fat mass in group 3; age, female sex, less than 3 times exercise per week, metabolic syndrome, uric acid, fat mass in group 2; and age, female, impaired fasting glucose, HTN, metabolic syndrome, uric acid, fat mass in group 1. Among patients with NAFLD in groups, metabolic syndrome was present in 39.4% in group 1, 49.0% in group 2, and 67.8% in group 3, respectively (P<0.001). Mean C-reactive protein in group 1-3 was 1.25, 1.47, and 1.95, respectively (P<0.001). Mean NAFLD fibrosis score was -2.97, -2.77, and -2.46, respectively. Mean TyG index was highest in group 3 (3.89), followed by group 2 (3.83) and group 1 (3.78) (P<0.001). In patients who underwent transient elastography (n=161), median liver stiffness and controlled attenuation parameter were higher in group 3 (5.50 kPa; 248.1 dB/m) than in group 2 (4.18 kPa; 258.5 dB/m) and in group 1 (3.51 kPa; 280.0 dB/m), with P<0.001 for both parameters. For extrahepatic manifestations, mean of coronary calcium score was significantly higher in group 3 than in group 1 or group 2 (P<0.001); prevalence of chronic kidney disease (GFR <60 ml/min) was not different among group 1-3 (P=0.677).

Conclusions: In this cross-sectional study, NAFLD in lean subjects (BMI <23) was not uncommon, albeit less frequent than subjects with higher BMI. Noninvasive indices suggested less severe disease in terms of systemic inflammation, insulin resistance, liver fibrosis and extrahepatic manifestations.

#184* PERFORMANCE OF LIVER STIFFNESS BY FIBROSCAN IN A LARGE PROSPECTIVE MULTICENTER UK STUDY: APPLICABILITY, RELIABILITY, DIAGNOSTIC PERFORMANCE AND INFLUENCE OF THE PROBE TYPE AND OF STEATOSIS ON THE LIVER STIFFNESS MEASUREMENT

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Asterisk (*) denotes abstract of interest
**Background & Aims:** This prospective study evaluated the diagnostic performance of liver stiffness measurement (LSM) by FibroScan with either M or XL probe in a cohort of 450 patients with NAFLD.

**Methods:** In the M118 study 450 patients underwent FibroScan examination within 2 weeks of a clinically indicated liver biopsy (LB) for suspected NAFLD. Recruitment took place (Mar 2014-Jan 2017) at seven UK centres. LB were scored in a blinded manner by two expert pathologists using the NASH CRN system. NASH was diagnosed using the FLIP algorithm. Diagnostic performance was reported in patients with reliable FibroScan examination (Boursier’s criteria) using area under the ROC curves (AUC). Cutoffs were computed for high sensitivity (Se) >0.90, high specificity (Sp) >0.90 or for maximizing Se/Sp simultaneously. Univariate analysis was performed using Wilcoxon or Chi-square/Fisher-exact test. Influence of probe type and histological parameters on LSM were appraised using a backwards stepwise multiple linear regression. **Results:** 408 patients completed the study. Of the 380 patients with a LB of sufficient size that showed NAFLD, 43% were female, with a median age 55 [IQR 19] years and median BMI 33.8 [9.3] kg/m2. Fibrosis distribution was: F0: 17%, F1: 23%, F2: 22%, F3: 28%, F4: 10%. 64% had NASH. 45% had a NAS score ≥5. 374/380 patients had a valid LSM and 331/374 had a reliable LSM giving 98% applicability and 89% reliability. Patients with unreliable LSM had a higher BMI: 39.0 vs 32.8, p<10^-6. 121 (37%) patients were measured using the M probe, 210 (63%) patients using the XL probe.

Performance characteristics are shown in the Table. Univariate analysis showed that probe type (p=0.62) did not influence LSM, whereas steatosis (p=0.047), lobular inflammation (p<10^-5), ballooning (p<10^-6) and fibrosis (p<10^-16) all did. However, at multivariate analysis the only parameter significantly influencing LSM was fibrosis stage (p<10^-16), with no association seen for steatosis or probe type. **Conclusion:** LSM by FibroScan is a reliable technique to non-invasively assess liver fibrosis in NAFLD patients. Probe type and steatosis do not influence LSM.

**Performance characteristics of FibroScan**

<table>
<thead>
<tr>
<th>Cutoff</th>
<th>F0</th>
<th>F2</th>
<th>F4</th>
</tr>
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<tbody>
<tr>
<td>AUC (95% CI)</td>
<td>0.78 [0.75-0.81]</td>
<td>0.84 [0.77-0.90]</td>
<td>0.94 [0.91-0.97]</td>
</tr>
</tbody>
</table>

**Cut-offs for Se, Sp, all M probe, XL probe:**

- Cutoff for Se: Cutoff for Sp:
  - Cutoff for M probe: Cutoff for XL probe:
    - C cutoff; Pr: prevalence; PPV: positive predictive value; NPV: negative predictive value.

Asterisk (*) denotes abstract of interest

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POSTERS COMMUNICATIONS

331 TRANSIENT ELASTOGRAPHY (TE) AND ACOUSTIC RADIATION FORCE IMPULSE IMAGING (ARFI) CAN PREDICT DEGREE OF ADVANCED FIBROSIS FOR AUTOIMMUNE HEPATITIS IN BIOCHEMICAL REMISSION

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Background and Aims: Autoimmune hepatitis (AIH) is a chronic autoimmune liver disease that responds well to the use of corticosteroids and immunosuppressants. When the disease is untreated, it progresses rapidly to cirrhosis, organ failure and death. Use of non-invasive Methods of assessment of liver fibrosis is still controversial in AIH, since stiffness measurements are often overestimated in cases of significantly elevated aminotransferase, which is a common characteristic of this disease. The Aim of this paper was to analyze the concordance of the stiffness measurements (LSM) by two shear wave techniques: TE and ARFI comparing them with the staging of fibrosis by the METAVIR score in patients who underwent liver biopsy for evaluation of histological remission.

Methods: The study included 33 patients with AIH. They underwent liver biopsy to evaluate histological remission after 18 months of normal liver enzymes in the period from 2012 to 2015. These patients were submitted to laboratory tests, Doppler ultrasound, TE, ARFI and liver biopsy on the same day. All patients underwent upper gastrointestinal endoscopy over a period of up to 6 months before or after inclusion in the study. SPS 19 was used to determine the mean, median, standard deviation and range. Efficiency of LSM for the determination of histological and fibrosis stages was determined by a receiver operating characteristic (ROC) curve analysis. Results: Twenty eight (84.8%) were female and type 1 AIH. The mean body mass index (BMI) was 28.6 kg/m² (range, 41.7 – 21.5). Immunosuppression at study inclusion was azathioprine and prednisone association in 87.9% of patients. Esophageal varices were present in 12 (37.5%) patients. One (3%) was F0, 6 (18.2%) were F1, 8 (24.2%) were F2, 10 (30.3%) were F3 and 8 (24.2%) were F4, according to METAVIR Classification. Despite normal liver enzymes, 13/33 (39.4%) patients did not achieve histological remission. For fibrosis stage F = 4, areas under ROC curves, were 0.83 (IC: 0.76 – 0.99) for TE and 0.78 (IC: 0.65-0.95) for ARFI. Optimal stiffness cutoff values were 12.3 kPa (Se = 87.5%, Sp = 88%) for TE, and 1.65 m/s (Se = 87.5%, Sp = 76%) for ARFI. The tests were unable to differentiate between patients with active disease and those in histological remission (p<0.05). Conclusions: Non-invasive liver fibrosis evaluation by TE and ARFI accurately identify liver fibrosis by METAVIR score in patients with AIH in biochemical remission. TE ≥ 12.3 kPa and ARFI ≥ 1.65 m/s were the best cutoff values to predict cirrhosis. No cutoff value was detected that could indicate whether the patient achieved histological remission.

363 COMPARISON OF TRANSIENT ELASTOGRAPHY AND MAGNETIC RESONANCE ELASTOGRAPHY IN PRIMARY BILARY CHOLANGITIS

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Background: Transient elastography (TE) has the ability to identify advanced fibrosis in primary biliary cholangitis (PBC), but data on magnetic resonance elastography (MRE) in PBC is limited. The Aim of this study was to compare liver stiffness (LS) measured by TE and MRE in patients with PBC. Methods: TE, MRE, clinical labs, and health-related quality of life (HRQoL) surveys, including PBC-40, were prospectively collected at Month 0 and Month 12. Advanced fibrosis (F3-F4) was assigned using cutoffs of 10.7 kPa for TE and 4.11 kPa for MRE. Results: Data from 43 subjects at Month 0 and 37 subjects at Month 12 were available for analysis. LS by TE and MRE were strongly correlated at Month 0 (r = 0.79, P < 0.0001) and Month 12 (r = 0.90, P < 0.0001) (Figure). Agreement between TE and MRE for advanced fibrosis (F3-F4) was moderate at Month 0 (86.0%, k = 0.54, p<0.001) and substantial at month 12 (91.9%, k=0.79, p < 0.001). At Month 0 total bilirubin (TB), INR, and alkaline phosphatase (ALP) were independent predictors of LS by TE while TB, INR, and albumin were predictors of LS by MRE. Changes in LS from Month 0 to Month 12 (median [range]) were 0.25 kPa [-8.2 – 9.0 kPa] for TE and -0.19 kPa [-2.7 - 1.7 kPa] for MRE. No associations were found between the change in LS measured by TE and MRE or between LS and HRQoL measures. Conclusion: Our Results demonstrate that TE and MRE are strongly correlated and that the two tests show moderate agreement in distinguishing advanced fibrosis from early-stage fibrosis in PBC.

Liver stiffness measured by MRE and TE at Month 0 and Month 12. Axes intersect at cutoffs for advanced (F3-F4) fibrosis for MRE and TE.

432 CLINICAL PHASE 1B/2 STUDY RESULTS FOR SAFETY, PHARMACOKINETICS, AND EFFICACY OF ND-L02-S0201, A NOVEL TARGETED LIPID nanoparticle (LNP) DELIVERING HSP47 SIRNA FOR THE TREATMENT OF PATIENTS WITH ADVANCED LIVER FIBROSIS

Eric Lowitz, Rosalina I. Balabanska, Edgar D. Charless, Scott L. Friedmans, Julio A. Gutierrez, Yoshiro Niitsus, Fred Poordads, Arun J. Sanyals, Yasunobu Tanakas, Ulrich Thienels, Wenbin Ying, Kagushi Maraumas; 1Texas Liver Institute, San Antonio, TX; 2Tokuda Hospital

Asterisk (*) denotes abstract of interest

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Objectives: ND-L02-s0201* is an injectable lipid nanoparticle with a novel vitamin A analogue encapsulating a chemically-modified siRNA that inhibits heat shock protein 47 (HSP47), a collagen chaperone in hepatic stellate cells. This Phase 1b/2 study aimed to evaluate the pharmacokinetics (PK), safety and efficacy of ND-L02-s0201 administered for 5 weeks in subjects with advanced liver fibrosis.

Methods: This was an open-label, multiple-dose, escalation study of subjects with METAVIR F3-F4 fibrosis due to either nonalcoholic steatohepatitis (NASH) or hepatitis C virus (HCV). ND-L02-s0201 was intravenously infused once or twice weekly for 5 weeks in 3 cohorts (0.2, 0.4, & 0.6 mg/kg/week). Subjects had a baseline biopsy within 12 months (Cohort 1) or within 6 weeks (Cohorts 2 & 3) and a posttherapy biopsy at Week 6. PK, safety, & change in fibrosis stages were evaluated. Biopsies were staged by local pathologists, and specimens were also analyzed for HSP47 (mRNA & protein) content, and alpha-smooth muscle actin protein (SMA).

Results: 25 subjects were treated (11 NASH, 14 HCV, 11 males, mean age 57 years, mean BMI 31.8 kg/m2). 18/25 subjects had HCV RNA>25 IU/mL; no subject received anti-HCV therapy within 12 weeks of Day 1. 23 subjects completed 5 weeks treatment. The siRNA suggested linear PK (area under the curve), the mean terminal half-life was 22.9-54.4 hr, and there was no significant accumulation after multiple doses. Changes in fibrosis score at Week 6 are presented in Table 1. Ishak and METAVIR scores improved in 5/9 & 3/9 NASH subjects and in 6/14 & 3/14 HCV subjects, respectively. FibroScan showed >10% decrease in 11/23 (48%) & 14/23 (61%) of subjects at Weeks 5 & 24, respectively. 8 subjects had transient adverse events (AES) related to study drug that were mostly mild; the majority were classified as infusion-related reactions. The most common AE was asymptomatic increased lipase.

Conclusion: In NASH and HCV subjects with advanced liver fibrosis, treatment with ND-L02-s0201 for 5 weeks was associated with improvements in fibrosis, as assessed by biopsy. ND-L02-s0201 showed linear PK and was well-tolerated, with no dose-limiting toxicities up to 0.6 mg/kg/week. These results support further evaluation in patients with advanced liver fibrosis. *Further clinical development as BMS-986263

### Table 1: Fibrosis Change at Week 6

<table>
<thead>
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<th>Cohort</th>
<th>Isaak</th>
<th>METAVIR</th>
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<tr>
<td></td>
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<tr>
<td>0.2 mg/kg/week</td>
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<td>0</td>
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<td>0.4 mg/kg/week</td>
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<tr>
<td>0.6 mg/kg/week</td>
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446 LIVER STIFFNESS MEASURED BY VIBRATION CONTROLLED TRANSIENT ELASTOGRAPHY IS AN EXCELLENT SURROGATE FOR IDENTIFYING CLINICALLY SIGNIFICANT PORTAL HYPERTENSION IN PATIENTS WITH COMPENSATED NASH CIRRHOSIS

Sofia, Sofia, Bulgaria; Bristol-Myers Squibb, Princeton, NJ; Icahn School of Medicine at Mount Sinai, New York, NY; Sapporo Medical University, Sapporo, Japan; Virginia Commonwealth University, Richmond, VA; Nittó Denko Corporation, Tokyo, Japan; R&D International, Rockville, MD; Nittó BioPharma Incorporated, San Diego, CA

**Objectives:** ND-L02-s0201 is an injectable lipid nanoparticle with a novel vitamin A analogue encapsulating a chemically-modified siRNA that inhibits heat shock protein 47 (HSP47), a collagen chaperone in hepatic stellate cells. This Phase 1b/2 study aimed to evaluate the pharmacokinetics (PK), safety and efficacy of ND-L02-s0201 administered for 5 weeks in subjects with advanced liver fibrosis.

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**Conclusion:** In NASH and HCV subjects with advanced liver fibrosis, treatment with ND-L02-s0201 for 5 weeks was associated with improvements in fibrosis, as assessed by biopsy. ND-L02-s0201 showed linear PK and was well-tolerated, with no dose-limiting toxicities up to 0.6 mg/kg/week. These results support further evaluation in patients with advanced liver fibrosis. *Further clinical development as BMS-986263

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<td>0.2 mg/kg/week</td>
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447 PLATELETS COUNT PERFORMS BETTER THAN LIVER AND SPLEEN ELASTOGRAPHY AS A PREDICTOR FOR LIVER RELATED EVENTS IN COMPENSATED CHRONIC HEPATITIS C CIRRHOTIC PATIENTS.

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**Background and Aims:** Portal hypertension is associated with the most important complications in cirrhosis. Liver (LS) and spleen stiffness (SS) are well validated as surrogates of portal hypertension. However, their ability to discriminate compensated patients prone to decompensation is yet to be determined. In the last years several
non-invasive Methods have been evaluated as predictors of clinical decompensation in cirrhotic patients. Our Aim was to evaluate LS and SS, as well as platelets count and liver function, as predictors for decompensation in a cohort of compensated CHC patients. Methods: 100 recently diagnosed cirrhotic patients were prospectively included and submitted to liver and spleen transient elastography by an experienced operator. Blood samples for platelets count and liver function evaluation were also obtained. SS was US guided. During a mean follow-up (FU) of 35 months, the incidence of liver related decompensations was prospectively registered. Factors associated with these decompensions were evaluated according to the Cox regression model. Results: 60% women; age 59 (± 6.6) years; BMI 28 (± 4.8); MELD 9.7 (± 3.4). LS was invalid in 2 patients and SS in 19. Mean platelets was 136.000 (± 54.000), LS was 24 kPa (±12) and SS was 53 kPa (± 18). Values for bilirubin, albumin and INR were: 1.2±0.9, 3.9±0.5 and 1.13±0.11, respectively. After 35 months, 25 patients had experienced one or more decompensations (ascites 16, hepatic encephalopathy 10, variceal bleeding 6), 63 remained compensated and 8 patients lost FU. There were 9 deaths (8 liver related) and 3 patients were transplanted. On the univariate analysis MELD, platelets, albumin and SS were associated with decompensations (P value 0.05, 0.00, 0.04, 0.05 and 0.04, respectively). The best cut-offs for predicting the outcome were SS and LS respectively above 58kPa (RR 3.30 (IC 95% 1.29-8.47, P 0.013) and 30.0 kPa (RR 2.69 (IC 95% 1.19-6.06, P 0.017)). On the multivariate analysis platelets count (as a continue variable) was the only independent predictor of decompensations (RR 6.62 (IC 95% 0.56) spare endoscopy rose to 39% (0% missed HRV). When using Baveno VI rule in D, there were 0% of missed HRV and 13% spared endoscopy. By further using SSM-100 (cut-off defined on entire cohort = 41 kPa) in the group without ruled out HVR by Baveno VI rule, spared endoscopy rose to 39% (0% missed HRV). Conclusion: This study suggests that the novel spleen-dedicated SSM-100 methods achieves better performance than the standard SSM-50 for the detection of HRV. This new examination with FibroScan™ dedicated to spleen stiffness measurement seems a promising alternative to HVPG and a useful refinement of the Baveno VI rule.

**448* PERFORMANCES OF FIBROSCAN® TO DETECT LARGE ESOPHAGEAL VARICES IN CHRONIC LIVER DISEASES: IMPROVED BY A NOVEL SPLEEN-DEDICATED EXAMINATION**

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**Background:** Esophageal varices (EV) represent one of the most severe complications of cirrhosis. International guidelines recommend that all cirrhotic patients are screened for the presence of EV. The Aim of this study was to introduce a new spleen-dedicated FibroScan® (FS) (Echosens, Paris, France) examination and to compare its performances with those of the standard FS and other biomarkers to detect high risk EV (HRV) (grade ≥ 2). Methods: We prospectively enrolled 216 patients with chronic liver diseases due to HCV, HBV or alcohol who underwent upper GI-endoscopy for EV grading, liver (LSM) and spleen (SSM) stiffness measurements within 3 months. LSM was done simultaneously using standard FS technical settings used for LSM (SSM-50) and settings dedicated to the spleen, specifically designed by Echosens for this study (SSM-100). Only cases with at least 8 valid SSM-100 were kept and the four following subgroups were further selected for analyses: A) 197 patients with at least 8 valid SSM-50; B) 138 patients with at least 8 valid SSM-50Hz and reliable LSM (fulfilling Boursier’s criteria); C) 88 patients with HVPG performed within 3 months of SSM and D) 92 patients with reliable LSM and platelet count. Results: In A, better performances were obtained with SSM-100Hz (area under ROC curve (AUC) = 0.81) than with SSM-50Hz (AUC = 0.72) (Delong test, p < 0.001). In B, SSM-100 obtained the highest performance (AUC = 0.84) and was significantly higher than SSM-50 (AUC = 0.73) (Delong test, p < 0.001) and LSM (AUC = 0.69) (Delong test, p = 0.01), respectively (Figure). In C, a good correlation was found between SSM-100 and HVPG (Pearson r = 0.56, p<0.001). AUC was not significantly different between SSM-100 (0.83) and HVPG (0.80) (Delong test, p = 0.62). When using Baveno VI rule in D, there were 0% of missed HRV and 13% spared endoscopy. By further using SSM-100 (cut-off defined on entire cohort = 41 kPa) in the group without ruled out HVR by Baveno VI rule, spared endoscopy rose to 39% (0% missed HRV). Conclusion: This study suggests that the novel spleen-dedicated SSM-100 settings achieves better performance than the standard SSM-50 for the detection of HRV. This new examination with FibroScan™ dedicated to spleen stiffness measurement seems a promising alternative to HVPG and a useful refinement of the Baveno VI rule.

**450 MANAGEMENT OF HEPATITIS C-CIRRHOTIC PATIENTS WITH BASAL LARGE BETABLOCKED ESOPHAGEAL VARICES AFTER SUSTAINED VIROLOGICAL RESPONSE**

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**Background:** Neither current American/European Liver Associations Guidelines nor Portal Hypertension Baveno VI Consensus address how to manage hepatitis C (HCV)-cirrhotic patients with basal large esophageal varices treated with betablockers (BB) after sustained virological response (SVR).

**METHODS:** HCV-cirrhotic patients with basal large betablockers esophageal varices were prospectively recruited after SVR with direct-acting antivirals (DAA). Hepatic venous pressure gradient
(HVPG) was measured to assess remaining bleeding risk (HVPG-BR ≥12 mmHg) after 5 days of stopping BB (propranolol/carvedilol). On the HVPG day, blood test, upper gastrointestinal endoscopy (UGE) and transient elastography (TE) were previously performed. BB could be permanently stopped at the discretion of attending physician if HVPG <12 mmHg. All patients signed informed consent; protocol was approved by Institutional Ethics Committee. RESULTS: 30 patients were included (interquartile range 25-75): 56.7% males, median age 66 years (59-74.5), median ALT 21.5 U/L (17.8-27.3), median body mass index 27 kg/m² (25.3-29.9), HIV 20%, median Model for End-stage Liver Disease score 10 (9-11), Child-Pugh A/B 90%/10%, median TE before AAD 23.3 kPa (17-35.7), primary/secondary bleeding prophylaxis 80%/20% (plus band ligation in secondary). Median time from end of AAD treatment to HVPG was 61 weeks (55.5–84). HVPG was <12 mmHg in 11/30 patients (36.7%; 95%CI: 21.9-54.5). On UGE in 26/30 patients (4 rejected) varices had regressed in 21 (80.1%); correlation with HVPG shown in Table 1. TE was feasible in 27/30 (90%). Per protocol, TE-AUROC for HVPG <12 mmHg was 0.762 (95%CI: 0.576–0.947; p=0.025). Best cutoff was 20.1 kPa: sensitivity 82.4%, specificity 40%, positive predictive value 84%, negative predictive value 57%, accuracy 76%. ≤14.1 kPa was able to rule-out HVPG-BR with sensitivity 94.1%; ≥25 kPa could rule-in it with specificity 90%. In 9/11 patients with HVPG <12 mmHg BB were permanently stopped with no bleeding episode up to now (median time 15 months, [IQR 10-22]). CONCLUSION: After >1 year from SVR, HVPG regresses below bleeding risk threshold in 36.7% of HCV-cirrhotic patients with basal large betablocked esophageal varices. In this situation, there is a weak correlation between UGE variceal size and bleeding risk. Permanent interruption of betablockers seems to be uneventful in patients with HVPG <12 mmHg, and TE could help in this decision. Table 1: Correlation between UGE and HVPG after AAD:

<table>
<thead>
<tr>
<th>HVPG ≤12 mmHg</th>
<th>Nonvarices</th>
<th>Small varices</th>
<th>Large varices</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 (3.4)</td>
<td>1 (1.3)</td>
<td>1 (1.3)</td>
<td>1 (1.7)</td>
<td>11</td>
</tr>
<tr>
<td>HVPG &gt;12 mmHg</td>
<td>2 (2.3)</td>
<td>11 (12.5)</td>
<td>2 (3.1)</td>
<td>15</td>
</tr>
</tbody>
</table>

Total 21 19 28

454 THE SUSTAINED VIROLOGICAL RESPONSE (SVR) BY DIRECT-ACTING ANTIVIRAL AGENTS (DAA) REDUCES PORTAL HYPERTENSION IN PATIENTS WITH HCV CIRRHOSIS.

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Background and Aims: Portal hypertension, defined by an Hepatic Venous Pressure Gradient (HVPG) above 5 mmHg, is associated with the development of esophageal varices (EV). Treatments with direct acting antivirals (DAAs) is successful in eradicating HCV in most patients with cirrhosis, even when significant portal hypertension is present. We assessed prospectively the changes in portal hypertension, evaluated by HVPG and by EV, in patients with HCV cirrhosis before and after sustained viral response (SVR) to DAAs.

Methods: Forty-one consecutive patients with HCV cirrhosis (Child-Pugh A5-A6) were included in the study between January 2015 and May 2016. None was on beta-blockers at the time of assessment. All underwent simultaneous liver stiffness measurement (LSM), UGI endoscopy for EV and HVPG measurement at baseline immediately before DAAs, and then as follow-up six months after achieving SVR.

Results: All patients achieved SVR. At baseline 8 patients (19.5%) had no EV, 29 (70.7%) had small EV and 4 (9.8%) large EV. After SVR 4 patients (9.8%) showed progression of EV and 5 patients (12.2%) reduction of variceal size (3 from grade 1 to grade 0; 2 from grade 2 to grade 1). Mean values of HVPG were significantly reduced from baseline to follow-up (12.2 to 9.5 mmHg, Δ = −2.7 mmHg, p = 0.001). Thirty-two patients (78%) had an HVPG decrease ≥10%. In 5 patients (13.9%) HVPG values were increased. Portal thrombosis occurred during therapy in two of these patients. Rates of patients with HVPG ≥10 mmHg (Clinical Significant Portal Hypertension- CSPH) according to variceal size, before and after DAAs, are shown in Table 1. Mean values of LSM decreased from 21.5 to 16.2 kPa (Δ: −5.3 kPa; p=0.016) while platelet counts increased (Δ: + 30.2 x 109/L, p = 0.023).

Conclusions: SVR obtained with DAAs is associated with a significant reduction of portal hypertension evaluated by HVPG and non-invasive tests (platelet counts and LSM). Only a minority of patients experience a reduction of variceal size. Longer follow up will assess the impact of HVPG reduction on the outcome of cirrhotic patients after SVR.

<table>
<thead>
<tr>
<th>Follow up</th>
<th>Baseline</th>
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<tbody>
<tr>
<td>HVPG ≤10 mmHg</td>
<td>33 (7.3%)</td>
</tr>
<tr>
<td>10 mmHg</td>
<td>58 (24.5%)</td>
</tr>
<tr>
<td>10-20 mmHg</td>
<td>49 (22.1%)</td>
</tr>
<tr>
<td>≥20 mmHg</td>
<td>50 (23.4%)</td>
</tr>
</tbody>
</table>

455 VALIDATION OF BAVENO VI CRITERIA FOR TRIAGING PATIENTS FOR SCREENING ENDOSCOPY IN PRIMARY BILIARY CHOLANGITIS AND PRIMARY SCLEROSING CHOLANGITIS

Carlos Mocetzeuma-Velazquez, Aldo J. Montano-Loza, Andrew Mason, Jan Erick Nilsson, Juan G. Abrahals; Gastroenterology and Liver Unit, University of Alberta, Edmonton, AB, Canada

Background: Baveno VI and AASLD 2016 guidelines recommend that patients with compensated cirrhosis with liver stiffness by transient elastography (LSM) <20kPa and platelets >150,000/mm3 do not need upper endoscopy (UE) to screen for varices, since the risk of having varices needing treatment (VNT) is <5%. This tool proved robust in patients with cirrhosis of viral and alcohol etiologies, but it is uncertain if it can be safely used in patients with cholestatic liver disease. The Aim of this study was to assess the performance of Baveno VI criteria and other described prediction rules in patients with compensated advanced chronic liver disease (cACLD) due to Primary Biliary Cholangitis (PBC) and Primary Sclerosing Cholangitis (PSC).

Methods: This was a retrospective cross-sectional study of patients with compensated PBC or PSC assessed with UE and paired LSM within one year. Criteria to perform UE was the presence of cACLD diagnosed by liver biopsy, clinical or imaging criteria, or a LSM>10kPa. We excluded patients on primary prophylaxis for variceal bleeding or with LSM not fulfilling quality criteria. We evaluated the performance of Baveno VI criteria, of a continuous model based on LSM and platelets using a risk threshold of 5% (Hepatology, 2016), of extended criteria (Liver Int, 2017) and of previously recommended criteria for PBC (Clin Gastroenterol Hepatol, 2007) in predicting the absence of VNT (Table) Results: Our study included 55 patients with PBC and 43 with PSC. Prevalence of varices was 42%, and of VNT 14%. Table 1 shows the performance of the different criteria. Baveno VI criteria would have saved 28% of UE, with a 0% false negative rate. The continuous LSM-platelet model would increase saved UE to 33%, with a FNR of 0%. Calibration of this model (developed in a sample with predominantly viral etiology) was excellent suggesting the relation between LSM-platelet and VNT is
not relevantly different in this population. Expansion of these criteria resulted in an increase in FNR, but could have saved close to 50% UE. In PBC, previously described criteria are safe but result in less saved UEs. Conclusions: Applying Baveno VI criteria is safe in patients with PBC and PSC, and could save ~30% of UEs. Expansion of these criteria could increase saved UEs but would increase the FNR. In settings with limited access to LSM, criteria based on Mayo score and platelets are a suitable alternative in PBC.

Performance of the different criteria to rule out VNT

<table>
<thead>
<tr>
<th>n</th>
<th>VNT a (%)</th>
<th>Baveno VI</th>
<th>LSM&gt;50</th>
<th>ISM&gt;10</th>
<th>Asoleh et al., 2010</th>
<th>Eslam et al., 2016</th>
<th>Jangkhot et al., 2017</th>
<th>Levy et al., 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPC</td>
<td>55</td>
<td>8 (15%)</td>
<td>41 (75%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FPC</td>
<td>43</td>
<td>6 (14%)</td>
<td>24 (56%)</td>
<td>0</td>
<td>2 (47%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</table>

FNR False negative rate (% of missed VNT)

**456 A PRAGMATIC REFINEMENT OF NON-INVASIVE ALGORITHM IN PREDICTING HIGH-RISK VARICES IN CIRRHOSIS: CAN MORE ESOPHAGOGASTRODUODENOSCOPIC BE CIRCUMVENTED WHILE NOT MISSING HIGH-RISK VARICES?**

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Background The diagnostic performance of Baveno criteria compared with other non-invasive scores such as the liver stiffness-spleen platelet ratio (LSPS) in excluding high-risk varices (HRV) needs further analysis. Aim To pragmatically refine non-invasive criteria and develop a good algorithm to exclude HRV in cirrhosis, while maximising the EGDs correctly circumvented with high NPV. Method Patients from two public hospitals in Singapore and New Zealand undergoing Fibroscan between 2011-2016 were analysed. Liver stiffness measurement<10kPa, previous ®-blocker use, liver transplantation, variceal bleeding, decompensation or splenectomy were excluded. Any medium/large gastroesophageal varices (GEV), or small varices with red-wales were defined as HRV. Risk prediction models with logistic regression were constructed for each variable. Optimal cutoffs for tests were determined by Youden Index and from known published cutoffs. Results A total of 15,629 Fibroscans were performed at the two sites. A cohort of 387 patients entered into final analysis. 74.7% were male. 31.3% were European and 23.5% Chinese. The most common aetiologies were; 53% HCV, 18.9% NAFLD and 15% HBV. The median MELD was 6(5-12). Overall, 27.1% had GEVs and 9.6% had HRVs. The NPV for HRV in Baveno criteria, LSPS<1.33 were 100%, and 98.7% respectively. 27.9%, and 40.3% of EGĐs could be circumvented while missing 0%, 1.3% of HRV by using Baveno, LSPS<1.33 respectively. The optimal cutoff for LSM+platelet was LSM<21 and platelet<125 (modified Baveno), and for LSPS was 1.80. For ‘ruling out’ HRV, modified Baveno criteria and LSPS<1.80 had NPV of 98.8%, 98%, while missing 0.5%, and 1% of HRV, respectively. 42.6%, 52.7% of EGĐs can be avoided using modified Baveno, and LSPS<1.80 respectively. None of the non-invasive test combination saved any additional EGĐs whilst NPV>98%. LSPS<1.80 was most ideal test, with 51.7% EGĐs ‘correctly’ circumvented while missing 4/385(1%) HRV. Conclusion Algorithm involving multiple non-invasive tests was not needed to high NPV value ruling out HRV. LSPS with cutoff of 1.80 was the best criteria through pragmatic analysis, in this large multicenter study.

**Table 1 Non-invasive combination algorithm**

| Backgground | Invasive HVPG measurement is the gold standard test to assess the degree of portal hypertension. The Aim of this study was to develop a predictive model of HVPG≥10mmHg (HVPG10) using noninvasive makers. Methods: Patients who have been programmed for liver resection/transplantation (LR/LT) from November 2014 until August 2016 were enrolled prospectively. Preoperative LFT, LSM using transient elastography and intraoperative HVGP were collected. The study cohort was divided randomly into training [66%] and validation [34%] sets. Independent predictors of HVPG10 were identified by multivariate binary logistic regression in the training cohort. A probability model, HVPG10 score, was developed and internally internally validated. Results: A total of 161 patients [66% men, median age of 63 years] who have had paired measurement of LFT, LSM and HVPG were included. Primary liver malignancy [34.2%] and end-stage liver disease due to alcohol [11.2%] were the most common indications for LR and LT respectively. Median MELD score, LSM, and HVPG were 6, 9.5kPa, and 5mmHg respectively. No underlying liver disease [F0] was found in 32.9% patients, chronic liver disease [F2/3] and cirrhosis [F4] were found in 32.9% and 34.2% patients respectively. Independent predictors of HVPG10, LSM [P<0.01, OR=1.1], total bilirubin [P=0.04, OR=0.9], alkaline phosphatase [P=0.02, OR=1], and international normalized ratio [P<0.01, OR=41.4], were used to develop HVPG10 score. Area under receiver operating curve in the training [n=106] and validation [n=55] sets were 0.91 [95%CI:0.83-0.98] and 0.93 [95%CI:0.86-0.99] respectively with a cutoff of 1.05 [Figure]. In the overall cohort, HVPG10 score cutoff of 0.15 can predict the individual risk of HVPG10 with 83% accuracy, 90% sensitivity, 8% specificity and 96% negative predictive value. Conclusion: HVPG10 score including LFT and LSM is an easy-to-use continuous scale tool. It would accurately predict the individual risk of decompena...
s sustained virological response. Four more are being worked up for HCV therapy. Compliance with treatment thus far has been 89%.

**Conclusion:** In a cohort of vulnerable adults with a high prevalence of excess alcohol consumption and HCV, AUDIT score was an independent predictor of CSHF. In contrast to a common perception that this group do not engage with health services, 99% accepted the community service with 89% being compliant with DAA therapy.

#611 NEW BLOOD TEST MULTI-TARGETED FOR LIVER FIBROSIS OUTPERFORMS ELASTOMETRY FOR MOST OUTCOMES

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**Background:** Most blood tests for liver fibrosis are targeted, by construction, for a single diagnostic target, usually significant fibrosis. However, in clinical practice, another important diagnostic target is cirrhosis for which the non-invasive diagnostic reference is elastography. The only blood test targeted for cirrhosis (CirrhoMeter: CM) by construction had a better accuracy for cirrhosis than the test using the same biomarkers targeted for significant fibrosis (FibroMeter: FM). However, it was difficult to use simultaneously both tests in the same patient. Therefore, we have recently developed a new statistical method to dispose a unique blood test having multiple diagnostic targets, called FibroMeter multi-targeted (FMM). Our **Aim** was to compare accuracy of FMM and liver vibration controlled transient elastography (VCTE by Fibroscan). **Methods:** 1746 patients with chronic liver disease of various etiologies were included. Reference was Metavir fibrosis (F) staging by liver biopsy. Liver automated morphometry was available in a subgroup of 484 patients. Judgement criteria included AUROC for significant fibrosis classifications including 6 fibrosis classes from F0/1 to F4. FMM and FM were derived in another population of 1012 patients with chronic hepatitis C; thus, there was no optimism bias in the comparisons.

**Results:** Respectively FMM vs VCTE, AUROC for significant fibrosis: 0.817 vs 0.786 (p=0.019), AUROC for cirrhosis: 0.885 vs 0.898 (p=0.395), Obuchowski index: 0.777 vs 0.755 (p=0.046), classification: 83.0 vs 80.0% (p=0.004). The corresponding accuracies of FM were, AUROC for significant fibrosis: 0.819 (p=0.017 vs VCTE, p=0.797 vs FMM), AUROC for cirrhosis: 0.857 (p=0.008 vs VCTE, p<0.001 vs FMM), Obuchowski index: 0.776 (p=0.064 vs VCTE, p=0.661 vs FMM), classification: 79.1% (p=0.446 vs VCTE, p<0.001 vs FM). Thus, when comparing a blood test and VCTE, FMM provided a statistical advantage over FM in 3 out of the 4 judgement criteria. The Spearman correlation coefficient were, respectively FM and VCTE: 0.619, 0.635 and 0.600; and with area of porto-septal fibrosis: 0.534, 0.543 and 0.550. **Conclusion:** Multi-targeting biomarkers very significantly improves the fibrosis staging accuracy of classical single-targeted blood tests in comparison with VCTE. This allows a blood test to outperform VCTE for overall staging and even matching VCTE for cirrhosis diagnosis.

614 IS LIVER BIOPSY STILL NECESSARY IN EVALUATING HCV
INFECTED KIDNEY TRANSPLANT CANDIDATE?
Claudia Cottone, Fernando H. Calmet, Cynthia Levy, Christopher O’Brien, Paul Martin, Kalyan R. Bhambir; University of Miami, Miami Beach, FL

Background. Biochemical noninvasive markers of liver fibrosis and Transient Elastography (TE) have been widely validated in HCV positive general population. However, in HCV-infected end stage renal disease (ESRD) patients, liver biopsy (LB) is still indicated as gold standard for evaluation of liver fibrosis. The upcoming recommendations of Kidney Disease Improving Global Outcome suggest to use noninvasive markers to determine liver fibrosis and to identify cirrhotic patients before LB. However, experience and performance of noninvasive markers in HCV positive ESRD population are generally limited to single-center studies and small groups of patients. Aim: To evaluate the performance of noninvasive markers of liver fibrosis in comparison to liver biopsy among HCV-infected kidney transplant candidates. Methods. We reviewed retrospectively a total of 98 HCV infected ESRD patients on the kidney transplant wait-list from 2011 to 2016. LB was routinely performed percutaneously or via trans jugular (TJ) route with simultaneous measurement of hepatic venous pressure gradient (HVPG). TE and biochemical noninvasive markers of liver fibrosis (APRI and Fib-4) were performed in all cases. Area under the receiver operating curve (AUROC) value were used to assess accuracy of noninvasive fibrosis markers and LB with or without HVPG. Results. Advanced liver fibrosis by LB (METAVIR F3-F4) was found in 27/98 patients and 70% of those were ≥60 years old. Accuracy of LB in detecting advanced fibrosis/cirrhosis was superior to that of APRI >0.38 (84.42% vs 61.1%), Fib-4 >1.45 (84.42% vs 57.78%). Concordance of both biochemical non-invasive markers in excluding cirrhosis failed to identify a limited number of patients with histological advanced liver fibrosis. In those patients other factors of liver fibrosis progression (alcohol abuse, metabolic syndrome and advanced age) were present. TE showed similar accuracy to LB (81.82% vs 84.42%) when using a cut-off >12.7 kPa. Comparison between the AUROC of non-invasive markers showed that AUROC of TE were higher than those of APRI (0.88 vs 0.659, p=0.01), Fib-4 (0.88 vs 0.63, p=0.01)

Conclusions. Among non-invasive markers of liver fibrosis TE is superior in detecting advanced fibrosis/cirrhosis and similar in accuracy to LB. Routine liver biopsies as recommended in previous years can be avoided in a significant proportion of HCV-infected ESRD patients in whom, both biochemical markers (APRI and Fib-4) are suggestive of non-advanced liver fibrosis. LB may be necessary only in some KT candidates with clinical stigmata of portal hypertension and with liver disease progression co-factor such as metabolic syndrome and alcohol abuse.

615 OBESITY PREDICTS DISCORDANCY BETWEEN MAGNETIC RESONANCE ELASTOGRAPHY AND TRANSIENT ELASTOGRAPHY FOR THE STAGE OF FIBROSIS IN PATIENTS WITH NONALCOHOLIC FATTY LIVER DISEASE
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Background: Liver disease in the absence of viral hepatitis co-infection is a growing problem in HIV positive individuals. Possible causes include alcohol excess, non-alcoholic fatty liver disease, and hepatotoxic antiretroviral therapy (ART). We aimed to assess the prevalence of hepatic fibrosis and associated risk factors in HIV mono-infected individuals with abnormal liver tests. Methods: HIV mono-infected individuals with persistently elevated transaminases for ≥6 months were identified as part of an earlier audit. Consenting individuals were prospectively assessed using transient elastography, Alcohol Use Disorders Identification Test (AUDIT) questionnaire, and screening for metabolic syndrome (MS). Thresholds for clinically significant hepatic fibrosis (CSHF) and hepatic steatosis (HS) were liver stiffness measurement (LSM) ≥7.1kPa and controlled attenuation parameter (CAP) ≥237dB/m respectively. Results: Of 425 eligible individuals, 85 have been recruited to date. The median age was 51yrs (IQR 44-58), 91.8% men, with median HIV duration being 14yrs (10-18). CSHF was seen in 18 (21.2%) (of whom nine [10.6%] also had HS) with two (2.4%) being cirrhotic (LSM >11.5kPa). Overall, 43 (50.6%) had HS. Risk factors in those with CSHF were: alcohol (n=5, 27.8%), MS (n=2, 11.1%), alcohol and MS (n=3, 16.7%), MS and ART (n=2, 11.1%), and three risk factors (n=2, 11.1%). No risk factors for CSHF were identified in four (2.2%). In those with and without CSHF, no differences were seen in age (48 vs. 51yrs, P=0.511), BMI (27.4 vs. 25.3, P=0.246), HIV duration (12 vs. 14yrs, P=0.524), diabetes mellitus prevalence (6.3% vs. 8.1%, P=0.642), and ART use (including diacidanosine, stavudine, nevirapine and efavirenz). Though not statistically significant, those with CSHF were more likely to be obese (BMI ≥30) (27.8% vs. 16.7%, P=0.317) and have hazardous drinking (AUDIT ≥8) (55.6% vs. 46.2%, P=0.596). On binary logistic regression lower HDL cholesterol was the only independent predictor of CSHF (HR 0.160, 95% CI 0.028-0.926, P=0.041). Both Fib-4 and APRI performed poorly in identifying CSHF (AUROC 0.477 and 0.462 respectively). Conclusion: Our preliminary results confirm the high non-viral liver disease burden in HIV mono-infected individuals with elevated transaminases with about a fifth having CSHF and >50% with HS. Alcohol and MS (alone or in combination) were the risk factors for CSHF in about 60%, and lower HDL was the only independent predictor of CSHF. However, no discernible risk factors were identified in about 25% of HIV mono-infected individuals with CSHF which raises the intriguing possibility that CSHF may be caused directly by the HIV infection.

623 TRANSIENT ELASTOGRAPHY CHANGES DURING HEPATITIS C TREATMENT WITH NOVEL AGENTS
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Background/Objectives: Accurate assessment of liver fibrosis is an important component in management of chronic hepatitis c. Past studies have demonstrated regression in fibrosis with interferon based treatments, however, currently studies are limited showing fibrosis scores before and after treatment with the newer oral Hepatitis C treatment modalities. Methods: This was a single center retrospective chart review at a major academic medical center that included patients prescribed one of the Direct-Acting Antiviral Drugs (DAAs) from January 2015 to November 2016. Pre and post (after SVR12) treatment fibroscan or fibrosure scores were recorded. Primary outcomes were: Median fibrosis scores pre and post SVR 12. Secondary outcomes included: median treatment time, median time to post treatment fibrosis score after SVR 12, distribution of pre and
post SVR 12 fibrosis scores, and quality of change in fibrosis score post treatment. Results: Overall, 833 patients were prescribed a DAA; of those prescribed, 55 patients had completed HCV therapy, achieved SVR12, and had pre and post treatment fibroscan or fibroSURE data available. Of these 55 patients, 20 patients had pre and post treatment fibroscan data, 30 patients had pretreatment fibrosures and post treatment fibroscans, and 5 patients had pre and post-treatment fibroSure data. Median treatment time was 12 weeks and median time to post treatment F score after SVR 12 was 6 months. Outcomes are summarized in Table 1. Conclusions: This study suggests that treatment of chronic hepatitis C leads to early stability or slight improvement in fibrosis as measured by non-invasive means in the majority of patients who achieve SVR 12 after being treated with a DAA. Future studies should continue to monitor for improvements in fibrosis over time.

Table 1: Overall Pre and Post Treatment Fibrosis Scores

<table>
<thead>
<tr>
<th>Liver Fibrosis Score</th>
<th>Pre-Treatment</th>
<th>Post-Treatment</th>
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<tr>
<td>F0</td>
<td>17</td>
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<tr>
<td>F1</td>
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<tr>
<td>F4</td>
<td>10</td>
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</tbody>
</table>

Overall Median F Score: F1 F3

Change in Fibrosis Score: Post Treatment (%) Improvement: 21 (30%) Static: 22 (40%) Worse: 12 (22%)

Asterisk (*) denotes abstract of interest

628* TRANSIENT ELASTOGRAPHY WITH CONTROLLED ATTENUATION PARAMETER (CAP) A TOOL FOR LIVER DISEASE SCREENING IN TYPE II DIABETES MELLITUS PATIENTS

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Background and Aim: Type II diabetes and nonalcoholic fatty liver disease (NAFLD) are frequently associated, NAFLD being considered the hepatic expression of the metabolic syndrome. The Aim of the present study was to assess the severity of liver fibrosis and steatosis in a cohort of type II diabetic patients, using non-invasive Methods: Transient Elastography (TE) and Controlled Attenuation Parameter (CAP). Material and Methods: The study included 354 type II diabetic patients, who were prospectively randomized (every first 6 patients who were referred to the Metabolic Disease Outpatient Clinic on a consultation day), evaluated in the same session by means of TE and CAP (FibroScan EchoSens) to assess both liver fibrosis and steatosis. Each patient was evaluated for the presence of viral hepatitis (B, C, D) and an AUDIT-C score was performed to exclude alcohol abuse. Reliable liver stiffness measurements (LSM) were defined as the median value of 10 LSM with an IQR/median <30%. For TE and CAP, M and XL probes were used. A cut-off value of 10.5 kPa [1] was used to define clinically relevant fibrosis (F2=3). For differentiation between stages of steatosis we used the following cut-off values [2]: S2(moderate) - 255 db/m, S3(severe) - 290 db/m, than we corrected the CAP values according to the presence of diabetes (we deducted 10 db/m) and according to the degree of obesity (we deducted 4.4 db/m for BMI<25 kg/m2 added 4.4 db/m for each BMI< 25 kg/m2) [3]. Results: Out of 354 diabetics screened we excluded those with associated viral hepatitis, those with an AUDIT-C score 28 and those with unreliable LSM. The final analysis included 239 subjects (59.4% women, 40.6% men, mean age 60.42±9.3; BMI=31.82±6.1kg/m2) with reliable LSM. Patients with obesity grade I were 35.6%, with obesity grade II 17.2% and 10% with obesity grade III (IMC≥40 kg/m2). Moderate and severe steatosis by means of CAP was found in 18.4% and 69.5 % cases respectively. After the correction we found moderate steatosis in 21.3% cases and severe steatosis in 59.8% cases. Clinically relevant fibrosis was detected by means of TE (LSM≥10.5 kPa [4]) in 15.4% (37/239) of subjects. Conclusions: In our group, 81.1% of diabetic patients had moderate and severe steatosis by CAP and 15.4% of them had severe fibrosis (TE ≥ 10.5 kPa), suggesting the need for their systematical assessment.

631 OPTIMAL THRESHOLD OF CONTROLLED ATTENUATION PARAMETER WITH MRI-PDFF AS THE GOLD STANDARD FOR THE DETECTION OF HEPATIC STEATOSIS

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Background: The optimal threshold of controlled attenuation parameter (CAP) for the detection of hepatic steatosis is unknown in nonalcoholic fatty liver disease (NAFLD). Magnetic resonance imaging proton-density-fat-fraction (MRI-PDFF) is an accurate and precise method to detect presence of hepatic steatosis and is better than CAP (Park et al. Gastro 2017). Thus, the Aim of this study was to evaluate the diagnostic accuracy and the optimal threshold of CAP for the detection of hepatic steatosis as defined by MRI-PDFF ≥ 5%.

Methods: This cross-sectional study included 121 adults prospectively recruited patients with and without NAFLD who underwent MRI-PDFF and CAP within a six-month period at the NAFLD Research Center, UCSD. All patients underwent a clinical evaluation including standardized collection of history, anthropometric and physical examination and biochemical tests. The primary outcome was the detection of hepatic steatosis as defined by MRI-PDFF ≥ 5%. The secondary outcome was the detection of hepatic fat content ≥ 10% as this threshold has been used in several therapeutic trials as inclusion criteria. Receivers operating characteristic curve (ROC) analyses were used to assess the diagnostic accuracy of CAP and optimum thresholds were determined using the Youden index. Results: This study included 121 patients (58% women), mean (±sd) age and BMI were 52.2 (±15.0) years and 30.0 (±5.6) kg/m2, respectively. The prevalence of NAFLD (MRI-PDFF≥5%) and MRI-PDFF ≥ 5% was 70% (n=85) and 47% (n=57), respectively. The area under the ROC (AUCRO) of CAP for the detection of MRI-PDFF ≥ 5% was 0.96 (95%CI: 0.90-1.00) compared to MRI-PDFF ≥ 5% was 0.95 (95%CI: 0.90-0.99). The cut-off value of 10.5 kPa was used to define clinically relevant fibrosis (F2=3). For differentiation between stages of steatosis we used the following cut-off values [2]: S2(moderate) - 255 db/m, S3(severe) - 290 db/m, than we corrected the CAP values according to the presence of diabetes (we deducted 10 db/m) and according to the degree of obesity (we deducted 4.4 db/m for each BMI<25 kg/m2 added 4.4 db/m for each BMI< 25 kg/m2) [3]. Results: Out of 354 diabetics screened we excluded those with associated viral hepatitis, those with an AUDIT-C score 28 and those with unreliable LSM. The final analysis included 239 subjects (59.4% women, 40.6% men, mean age 60.42±9.3; BMI=31.82±6.1kg/m2) with reliable LSM. Patients with obesity grade I were 35.6%, with obesity grade II 17.2% and 10% with obesity grade III (IMC≥40 kg/m2). Moderate and severe steatosis by means of CAP was found in 18.4% and 69.5 % cases respectively. After the correction we found moderate steatosis in 21.3% cases and severe steatosis in 59.8% cases. Clinically relevant fibrosis was detected by means of TE (LSM≥10.5 kPa [4]) in 15.4% (37/239) of subjects. Conclusions: In our group, 81.1% of diabetic patients had moderate and severe steatosis by CAP and 15.4% of them had severe fibrosis (TE ≥ 10.5 kPa), suggesting the need for their systematical assessment.
or XL probe, we found that CAP values were significantly higher using XL probe compared to M probe when liver fat was < 10%: 297.1 vs. 239.4, p<0.001. When stratified by IQR of CAP, we found that as IQR below median (30 dB/m) had a higher AUROC compared to IQR above median (0.92, 95%CI: 0.85-1.00) vs. [0.70, 95%CI: 0.56-0.85], p-value=0.0117. Conclusion: The cut-point of CAP for presence of hepatic steatosis (MRI-PDFF ≥ 5%) was 288 dB/m. The diagnostic accuracy of CAP for the detection of hepatic steatosis is more reliable when IQR of CAP is <30 dB/m. These novel data have implications for clinical utility of CAP in the assessment of NAFLD. Using these optimal thresholds for the quantitative diagnosis of hepatic fat may modify the clinical trials design for the treatment of NAFLD and reduce costs.

632 EVALUATION OF LIVER DISEASE SEVERITY BY TRANSIENT ELASTOGRAPHY IN PATIENTS WITH SHORT BOWEL SYNDROME (SBS) RECEIVING LONG-TERM PARENTERAL NUTRITION

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Background: Patients with short bowel syndrome (SBS) are at risk for hepatobiliary complications such as liver cirrhosis and/or end-stage liver disease, especially if receiving longterm parenteral nutrition (PN). The ultrasound-based transient elastography (FibroScan®) is a well-established noninvasive technique for the staging of liver fibrosis. Controlled attenuation parameter (CAP) implemented on FibroScan has been developed to measure the degree of ultrasound attenuation due to hepatic fat. The Aim of the present study was to evaluate dynamic changes of liver fibrosis and steatosis within 12 months by transient elastography (TE) including CAP in a cohort of patients receiving long-term PN.

Methods: 25 adult patients (52% male, median age 49 years) with PN requirement for at least 4 consecutive months and/or small bowel resection more than 50% were included and prospectively followed. Liver stiffness by FibroScanR and CAP measurement were done at study entry and after 12 months. Clinical parameter as well as data on underlying bowel disease and nutrition composition were collected. In addition bioelectric impedance analysis was performed in all patients.

Results: FibroScanR and CAP did not show any significant difference after 12 months [5.2 kPa (2.8-16.2 kPa); 223 dB/m (101-366 dB/m)] compared to study entry [5.3 kPa (2.7-12.3 kPa); 237 dB/m (100-344 dB/m)]. There was no significant correlation between FibroScanR/CAP and elevated transaminase levels. CAP significantly correlated with triglycerides (r=0.411; p=0.042) and BMI (r=0.468; p=0.016). Patients with a remnant small bowel <100 cm showed a significant higher stiffness value by FibroScanR compared to those having a remnant length ≥100 cm (6.1 kPa vs. 4.7 kPa; p=0.028), whereas duration of PN was neither associated with stage of fibrosis nor degree of steatosis. Conclusion: In our study cohort prevalence of advanced fibrosis/cirrhosis was low (<10%) without significant dynamic within 12 months follow-up. Short intestinal remnant length appeared to be a risk factor for development of fibrosis. Further studies with longer follow-up time are required to assess long-time risk of chronic liver disease.

635 COMPUTED TOMOGRAPHY-MEASURED LIVER VOLUME PREDICTS STAGE OF HEPATIC FIBROSIS

Asterisk (*) denotes abstract of interest
both Fibroscan M and XL probes were included. Advanced fibrosis was defined as NASH CRN F≥3 or Metavir F2≥3. Results: LSM failed with the M probe in 57 patients and with both probes in 5 patients (LSM failure, M vs XL: 13.0% vs 1.1%, p=0.001). Both M and XL probe Results were available in 382 patients (age: 54.7±13.4 years, male sex: 60.5%, NAFLD: 76.7%, advanced fibrosis: 42.7%, cirrhosis 13.9%). The correlation between M and XL Results was excellent (Rs: 0.87, p<0.001; ICC: 0.90, p<0.001). AUROC of M and XL probes for the diagnosis of advanced fibrosis (respectively: 0.808±0.022 vs 0.784±0.024, p=0.070) and cirrhosis (0.898±0.020 vs 0.896±0.020, p=0.880) were not significantly different. However, XL probe gave significantly lower Results than M probe (10.3±8.0 vs 12.3±8.7 kPa, p<0.001). Consequently, using the same diagnostic cut-offs for both probes, M probe showed a significantly better sensitivity for advanced fibrosis and cirrhosis whereas XL probe had a significantly better specificity. These first Results suggested that specific diagnostic cut-offs should be defined for each probe. 115 patients having SCD ≥25mm were matched for age, sex, fibrosis stage and serum transaminases with 115 patients having SCD ≥25mm. M probe Results obtained in the SCD ≥25mm group were not significantly different than XL probe Results obtained in the SCD ≥25mm group (respectively: 11.0±8.8 vs 11.4±7.2 kPa, p=0.175). Diagnostic accuracy, sensitivity and specificity for advanced fibrosis and cirrhosis were not significantly different between M probe in the SCD ≥25mm group and XL probe in the SCD ≥25mm group, and this by using the same diagnostic cut-offs in all patients. Conclusion: Fibroscan M probe must be used on patients with a skin-liver capsula distance ≥25mm and XL probe on those with a distance ≥25mm. By doing this, LSM result can be interpreted with the same diagnostic cut-offs for both M and XL probes.

637 EVALUATION OF LIVER STIFFNESS, APRI AND FIB-4 SCORES IN END-STAGE RENAL DISEASE PATIENTS WITH CHRONIC HEPATITIS B VIRAL INFECTION
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Background: Prior to kidney transplantation in end-stage renal disease (ESRD) patients with chronic hepatitis B viral (HBV) infection, liver biopsy is recommended to assess disease severity. Due to its associated complications, non-invasive tests such as aspartate aminotransferase/platelet ratio index (APRI), fibrosis index based on four factors (FIB-4) and transient elastography (TE) (FibroscanR) has been introduced. We evaluated the role of TE, APRI and FIB-4 in ESRD patients with chronic HBV infection. Methods: ESRD patients on hemodialysis with chronic HBV were invited to the study. Exclusion criteria were those who had contraindications of TE and liver biopsy. After overnight fasting, patients underwent TE, following with percutaneous liver biopsy on the same day. Liver histology was graded for fibrosis staging according to Metavir scoring system. APRI and FIB-4 were calculated. Staging ≥2 and ≥3 were defined as significant fibrosis (Sig-F) and severe fibrosis (Sev-F), respectively. The association of Sig-F and Sev-F with APRI, FIB-4 and liver stiffness measurement (LSM) was analyzed using Kruskal-Wallis test. Receiver operating characteristic (ROC) curves were used to evaluate the diagnostic accuracy of TE, APRI and FIB-4. Comparisons of area under ROC (AUC) was performed. Results: Forty-eight patients were enrolled. Among the evaluation of LSM, APRI and FIB-4 based on Sig-F and Sev-F staging, only the median (IQR) of LSM was different between non Sig-F and Sev-F (5.4 (4.3-6.5) vs 7.7 (6.1-12.4) kPa, p=0.008) and medians (IQR) of LSM and APRI was different between non Sev-F and Sev-F (5.6 (4.3-6.7) vs 11.6 (7.1-17.9) kPa, p=0.01 and 0.22 (0.15-0.31) vs 0.34 (0.31-0.43), p=0.03). The diagnostic performance of LSM, APRI and FIB-4 is showed in Table. From the comparison of ROC curves, LSM was better than FIB-4 in the diagnosis of Sig-F (P=0.04). However, the diagnostic performance of the 3 models for Sev-F was not different. Conclusions: Transient elastography should be chosen for assessing severity of liver disease in ESRD patients with chronic HBV infection. LSM over 11.3 kPa mostly predicts the presence of severe fibrosis. With the role of LSM and APRI, liver biopsy may be avoided in ESRD patients during pre-KT evaluation.

Performance characteristics of predictive models

<table>
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<th>Significant (kPa)</th>
<th>AUC</th>
<th>P</th>
<th>Cut-off</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
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<td>APRI</td>
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<td>FIB-4</td>
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<td>0.58</td>
<td>0.41</td>
<td>0.23</td>
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638 INFLUENCE OF INTENSE EXERCISE ON HEPATIC STIFFNESS VALUES AS MEASURED BY TRANSIENT ELASTOGRAPHY.
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Introduction: Hepatic stiffness measured by transient elastography (TE) has become the standard for assessing fibrosis in chronic liver diseases. Its value, far from being a stable variable, is influenced by several –not all known– circumstances: fasting, hepatic congestion, steatosis, obstruction of the bile duct, etc. It is unknown whether physical exercise can influence the outcome of TE. Aim: To know if physical exercise can affect the result of the TE and what variables related to the practice of physical exercise can influence the same. Material and Methods: 100 volunteers who ran a half marathon (21 km and 97 meters) were subjected to a strict control that included the determination of anthropometric, analytical, bioimpedance, urine density and TE variables before and after (except bioimpedance that was only done before) to participate in the 9th half-marathon edition of the city of Leon, Spain. During the race in all runners the heart rate was monitored as well as the fluid intake to take into account the difference in weight between the beginning and the end of the race. Performing the TE before the race required at least 3 hours of fasting. Results: The run was performed at 9°C and 43% RH at 102±1.81 min on average. Age: 43.9±11 years, median 45 years. 82 males and 18 females. Weight: 71.6±10.85 kg; BMI: 24.0±3.2. 36%; %Body fat: 19.8±9.35%; Basal metabolism: 1605.19±1592.92 Kcal/day. A TE was made to 96 runners of the 100 the day before the race and immediately after the race, to 47 just before the race and
640* PRACTICALITY OF USING VIBRATION CONTROLLED TRANSIENT ELASTOGRAPHY (VCTE) IN OUTPATIENT HEPATOLOGY CLINIC – NUMBER OF ATTEMPTS AND TIME NEEDED TO OBTAIN RELIABLE LIVER STIFFNESS MEASUREMENT

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Introduction: Vibration-controlled transient elastography (VCTE) using Fibroscan 502 Touch with medium (M) and extra-large probes (XL) is currently available for use to estimate liver fibrosis and steatosis. As the technique does not require the expertise of a radiologist, Fibroscan 502 touch is primarily located in outpatient clinics. However, the failure rate, rate of unreliable scans, time needed to get a successful scan and the number of attempts required to obtain a scan is currently unclear. **Aim:** In the current study, we examined the failure rate (inability to acquire 10 valid measurements), rate of unreliable scans (IQR/M >0.30 with LSM median ≥7.1 kPa), success rate (number of attempts required to obtain 10 valid measures) and time required to obtain a valid scan.

**Methods:** Data for all patients that underwent VCTE between August 2013 and March 2017 was extracted from the Results table of Fibroscan 502 Touch machines. **Results:** A total of 5862 scans (49% female, 46% male, 5% data missing) were performed during the study duration using XL probe in 33% (n=1918). A total of 5799 scans had ≥10 valid measures yielding a failure rate of 1.1% (n=63). The rate of unreliable scans was 0.7% (n=39). The median success rate was 100% (IQR 85-100). The median time required to perform a valid scan was 2.6 minutes (IQR 1.5-4.7) and was significantly different between M and XL probe (2.4 (IQR 1.5-4.4) vs. 2.9 (IQR 1.6-5.5) minutes, P<0.01). Similarly, the median number of attempts required to get a valid scan was 10 (IQR 10-11) and was significantly different between M and XL probes [10 (IQR 10-11) vs. 11 (IQR 10-12), P<0.01]. The frequency of successful scans based on the number of attempts and the time required to perform the scans are shown in Figure 1. **Conclusion:** VCTE can be performed in an outpatient setting with ease and usually performed in less than 5 minutes with high success rate.

642 IMPACT OF VITAMIN D SUPPLEMENTS ON LIVER STIFFNESS AND AMINOTRANSFERASE ACTIVITIES IN PATIENTS WITH CHRONIC LIVER DISEASES

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**Background and Aims:** Patients with chronic liver disease are more likely to develop vitamin D deficiency than the general population. Vitamin D deficiency has been associated with increased liver stiffness in early stages of the disease and with higher mortality in cirrhosis. Our aim was to investigate the influence of vitamin D supplementation on liver stiffness and serum liver enzymes in patients with chronic liver disease. Patients and Methods: Patients included if they suffered from chronic liver disease. Patients were subdivided in patients with vitamin D deficiency who received vitamin D (Group 1: 20,000 IU 25OH-cholecalciferol per week), with vitamin D deficiency but without any supplements (Group 2), and patients with sufficient serum vitamin D concentrations without additional supplementation (Group 3). Liver stiffness measurements (LSM) were obtained by transient elastography, and aminotransferase activities (ALT, AST) were recorded before the start of supplementation and at the end of a year. LSM and aminotransferase levels were compared using Wilcoxon signed-rank tests for related samples or t-tests, as appropriate. **Results:** In total, we included 100 patients in groups 1 and 2. Reflecting the generally low vitamin D levels in patients with chronic liver disease, we were only able to identify 35 patients for group 3. Patients who received vitamin D showed a significant increase in serum vitamin D concentrations (10.6 ± 5.2 ng/ml vs. 33.0 ± 14.9 ng/ml, p<0.001). Patients with deficiency who received vitamin D showed a significant (p<0.05) decrease in mean LSM from 13.4 ± 16.0 kPa to 9.7 ± 7.8 kPa, whereas in groups 2 and 3 no significant changes were detected. ALT and AST improved in group 1 (ALT: 66 ± 73 U/l vs. 54 ± 59 U/l, p<0.05; AST: 56 ± 55 U/l vs. 50 ± 41 U/l; p=0.076) and in group 2 (ALT: 67 ± 81 vs. 49 ± 50 U/l, p<0.01; AST: 56 ± 55 U/l vs. 43 ± 33 U/l; p<0.05) but remained unchanged in group 3. Conclusions: We found evidence for positive effects of vitamin D supplements on liver stiffness - but not surrogate markers of hepatic inflammation - across patients with chronic liver disease. Our findings indicate that the decrease in LSM as independent favorable factor for disease outcome should be evaluated in prospective cohort studies.

830 PERTINENCE OF LIVER STIFFNESS MEASUREMENT IN PATIENTS WITH WILSON’S DISEASE FOR ASSESSMENT OF INITIAL FIBROSIS AND TREATMENT FOLLOW-UP

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Asterisk (*) denotes abstract of interest
Background: Wilson’s disease (WD) is a rare autosomal recessive disorder of copper metabolism, leading to liver cirrhosis and neuropsychological deterioration. A liver biopsy may be useful to assist in diagnosis and to estimate the extent of fibrosis. However, non-invasive Methods of fibrosis assessment seem useful considering the invasive character of the biopsy and the help of molecular biology for diagnosis. Aim: Determine the pertinence of liver stiffness measurement (LSM) in patients with WD, for assessment of initial fibrosis and for treatment follow-up. Methods: We performed a retrospective analysis of all patients with confirmed diagnosis of WD, examined in a liver reference center, at the Paul-Brousse Hospital, Villejuif, France. Patients were evaluated clinically, biologically, morphologically and genetically. Hepatic involvement was assessed with liver biopsy and/or LSM. Results: We included 107 patients with hepatic symptoms of the WD, 54 (50.5%) females and 53 (49.5%) males, from 1974 to 2016. The mean age at diagnosis of WD was 20.1 (±10.54). Fiftyseven of 107 patients (53.3%) had neurological symptoms (mixed symptoms, neuropsychological and hepatic) at admission. The mean follow up was 15 years with extremes from 1 to 44 years. Sixty-five patients (60.7%) had liver pathological analysis and 72 (67.2%) had LSM. Seventy-three patients (68%) had cirrhosis at diagnosis of the disease. Forty-three patients (76%) had cirrhosis among the group of patients with neurologic and hepatic symptoms. Thirty-four (31%) patients were transplanted. Fourteen patients have a liver biopsy associated with LSM in a short interval of 1 month. Eleven of these 14 patients had cirrhosis at biopsy (Metavir F4). The three other patients were respectively F2, F1 and F0 according to Metavir score. The mean LSM for patient with cirrhosis was 32.3 (±15.9) kPa and was 6.2 (±2.1) kPa for patients with mild or moderate fibrosis (F0 to F2). Forty of non-transplanted patients (54.8%) had multiple measurements of liver stiffness during follow up. The mean LSM was 33.7 (±22.5) kPa at diagnosis. Mean LSM with chelators therapy was 17.6 (±18) kPa at 1 year, 16.5 (±12) kPa at 2 years, 9.38 kPa (±5.4) at 5 years, 10.4 (±4.7) kPa at 10 years, 7.7 (±3.6) kPa at 15 years and 7.2 (±2) kPa after 20 years. Conclusion: In case of a proven diagnosis of Wilson’s disease, LSM is pertinent for the estimation of liver fibrosis and can be useful to adapt the follow-up. During follow-up, there is a gradual decrease in the LSM under chelator treatment. The LSM can be a useful tool for monitoring the effectiveness of treatment.

1002 PROSPECTIVE ASSESSMENT OF THE IMPACT OF SUCCESSFUL DAAS TREATMENT ON LIVER FIBROSIS STAGE AND PREDICTORS OF FIBROSIS REGRESSION IN PATIENTS WITH CHRONIC HEPATITIS C AND ADVANCED FIBROSIS STAGE

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Background: The new direct-acting antiviral agent (DAAs) therapies have demonstrated a high sustained virological response rate (SVR) in patients with hepatitis C virus infection (HCV) however the impact of SVR on fibrosis stage was not evaluated. We have prospectively explored the impact of SVR on liver fibrosis stage using non-invasive measures. Baseline predictors of liver fibrosis regression were determined. Methods: Fibrosis stage was determined using: elastography (shear wave, Aixplorer SuperSonic Imagine, France) or Fibrotest (BioPredictive, France) as well as the APRI score, and FIB-4; at baseline and at 6 months intervals after end of treatment. Results: A total of 150 patients were prospectively enrolled, of them, 125 (54% male, 59±11 years, BMI 28±4, F3-4 89%) are currently being reported. Median follow up period was 12 months (IQR 7-15). Of the 79 patients with F4 and 31(39%) with F3 at baseline; 31(39%) and 26(79%) demonstrated improvement in fibrosis stage (defined as fibrosis stage ≥1) respectively at the end of follow-up. The median (IQR) liver stiffness decreased from 11.5(9.7-17)Kpa at baseline to 10.5(7.3-14.2)Kpa (p=0.0001) at 6 month, and to 8.5(6.8-12.5)Kpa (p=0.003) at 12 month post treatment. The median (IQR) fibrosis stage (using Fibrotest) decreased from baseline 0.77 (0.75-0.88) to 0.58 (0.49-0.77) at 12month P=0.001. Using univariate analysis, the baseline negative predictors of fibrosis regression in cirrhotics were: splenomegaly (p> 0.001), BMI>29 (p=0.037), DM (p=0.048), esophageal varices (0.007), bilirubin (p=0.0001), albumin (p=0.003), AST (p=0.005), ALT(p=0.019), PLT(p=0.001) and APRI cut off >2.1 and FIB-4 score cut off >2.55 (p=0.0001). In multivariate analysis splenomegaly (OR 0.002, p=0.007), DM (OR 0.029, p=0.039), BMI >29 (OR 0.016, p=0.014) and FIB-4 score >2.55 (OR 0.023, p=0.047) were baseline negative predictors of fibrosis regression. None of the cirrhotic patients developed hepatic decompensation. One patient (0.9%) developed hepatocellular carcinoma. Conclusions: Following successful DAAs treatment the majority of our HCV patients with advanced fibrosis stage demonstrated significant improvement in liver fibrosis stage assessed by non-invasive Methods. Advanced fibrosis stage and the metabolic syndrome were negative predictors of fibrosis regression. Longer follow up period is required to determine the impact of DAAs treatment in HCV patients.
chronic HCV, 20% having HBV, and 13% having NASH. 237 (33%) did not receive insurance payments. A total of $27,464.34 was paid by the insurance companies. The following data only includes non-zero insurance payments. The average rate of reimbursement per patient was $57.82. 85% (n=144) Medicare patients were reimbursed, with an average reimbursement of $34.69 [$0.21 - $500]. None of the 48 Medicaid patients were reimbursed. 68% (n=522) commercial insurance patients were reimbursed, with an average reimbursement of $65.81. Of the commercial insurances: Aetna reimbursed 75% (n=67), with an average of $54.07 [$45.54 - $425]. Bluecross Blue shield reimbursed 67% (n=141), with an average of $36.05 [$4.83 - $250]. Cigna reimbursed 61% (n=33), with an average of $92.55 [$37.77 - $425]. Humana reimbursed 55% (n=55), with an average of $65.98 [$32.11 - $500]. WPS reimbursed 49% (n=33), with an average of $33.54 [$32.81 - $36.41]. United Healthcare reimbursed 75% (n=155), with an average of $82 [$25.18 - $200]. 9 Self-Pay patients had an average rate of reimbursement per patient of $118.35 [$7.50 - $250]. HCV average reimbursement rates were $55.06. HBV were $66.33, and NASH were $59.65. Conclusion: Only 66% of FibroScansR® were reimbursed. All Medicaid claims were denied. The relatively low percentage of scans that were reimbursed combined with low average reimbursement ($57.82) may make the ROI too low to justify the cost of the equipment.

1030 PRESENCE OF GENOTYPE 3 PREDICTS CIRRHOSIS IN CHRONIC HEPATITIS C PATIENTS
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Background and Aims: Hepatitis C has emerged as important cause for cirrhosis and hepatocellular carcinoma. We studied the prevalence of different Genotypes and severity of liver disease in chronic hepatitis C patients. Methods: We prospectively studied 962 patients with chronic hepatitis C from June 2016 to May 2017. We compared all biochemical parameters, quantitative HCV RNA, HCV genotype, fibroscan, ultrasound, and endoscopic findings in genotype 3 and non-genotype 3 patients. Cirrhosis was diagnosed in patients with liver stiffness measurement (LSM) values ≥ 12.5 Kpa.

Results: Out of total 949 patients, there were 546 patients with genotype 3 and 297 patients (genotype 1/4/5; n= 103/188/6) with non-genotype 3. The mean HCV RNA values in genotype 3 and non-genotype 3 were 6.9 and 8.7 million copies/mL (P=0.051) respectively. In 106 patients baseline RNA was undetectable. The mean age was not different between genotype 3 and non-genotype 3 (39.6 vs 39.2, P=0.811). The LSM values were available in 618 patients and biochemical parameters were available in 212 patients. Overall, genotype 3 patients had higher LSM (11.3 vs 7.62, P=0.000), higher AST (88.4 vs 68.6, P=0.027) and low platelet count (228.4 vs 261, P=0.032) as compared to non-genotype 3 patients. Sub group analysis revealed that non-cirrhotic patients with genotype 3 had higher LSM (6.75 vs 6.11, P=0.000) and higher AST (74.4 vs 57, P=0.01) values as compared to patients with non-genotype 3. The platelet count was lower in non-cirrhotic genotype 3 as compared to non-genotype 3 (241.1 vs 263.6, P=0.161) although not statistically significant. Overall, genotype 3 had higher prevalence of cirrhosis than non-genotype 3 (115/415 vs 25/245, P=0.000), respectively. However, once cirrhosis developed decapsulation was not different between the two groups (32/115 vs 7/25, P=0.986). Asterisk (*) denotes abstract of interest

Conclusions: Chronic liver disease is more advanced in non-cirrhotic chronic hepatitis C patients with genotype 3 than non-genotype 3. Genotype 3 patients have higher prevalence of cirrhosis indicated by higher AST, lower platelet count and higher LSM values as compared to non-genotype 3 patients. However, once cirrhosis developed, decapsulation was not different between the two groups.

1033 REGRESSION OF FIBROSIS AFTER HEPATITIS C TREATMENT - A STEP TOWARDS DISCHARGE?
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Treatment of hepatitis C is continually evolving, with simplification of treatment regimes and reduction of side effects. While treatment has clearly described pathways, follow-up and potential discharge of patients with fibrosis who achieve sustained viral response (SVR) is less clear. Liver function tests (LFTs), viral load, and non-invasive tests such as transient elastography (Fibroscan) are often measured, with no clear consensus on discharge from follow-up based on these Results. We identified all treated hepatitis C patients who achieved SVR at the Queen Elizabeth University Hospital between April 2015-August 2016. Basic demographics, genotype, treatment regime(s), LFTs, and other viral serology (Hepatitis B and HIV) Results were known in all cases. Baseline Fibroscan readings were known, as well as post-SVR readings in some cases. 136 patients fell into the period identified; 88 (64.7%) men and 48 (35.3%) women. Average age was 51.7. The majority (61.8%) were genotype 1 and Caucasian (91.9%). 43 patients had Fibroscans pre- and post-treatment; within this group, 15 patients (34.8%) had an interferon-containing regime, and 26 (65.2%) an interferon-free regime. Of the 43 patients, 35 were treatment-naive. We found a median improvement in liver stiffness of 2.85kPa (33% improvement) in patients post-SVR, with 78.9% improving to F0/F1/F2 fibrosis. 7/8 patients with pre-treatment F2 fibrosis and 10/12 with pre-treatment F3 improved to F0/1, while 1/12 pre-treatment F3 and 4/7 pre-treatment F4 patients improved to F2. The 93 patients who did not receive post-treatment Fibroscans had similar demographics to the post-treatment scan cohort, however it was noted that their baseline Fibroscan readings tended to be higher, with a reading of >20kPa in 29% of patients. There was no clear evidence that these higher readings contributed to a decision to forego post-treatment Fibroscan, nor was alcohol consumption a significant factor in either cohort. We demonstrated an improvement in Metavir group in a number of patients who achieved SVR. Many of these patients (22) improved into a category that could be used as a component of criteria to discharge from clinic follow-up. Given the similarity in demographics between our two cohorts, it may be assumed that a number of patients who did not get post-SVR Fibroscans may have also improved to a degree that discharge could be considered. A prospective audit of Fibroscan Results pre- and post-treatment in all treated hepatitis C patients is needed to determine whether an improvement in Metavir group can be consistently demonstrated. This evidence may be used to support discharge decisions and potential cost-saving.

1044 SEROEPREVALENCE OF HCV AND TRANSIENT ELASTOGRAPHY IN A CORRECTIONAL SETTING
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Background: Disease burden of HCV is important for its elimination specially in high prevalence area as correctional setting in the era of highly effective oral drugs. Prevalence of HCV and its effect on hepatic fibrosis in this community is not very well studied. We studied seroprevalence of HCV and pattern of fibrosis in correctional setting of Punjab (India). Methods: We studied the prevalence of HCV in 12 prisons of Punjab (India) using HCV antibody screening. We also assessed the fibrosis in anti HCV positive individuals. Fibrosis was detected with the help of transient elastography (FibroScan; Echosens, Paris, France) in patients with HCV. Cut-off values of fibrosis were 7.1 kPa for F ≥ 2, 9.5 kPa for F ≥ 3, and 12.5 kPa for F = 4.

Results: A total of 8786 prisoners were screened in 12 prisons of Punjab. There were 8611 males and 175 females. Overall, the prevalence of HCV infection was 28.38 % (2494/8786). HCV infection was more frequent in males (28.8% vs 5.1%; p<0.000), injection drug users (IDU) (82.1% vs 17.0%; p=0.000), those with history of blood transfusion (69.8% vs 23.4%; p=0.000), history of tattoo (68.6% vs 22.1%; p=0.000), history of alcohol (40.0% vs 21.7%; p=0.000), history of smoking (53.4% vs 19.1%; p=0.000), history of multiple unprotected sexual intercourse (72.3% vs 22.3 %; p=0.000) and history of surgery (62.6% vs 25.5 %; p=0.000). Transient elastography was done in 1028 individuals who were anti HCV positive. Liver stiffness values ranged from 2.8 to 63.9 kPa (median, 6.3 kPa). Among the HCV patients, there was fibrosis stage F1, in 637(57.9%); F2, in 199(18.1%); F3, in 78(7.1%) and F4, in 114(10.4%).

Conclusions: HCV infection is prevalent among the prison population. IDU, blood transfusion, tattoo, history of alcohol, smoking, multiple unprotected sexual intercourse and history of surgery are important risk factors for HCV infection. Although asymptomatic, significant number of individuals also had severe fibrosis/cirrhosis. These Results suggest routine screening of HCV in correctional setting to identify cases and severe liver disease.

1054 DYNAMICS OF HEPATIC STEATOSIS IN THE TREATMENT FOR CHRONIC HEPATITIS C WITH DIRECT ACTING ANTIVIRALS
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Background: Hepatic steatosis is one of the common pathological findings of chronic hepatitis C (CHC). We aimed to analyze the changes of hepatic steatosis in anti-HCV treatment with DAA and investigated a clinical significance of the hepatic steatosis dynamics.

Methods: We retrospectively analyzed 110 patients with CHC (48 males and 62 females) who received DAA therapy including daclatasvir- asunaprevir (n=52), ombitasvir-paritaprevir-ritonavir (n=6), sofosbuvir-ledipasvir (n=31) and sofosbuvir-ribavirin (n=21). All patients showed undetectable HCV-RNA for 12 weeks after the end of treatment and achieved sustained viral response (SVR12).

Hepatic steatosis was evaluated and quantified as Controlled Attenuation Parameter (CAP) using FibroScan. CAP was measured before DAA treatment and at SVR12.

Results: The median of CAP at SVR12 significantly increased from the basal CAP (from 197.6 dB/m to 216.0 dB/m. p<0.01) whereas AST (aspartate aminotransferase), ALT (alanine transaminase) and GGT (γ-glutamyltransferase) significantly decreased at SVR12. There was no significant change of BMI (body mass index). In the multivariate analysis, basal BMI (odds ratio=1.3), basal ALT (odds ratio=1.07) and basal CAP (odds ratio 0.96) independently associated to the increasing CAP. In the patients with increasing CAP at SVR12 (n=69), dCAP positively correlated to dAST (aspartate aminotransferase, r=0.28) and dALT (r=0.28), and negatively correlated to dAlb (albumin, r=-0.32).

Conclusion: Hepatic steatosis increased after the eradication of HCV. Basal obesity without severe hepatic steatosis is risk for increasing cap after DAA therapy and increasing CAP attenuates the improvement of liver function.

1060 ELASTOGRAPHY FINDINGS IN MONO-INFECTED HCV PRISON INMATES: DEMOGRAPHICS AND BASELINE CHARACTERISTICS FROM HIPPOCRATES STUDY (HEPATITIS C IN-PRISON PROGRAM FOR ENHANCING CURE RATES)
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Introduction: An unprecedented public health decision was taken in February 2015 in Portugal: full reimbursement of direct antiviral oral agents therapy for hepatitis C virus infection was launched. Since then, the majority of hepatitis C patients was successfully treated. Trying to reach out difficult population, the focus is being turned on to the high risk groups, including prisoners, people who inject drugs (PWID) and hemodialysis patients. The HIPPOCRATES project Aims to evaluate the performance, outcome and impact of the new antiviral oral agents in HCV infected prisoners. In this preliminary appraisal we have assessed the degree of fibrosis in these patients, and analyzed its relation with HCV transmission, genotypes, viral load and alcohol consumption.

Methods: We have been performing a prospective study of patients in the largest northern Portuguese prison throughout 2017. Clinical and laboratorial data were collected at the prisons by the medical team and prospectively recorded in a database from patients with HCV antibody and positive HCV RNA. The degree of fibrosis was evaluated using the Fibroscan 430 mini model (Echosens), performed at the prison ward. Results: We have enrolled 66 patients with positive HCV RNA from the 118 prisoners with HCV antibody, in a total of 1208 prisoners (prevalence of 5.6%). The mean age was 41±8.3 years. Almost 70% of the patients had a previous history of injecting drugs and 58% had alcohol consumption of more than 25 g a day. The most prevalent genotypes were 1a (36 patients, 55%), genotype 3 (28%) and genotype 1b (9%). Genotype 4 was observed in 8% of the cases. The median viral load was 1 910 000

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was between baseline and SVR12 (**p=0.001**), 6.6 [5.6-8.9] vs 10.0 [6.4-21.0] KPa. **Conclusion:** Despite very demanding, tertiary care Hepatology consultation in prison is feasible and a thorough medical gesture to deliver better care for patients and their communities. The prevalence of chronic hepatitis C in this prison setting was 5.6%. The most prevalent genotype was genotype 1a (55%). The prisoners group showed a statistically significant lower liver stiffness [6.6 [5.6-8.9] vs 10.0 [6.4-21.0] KPa]. These data support the concept of spreading outreach programs in which liver specialists might immerse in real life settings.

**1067 SEVERITY AND CORRELATES OF LIVER FIBROSIS ASSESSED BY ELASTOGRAPHY ARE DIFFERENT BETWEEN HEPATITIS C-INFECTED PEOPLE WHO INJECT DRUGS AND PATIENTS INFECTED BY OTHER ROUTES.**

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**Background:** People who inject drugs (PWID) are key drivers of hepatitis C virus (HCV) transmission. Using transient elastography, we Aimed to compare the stage of the liver disease and its correlates between HCV-infected PWID and non-PWID. **Methods:** Consecutive HCV-viremic patients (n=280; PWID/non-PWID:137/143) undergoing successful liver stiffness measurements (2009-2015) were retrospectively reviewed. Liver stiffness values were stratified according to established cut-offs (7.9, 12 kPa for significant, advanced fibrosis, cirrhosis respectively). Multivariate logistic regression was used to assess predictors of advanced fibrosis. **Results:** PWID were more frequently males (78.8% vs 55.9%), younger (42.7±10.5 vs 50±14.8 years), had a lower mean body mass index (24.9±3.4 vs 26.2±4.3 Kg/m2) and lower prevalence of diabetes (3.7% vs 11.1%) and arterial hypertension (6.6% vs 21.7%) compared to non-PWID (p<0.05, all comparisons). Excessive alcohol use (>40 g/day; 37.3% vs 19.1%) and history of smoking (85.2% vs 38.5%) were significantly more prevalent among PWID (p<0.001, both comparisons). Genotype-3 predominated in PWID (48.3%) and genotype-1 in non-PWID (43.7%). HCV-RNA>800,000IU/ml was documented in 58.2 vs 56.3% respectively. Overall, PWID had lower median liver stiffness (7.9 kPa [IQR:5.9-11.5] vs 9.9 kPa [IQR:6.4-13.1]; p=0.049), with significant/advanced fibrosis/cirrhosis being detected in 21.9%/16.8%/19.7% of PWID vs 17.5%/21.7%/30.0% of non-PWID (p=0.07). In the multivariate analyses, older age was independently predictive of advanced fibrosis both in PWID (OR:1.09, 95%CI: 1.03-1.15) and non-PWID (OR:1.05, 95%CI:1.01-1.10). Male gender (OR:6.32, 95%CI: 1.37-29.26) alcohol use (OR:3.60, 95%CI:1.12-11.49) and smoking (5.16, 95%CI: 1.32-20.05) were predictive only in the PWID group. **Conclusions:** Distinct epidemiological and liver disease features, including predominance of non-advanced fibrosis stages, should be taken into account in designating HCV elimination policies targeting PWID. Smoking and alcohol cessation counseling is also important, as both appear to be relevant co-factors of liver disease in PWID.

**1151 REGRESSION OF LIVER STIFFNESS FOLLOWING THERAPY WITH DIRECT ACTING ANTIVIRAL(S) IN CHRONIC HEPATITIS C PATIENTS. RESULTS FROM HERACLIS: A HELLENIC MULTICENTER REAL-LIFE COHORT CLINICAL STUDY.**

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**Background/Aim:** Several studies suggested a regression of liver fibrosis over time after successful therapy in chronic hepatitis C (CHC) patients. We assessed the early changes of liver stiffness measurements (LSM) among CHC patients after treatment with direct acting antiviral(s) (DAAs). **Methods:** We included all non-cirrhotic and compensated cirrhotic CHC patients who were treated with DAA in 7 liver centers throughout Greece and had available LSM at baseline and 12 weeks after treatment completion (SVR12). All patients fulfilled the national criteria for DAA reimbursement: F3 experience, F4 liver transplantation, severe extrahepatic manifestation. LSM were determined with the same method in the same patients (Fibroscan® or 2D-Shear-Wave Elastography). **Results:** In total, 147 patients (males: 52.4%, age: 55.2±11.8 years, body mass index 26.5±4.6 Kg/m2) were included (GT1a: 12.9%, GT1b: 45.6%, GT2: 2%, GT3: 21.1%, GT4: 18.4%). Most patients (105/147, 71.4%) were treatment-experienced. The severity of liver disease at baseline was FO-F2 in 16.3%, F3 in 31.3% and F4 in 52.4%. LSM significantly improved in all treated patients between baseline (17.1±11 kPa) and SVR12 measurements (13±8.3 kPa, P<0.001), with 64/147 (43.5%) patients succeeding an improvement of ≥25% of LSM comparing to baseline values. At the time of analysis, SVR12 data were available from 139 (94.6%) patients with SVR achieved in 126 (90.6%) of them. LSM improved significantly between baseline and SVR12 measurements in both responders (16.5±11.2 vs. 12.9±8.5 kPa, respectively, P<0.001) and non-responders (22±10.8 vs 13.4±7.6 kPa, respectively, P<0.01). No significant difference was found between responders and non-responders, regarding delta stiffness (3.6±7.1 kPa vs. 8.6±9.8 kPa, respectively, P=0.100). LSM improvement of ≥25% at SVR12 was independent of gender, age, body mass index,
presence of diabetes, previous treatment history, baseline LSM, hemoglobin, white blood cells, platelets, alanine aminotransferase, bilirubin, albumin levels and treatment response. Conclusion: LSM decrease significantly in CHC patients following treatment with DAA. Long-term follow-up studies are needed to assess whether LSM may further improve over time and whether such early LSM improvements reflect true regression of liver fibrosis and not only a reduction of necroinflammatory activity.

1209 TRANSIENT ELASTOGRAPHY PREDICTS TRANSPLANT FREE SURVIVAL IN BILIARY ATRESIA PATIENTS
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Background: Kasai operation restores some biliary flow in biliary atresia (BA) patients, vast majority of patients still developed progressive hepatic fibrosis. The Aim of our study is to identify the severity of liver fibrosis in BA patients after Kasai operations and to investigate the impacts of liver fibrosis on patients’ outcome. Method: We enrolled BA patients who had not received liver transplant from 2014 September to 2016 December at National Taiwan University Children Hospital. Liver stiffness measurement (LSM) was performed using transient elastography (TE, Fibroscan®). AST to Platelet Ratio Index (APRI), Fibrosis-4 (FIB-4) scores were recorded at enrollment. We recorded the time the patients deceased or received liver transplant due to disease progression. Results: 56 patients were enrolled at mean age of 7.95±1.07 year-old and were follow-up for 1.55±0.74 years. 6 (10.7%) patients received liver transplantation and 1(1.7%) patient died during follow-up. APRI score and LSM were significant higher in those who need liver transplant or died because of diseases. LSM and APRI score are good indicator for predicting transplant free survival (TFS) in BA patients with area under the receiver operating characteristic (AUROC) 0.80; 95%CI (P=0.001), 0.67-0.90 and AUROC 0.75; 95%CI, 0.60-0.86 (P=0.02) respectively. In multiple linear regression, only LSM showed statistical significance (OR 7.37, 95%CI 1.13-47.92, P-value =0.036), while APRI score and FIB-4 did not. Multivariate Cox-proportional hazards model including patients age, gender, Kasai operation ages, APRI score and LSM showed that LSM greater than 42.2 kPa is the only independent variable that associates with decrease TFS in BA patients (Hazard ratio 7.86, 95%CI 1.10-55.78, P=0.04). Conclusions: TE is a non-invasive method to evaluate liver fibrosis and predict TFS in patients.

Kaplan-Meier curves show decrease transplant free survival of patients with liver stiffness > 42.2 kPa.

1211 SOME CONSIDERATIONS ABOUT FIBROSCAN IN EXTRAEHEPATIC CHOLESTATIC LIVER DISEASE
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Background: Although liver FibroScan is one of the non-invasive Methods which can be done easily to detect the severity of liver fibrosis, its reliability in extrahepatic cholestatic liver disease has been questioned recently. We analyzed five non-invasive Methods in cholestatic liver disease to validate the diagnostic performance of Fibro-Scan. Materials and Methods: Retrospective cohort study was done in 135 patients with biliary atresia, the most common extrahepatic cholestatic liver disease in children, at Severance Children’s Hospital from January 2007 to December 2016. Medical records were reviewed, including clinical and demographic data such as biochemical parameters indicating hepatic injuries, liver histopathology, liver stiffness measurement, Aspartate aminotransferase (AST)-to-platelet ratio index (APRI), AST/Alanine aminotransferase (ALT) ratio (AAR), Fibrosis-4, and gamma-glutamyl transpeptidase (GGT)-to-platelet ratio (GPR). The five non-invasive Methods were evaluated to see their correlations with liver fibrosis. Results: The patients were categorized into four groups according to the Metavir score. Mean age and biochemical parameters such as total and direct bilirubin, AST, ALT, Platelet, and Prothrombin time in international normalized ratio showed statistically significantly difference among the four fibrosis scoring groups. Five non-invasive Methods were analyzed to validate the diagnostic performances. Liver stiffness measurement appeared to have good diagnostic performance in the extent of liver fibrosis (Area Under Receiver Operating Characteristic of liver stiffness measurement is 0.81 (F0-1 vs 2-4), 0.74 (F0-2 vs 3-4) and 0.86 (F0-3 vs 4) correspondingly). By using Youden’s index, we have calculated cut point values of each method (cut point is 8.40 kilopascal (F ≥ 2), 12.20 kilopascal (F ≥ 3), and 17.90 kilopascal (F=4) respectively). Conclusion: Liver FibroScan can be considered again as a reliable non-invasive method to find the extent of liver cirrhosis (F 4) in cholestatic liver disease. Higher cut point values should be considered for the proper assessment for the liver fibrosis.

1225∗ TRANSIENT ELASTOGRAPHY AND CONTROLLED ATTENUATION PARAMETER ASSESSMENT OF LIVER DISEASE IN CHILDREN AND YOUNG ADULTS WITH CYSTIC FIBROSIS: A 3 YEAR LONGITUDINAL STUDY
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Background: Liver disease is the third leading cause of death in cystic fibrosis (CF) patients. Hepatic steatosis is a common, early sign of CF-related liver disease (CFLD). Controlled attenuation parameter(CAP), obtained during transient elastography (TE), can detect and quantify steatosis. Objective: To evaluate if serial LSM and CAP can be used to identify and follow progression of CFLD. Methods: This was a longitudinal cohort study of CF patients seen for routine outpatient care at Boston Children’s Hospital. CAP and LSM were obtained at enrollment (January-October 2013) and annually up to 3 years. CFLD asterisk (*) denotes abstract of interest

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was defined per published criteria as: No CFLD, CFLD without portal hypertension (PHTN) and CFLD with PHTN. CFLD without PHTN criteria: recent ALT≥1.3xULN, on ursodiol, or abnormal liver echogenicity on imaging. CFLD with PHTN criteria: splenomegaly, esophageal varices on endoscopy, platelet count<100,000/mmi or signs of PHTN on ultrasound. Change in CAP and LSM was compared between adjacent patient encounters of consistent or worsening disease using a generalized estimating equation. **Results:** A total of 249 patients [53% male; mean age 14±7y;7(3%)<2y and 74(30%) 18-25y] underwent baseline LSM; 127(51%) also had CAP. At enrollment, 158(64%) had no CFLD, 73(29%) CFLD without PHTN, and 18(7%) CFLD with PHTN. A total of 387 paired encounters were documented, 43(11%) reflecting a change in disease status. The median time between adjacent measurements was 12 months (IQR 10-15). Subjects with CFLD without PHTN at one encounter followed by CFLD with PHTN at the next encounter saw a greater change in CAP than those whose status remained unchanged (40±4.9 vs. -5.0±6.6 dB/m, P<0.0001). Similarly, subjects without CFLD at one encounter followed by CFLD without PHTN at the next saw greater change in CAP, although the difference was not statistically significant (25.1±14.4 vs 5.5±2.6 dB/m;P=0.19). There were no significant differences across adjacent encounters for LSM. **Conclusion:** In this 3 year study, CAP is able to detect changes in CFLD when there is no detectable change in liver fibrosis.

### Change in CAP (dB/m) across adjacent patient encounters

#### 1235* PREVALENCE OF FATTY LIVER IN ADOLESCENTS ATTENDING PRIMARY CARE CLINIC

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The epidemic of obesity in adolescents is alarming and is a predictor of adult obesity. Obesity trends are causing serious health concerns affecting all socio-economic groups, irrespective of sex, age, or ethnicity. Screening of adolescents for fat infiltration of the liver was only detected in 13% of the patients, with no correlation between CAP and overweight/obesity in this cohort.

### 1532* REGRESSION OF LIVER STIFFNESS (LS) AFTER DIRECT ACTING ANTI-VIRAL (DAA) THERAPY FOR HEPATITIS C IN THE COUNTRY OF GEORGIA

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**Background:** Novel DAAAs targeting hepatitis C virus (HCV) have revolutionized the treatment of chronic infection by dramatically increasing rates of sustained virological response (SVR). To date there are limited data suggesting reversibility of HCV-associated liver fibrosis/cirrhosis after DAA therapy. We assessed the impact of DAA therapy on liver fibrosis regression measured by transient elastography in patients with chronic HCV infection. **Methods:** A prospective study was conducted in HCV infected adult patients with advanced liver fibrosis (Metavir F3) or cirrhosis. LS score>14.5 kPa indicated LS-defined cirrhosis. The primary outcome was improvement in liver stiffness measurement (LSM) at week 24 post-treatment measured as 1) decrease in median LS compared to baseline and 2) at least 20% decrease in LSM compared to baseline. Multivariate logistic regression model was utilized to identify factors associated with at least 20% improvement in LSM. Following factors were included in the analysis: baseline LSM, alanine aminotransferase, alkaline phosphatase, platelet count, bilirubin and albumin, HCV genotype, treatment regimen, achievement of SVR, pretreatment body mass index, heavy alcohol drinking and presence of diabetes mellitus. **Results:** Of total 304 patients, 172 (56.6%) had LS-defined cirrhosis pre-treatment. SVR was achieved in 257 (84.5%) patients treated with either interferon-containing (PEG-IFN/RBV/Sofosbuvir (SOF) - 12 weeks) or interferon-free regimens (SOF/RBV for 12, 20 or 24 weeks, SOF/Ledipasvir (LDV)+RBV-12 or 24 weeks). LSM decreased from baseline median of 16.9 (IQR: 11.8 – 27.7) kPa to post-treatment week 24 score of 11.9 (IQR: 8.2–20.9) kPa (p<0.0001). LS significantly reduced during treatment, but improvement continued off treatment only in patients who achieve

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an SVR. Of total 304 patients, 198 (65.1%) achieved at least 20% reduction in LS. In multivariate analysis SVR was significantly associated with this reduction (p<0.0001) regardless of the association of interferon to the treatment regimens (SOF/RBV vs. PEG-IFN/SOF/RBV – OR:1.90, 95% CI:0.94–3.82; SOF/LDV+RBV vs. PEG-IFN/SOF/ RBV–OR:1.94, 95% CI: 0.96–3.94). Despite decreasing baseline LSM, more than half of cirrhotic patients remained cirrhotic at week 24 post-treatment. **Conclusion:** SVR achieved after DAA treatment is associated with regression in LS. However, regardless of achieving SVR liver damage persists in significant proportion of patients. Thus, early treatment of HCV-infected patients can significantly prevent residual liver damage.

### 1543 THE REAL-WORLD EFFICACY, CHANGES IN LIVER STIFFNESS VALUES AND FIBROSIS MARKERS, AND THE SAFETY OF DACLATASVIR PLUS ASUNAPREIVR USED TO TREAT PATIENTS WITH HCV GENOTYPE 1B INFECTION

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**Background & Aims:** Treatment with daclatasvir plus asunaprevir (DCV+ASV) is associated with potent antiviral effects in patients with genotype 1b hepatitis C virus (HCV) infection. We investigated the real-world efficacy, changes in liver stiffness values and non-invasive fibrosis markers, and the safety of DCV+ASV treatment in Korea.

**Methods:** A total of 363 patients with chronic hepatitis C were treated with DCV+ASV from August 2015 to January 2017. Finally, we analyzed data on 270 patients who were followed up for at least 12 weeks after the end of treatment. We investigated virological response and the changes in non-invasive fibrosis markers before and after treatment completion. **Results:** The mean patient age was 60.7 years and females predominated (60.4%). Most patients were treatment-naïve (64.8%) and 56 (20.7%) had cirrhosis. 257 (95.2%) and 251 (93.0%) patients achieved end-of-treatment responses and sustained virological responses at 12 weeks post-treatment (SVR12), respectively. The SVR12 rates were higher in patients who were <65 years of age, in males, in those without cirrhosis and in patients with lower HCV RNA levels. All of LS values, fibrosis-4 (FIB-4) and aspartateaminotransferase-to-platelet ratio index (APRI) values declined from baseline to time of assessment of SVR12, regardless of the presence of cirrhosis and any prior treatment history. **Conclusion:** DCV+ASV therapy afforded a high SVR12 and improved liver fibrosis; treatment was well tolerated in patients with genotype 1b HCV infections. Further studies are required to monitor the long-term Results of DCV+ASV treatment.

### 1567 REGRESSION OF LIVER STIFFNESS IN PATIENTS WITH HCV-RELATED COMPENSATED CIRRHOSIS AFTER VIRAL ERADICATION BY DAAS

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**Background.** Regression of liver stiffness (LS) by transient elastography (TE, FibroScanR) after sustained virological response (SVR) in hepatitis C virus (HCV) infected patients has been reported. This study aimed to evaluate LS changes in patients HCV-related compensated cirrhosis who achieved SVR by direct antiviral agents (DAAs). **Methods.** Among 180 HCC-free, compensated HCV cirrhotic patients, without concomitant liver diseases, consecutively treated with DAAs, we included 136 SVR patients [median age 70 yr, 75% GT 1, 52% male, 26% with oesophageal varices (OV)] with baseline (start of DAAs) LS ≥12.5 kPa and a second reliable LS measurement at least 6 months after the end of treatment (EOT). Cirrhosis regression was defined as a reduction of LS from ≥12.5 to <12.5 kPa. **Results.** After a median of 12 (range: 6-15) months post EOT, LS reduced in 121 (89%) patients by median value of 6 (range: 1-32) kPa, increased in 13 (10%) by 3 (range: 1-11) kPa and remained unchanged in 2 (1%). Overall, the median LS decreased significantly from 18 (range: 12.6-60) to 13 (range: 5-48) kPa (p<0.0001); LS reduced ≥25% compared to baseline in 77 (57%). Sixty-four (47%) patients showing cirrhosis regression had baseline lower LS (15 vs 24, p<0.0001), higher platelets (145 vs 98 cells x103/mL, p=0.013) and lower prevalence of OV (12% vs 39%, p=0.0005), compared to those without cirrhosis regression. Only 3 out of 40 (8%) patients with baseline LS ≥23 kPa obtained cirrhosis regression. **Conclusion.** Although significant improvement of LS was observed in the majority of patients with HCV-related compensated cirrhosis successfully treated DAAs, such changes might reflect a regression of liver inflammation rather than liver fibrosis. Therefore only long-term follow up studies may define the clinical significance of LS reduction.

### 1576 ERADICATION OF CHRONIC HEPATITIS C INFECTION WITH DIRECT ACTING ANTIVIRALS IS ASSOCIATED WITH REDUCTION IN FIBROSIS BY TRANSIENT ELASTOGRAPHY (FIBROSCAN)

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**Background** Eradication of chronic hepatitis C infection (CHC) is associated with reduced mortality and morbidity, particularly in those with advanced fibrosis. Histological regression of liver fibrosis has been reported in interferon (IFN)-based therapies, which may be partly attributed to IFN’s anti-fibrotic effect. There is evolving data for fibrosis regression post-direct acting antiviral (DAA) therapy. The study aims to determine if liver stiffness, an indirect measure of fibrosis, improves with sustained virological response (SVR) following DAA therapy. **Methods** This was a retrospective study conducted at a University-affiliated, tertiary referral hepatology clinic in Vancouver, Canada. Patients with CHC treated with IFN-free, DAA regimens between 03/2013-10/2016, and SVR at 12 weeks posttherapy were assessed for inclusion in the study. Patients with concomitant non-CHC liver disease, and those missing pre-therapy or post-therapy transient elastography (TE), which was measured using FibroScan, were excluded. **Results** 105 patients met study criteria and were included. Mean age was 58±8.3 years and 71 (68%) were male. 95 (90%) patients had genotype 1 (1a – 57, 1b – 33, unknown – 5). 63 (60%) received LDV/SOF based regimens, while 17 (16%) and 16 (15%) received SOF/VEL and PROD based regimens, respectively. 9 (9%) received SOF/SIM or SOF/RBV. After a median follow-up of 34 (range 12-70) weeks posttherapy, there was significant reduction in TE (p=0.016) (see table). Of 53 patients with F3/4 fibrosis, after a
median follow-up of 34 (range 12-58) weeks, the TE scores improved from 21.1±14.0 kPa to 15.0±11.0 kPa (p=0.01). Fibrosis stage was downgraded in 25 (47%) patients. Of 52 patients with F1/2 fibrosis, after a median follow up of 35 (range 12-70) weeks, the TE scores improved from 6.3±1.8 kPa to 5.2±1.6 kPa (p<0.01). Fibrosis stage was downgraded in 17 of 20 (85%) F2 patients after SVR. Conclusion: Eradication of CHC with DAAs is associated with improved TE scores. Fibrosis stage reduction was more frequent among those with F3/4 fibrosis. Further longer-term studies are needed to verify whether the change in TE is due to reduction in inflammation or hepatic fibrosis.

**1625 COMPARISON OF ACOUSTIC RADIATION FORCE IMPULSE ELASTOGRAPHY AND TRANSIENT ELASTOGRAPHY FOR THE PREDICTION OF HEPATOCELLULAR CARCINOMA RECURRENCE AFTER RADIOFREQUENCY ABLATION**

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**Background/Aims:** To compare the clinical value of acoustic radiation force impulse (ARFI) elastography and transient elastography (TE) for the prediction of recurrence after radiofrequency ablation (RFA) of hepatocellular carcinoma (HCC) and to investigate other predictors for recurrence of HCC. **Methods:** A total of 130 patients with HCC who underwent ARFI elastography and TE within 6 months before curative RFA were enrolled prospectively, from 2011 to 2016. Independent predictors for recurrence of HCC were analyzed separately by using ARFI elastography and TE. The accuracy of ARFI elastography and TE to predict HCC recurrence was determined and compared by receiver operating characteristic (ROC) curve analysis. **Results:** The mean age of HCC patients (98 men and 32 women) was 63.7 (range, 43-84) years. During the follow-up period (median 21.4 months), 61 (46.9%) patients had experienced recurrence of HCC. Patients with recurrence had significantly more frequent liver cirrhosis, lower serum albumin, higher prothrombin time, lower platelet counts, larger spleen size, higher alpha-fetoprotein, higher ARFI velocity, and higher TE value compared to patients without recurrence. In multivariate analysis using ARFI velocity, serum albumin and ARFI velocity (HR 2.639; 95% confidence interval [CI] 1.023; 95% CI 1.008 - 1.038, P =0.002) were selected as independent predictors of recurrence. The area under the ROC curve (AUROC) of ARFI elastography (0.816, 95% CI 0.745 - 0.888) was not statistically different to that of TE (0.800, 95% CI 0.726 - 0.875) for predicting recurrence of HCC (P = 0.627). The optimal cutoff value of ARFI velocity and TE value was 1.6 m/s (sensitivity 85.3%, specificity 65.2%) and 13 kPa (sensitivity 72.1%, specificity 68.1%), respectively. **Conclusions:** ARFI elastography and TE provide comparable assessment in predicting the recurrence after RFA of HCC.

**Predictors of recurrence after radiofrequency ablation**

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<th>TE</th>
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<th>ARFI</th>
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<td>-0.100</td>
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<td>Transient elastography (kPa)</td>
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**1710 PREVALENCE OF GRAFT STEATOSIS AFTER LIVER TRANSPLANTATION USING CONTROLLED ATTENUATION PARAMETER MEASUREMENTS: A LARGE COHORT STUDY**

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**Background:** Liver steatosis is a cause of graft dysfunction after liver transplantation. The current study Aims to determine the prevalence of steatosis in a large cohort of liver transplant recipients from a single center. **Methods:** Consecutive patients transplanted from 2003 to 2014 underwent liver stiffness (LS) and controlled attenuation parameter (CAP) measurements using transient elastography. Liver biochemistry and fasting lipid profile and glucose were taken. **Results:** A total of 554 patients underwent valid transient elastography, of which 396 (71.5%) were male, with a median age of 59 (range, 19-78) years, and median time to transient elastography of 77 months (range, 6-167) after transplantation. The majority (71.8%) was transplanted for hepatitis B related complications. The prevalence of no, mild, moderate, and severe steatosis was 49.1%, 6.3%, 25.8%, and 18.8% respectively. A higher CAP score was observed in males vs. females (229 vs 212 dB/m respectively, p=0.007) and in living vs. deceased donor transplant (229 vs 215 dB/m respectively, p=0.004). Steatosis, as diagnosed by CAP score of ≥222 dB/m, was observed in 282 (50.9%) patients, of which 35 (6.3%) had mild steatosis, 143 (25.8%) had moderate steatosis, and 104 (18.8%) had severe steatosis. Patients with steatosis had older age at transplant (53 vs. 51 years, p=0.005), older age at transient elastography (60 vs 57 years, p=0.001), and higher BMI (25.4 vs 23.2 kg/m^2, p=0.001), ALT (24 vs 22 U/L, p=0.026), GGT (35 vs 28 U/L, p=0.041), platelets (181 vs 168, p=0.001), fasting glucose (5.8 vs 5.3, p=0.002), total cholesterol (4.3 vs 4.2, p=0.037), LDL-cholesterol (2.5 vs 2.2, p=0.001), triglyceride (1.3 vs 1.0, p=0.001). A lower HDL-cholesterol was observed in steatotic patients (1.2 vs 1.5, p=0.001). There was no significant difference in LS measurements between those with and without graft steatosis (4.9 vs 5.0 kPa, p=0.635). Hypertension, diabetes, and hyperlipidemia were present in 324 (58.5%), 190 (34.3%), and 124 (22.4%) patients respectively. A higher CAP score was observed in patients with hypertension (237 vs 204
VIRAL RESPONSE IN PREVENTING HEPATOMA DEVELOPMENT FOR PATIENT WITH HEPATITIS B VIRUSRELATED CIRRHOSIS UNDERWENT ANTI-VIRAL THERAPY

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Background: The incidence of hepatoma (HCC) reduced after potent nucleoside agent (NA) for patient with hepatitis B virus (HBV)-related cirrhosis. However, patients with complete virological response (VS) remained at risk of HCC. The purpose of this study was to investigate whether or not liver stiffness (LS) measurement useful and to determine the cutoff in predicting HCC development. Methods: Between Jul/2006 and Aug/2016, patients with HBV-related cirrhosis underwent NA (entecavir/tenofovir) therapy in complete VS (HBV DNA <70 copy/ml), with the first LS measurement (FibroScan, Echosens, Paris, France) during complete VR and with serial LS were enrolled. Patients with HCC before or 6 months after NA therapy were excluded. Those patients developed HCC before the first LS measurement was also excluded. HCC surveillance was performed with liver sonography at an interval of 3-6 months. Patient was followed until HCC development, death or the last date of outpatient clinic visit. Results: A total of 373 patients (males/females: 275/98, mean age: 52.7 years), including 257 with LS measurements before NA treatment, were enrolled. The median follow-up period was 5.6 years (range: 1.9-8) from NA treatment and 3.8 years (range: 0.5-7.7) from the first LS measurement during complete VR. The mean first LS value during complete VR was 13.2kPa. There were 29 patients developing HCC. The 1-, 3-, 5- and 7-year cumulated incidence of HCC was 0%, 3.3%, 6.4% and 9.5%, respectively. For the first LS in HCC prediction, the performance assessed with area under receiver operating curve was 0.638. Logistic regression showed that LS >21.5kPa (OR: 3.223, 95% CI: 1.361-7.633) and age >66 years (OR: 2.588, 95% CI: 1.175-5.697) were independent factors associated with HCC occurrence. However, the change of LS was not associated with HCC development. There were 2 to 13 LS measurements during complete VR. Stratified by the first LS and serial LS measurements, LS change was classified into 4 patterns including persistent LS >21.5kPa (group A), decreasing from <21.5kPa (group B), increasing from LS <21.5kPa (group C), persistent LS >21.5kPa (group D). The HCC occurrence was 20% (6/30), 14.3% (3/21), 0% (0/14) and 6.5% (20/308) (p = 0.029) in group A, B, C and D, respectively. Patients in group A had higher HCC occurrence than those in group D. Conclusion: For patients with HBV-related cirrhosis underwent NA treatment in complete VR, liver stiffness >21.5kPa and age >66 years were associated with high risk of HCC development. However, LS change at serial measurements was not predictive of HCC development.

1912 PERFORMANCE OF FIBROSIS BIOMARKERS FOR STRATIFYING HEPATOCELLULAR CARCINOMA RISK IN PATIENTS UNDER ANTIVIRAL THERAPY FOR CHRONIC HEPATITIS B

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Background and Aims: Fibrotic burden has been suggested as an important biomarker to stratify the risk of developing hepatocellular carcinoma (HCC) in patients with chronic hepatitis B (CHB) infection under antiviral therapy. We tested whether liver stiffness (LS) measured using transient elastography is helpful over two non-invasive serum biomarkers of fibrosis [the aspartate aminotransferase to platelet ratio index (APRI) and the Fibrosis-4 (FIB-4)] in stratifying the risk of HCC. Methods: A retrospective cohort of 1,014 CHB patients under antiviral therapy for at least a year [mean age = 50.9 ± 9.3 years; male = 741 (73.1%)] was analyzed. The HCC risk was compared by using serum biomarkers (APRI and FIB-4) and LS value. Cutoff point that can rule out significant fibrosis [LS values (6.0), APRI (0.5) and FIB-4 values (1.45)] was used to group patients. Results: During median 3.9 years (min-max: 0.5-5.3 years) of follow-up, HCC was diagnosed in 37 patients (3.6%). The HCC incidence rate at 3 years was higher for those with higher fibrotic burden, as estimated by LS (1.4% vs. 5.3% for LS < 6 vs. ≥ 6, p < 0.001), APRI (2.0% vs. 6.9% for APRI < 0.5 vs. ≥ 0.5, p < 0.001), and FIB-4 (1.3% vs. 5.2% for FIB-4 < 1.45 vs. ≥ 1.45, p < 0.001), respectively. When two serum biomarkers were used to group patients, the 3-year HCC incidence rate was 7.3%, 3.0% and 1.3% for both high APRI and FIB-4, any high APRI and FIB-4 and both low APRI and FIB-4, respectively (p < 0.001). Among 758 patients with any high or both low APRI and FIB-4 score, LS value was high (> 6) for significant proportion of patients (39.9%), and HCC risk was significantly different according to the LS value (3-year HCC incidence rate of 1.1%, 2.0% and 6.8% for LS < 6, 6-9 and > 9, respectively, p < 0.001). Conclusion: Among CHB patients under antiviral therapy, APRI and FIB-4 could stratify patients risk for developing HCC. LS could further stratify patients risk among patients with discordant or both low APRI and FIB-4 score, indicating that LS measurement for CHB patients under antiviral therapy can have additional role over serum biomarkers in stratifying the risk of HCC.

1940 HIGH HBV VIRAL LOAD IS ASSOCIATED WITH MIXED HBV GENOTYPES AND LIVER STIFFNESS IN CO-INFECTED HIVE MEXICAN PATIENTS

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Background: A high frequency of occult hepatitis B, flaring and hepatitis B virus (HBV) genotype G are characteristic in Mexican HIV patients. In Latin America, HBV genotypes H and F are endemic among the native and admixed populations. However, the existence of HBV genotypes and their impact on the clinical outcome is unknown. This study aimed to identify HBV genotypes and assess liver damage in Mexican patients infected with HIV. Methods: A cross-sectional study was performed in 228 HIV-infected patients. HBsAg and total anti-HBc were tested using third-generation enzyme
immunoassays (Bio-Rad, Poincare, MC, France). Viral load (VL) was measured by Reverse Transcriptase-PCR system (COBAS AmpliPrep/COBAS TaqMan HBV Test, v2.0.). Multiplex PCR assays and direct DNA sequencing were used to determine HBV genotypes. Liver stiffness was assessed by translational elastography (Fibroscan™). Liver damage was graded as mild liver damage (≥7.1Kilopascals, KPa) and advanced liver damage (≥7.1Kpa) Statistical analyses were performed with SPSS Statistics (V21.0, IBM™). Results: VIH/HBV co-infection was 29.4% (67 HBSAg positive/228). VL was detectable in 70.1% (47/67) of the cases in which 66.0% (31/47) had a VL <2000 IU/mL and 34.0% (16/47) had ≥2000 IU/mL. In 25 patients, 44 HBV strains were identified and distributed in 5 genotypes as follows: H, 50%; G, 23%; D4, 16%; A2, 9% and F1b, 2%. In regards to genotype mixtures, 44% of the cases were single genotype (H, n=10; G n=1) whereas 36% (n=9) were dual-mixed infection (H/G>H/D4>H/A2>A2/G) and 20% (n=5) were triple-mixed infection (H/G/D4>G/D4/A2>H/D4/F1b). Median VL tended to be higher in patients with triple-mixed infection in comparison to patients with a single genotype (log 4.5 vs. log 4.4, p=0.234). Among 19 cases, the advanced liver damage was associated with triple-mixed infection compared to single genotype H cases (29.0 ± 19.5 KPa vs. 6.5 ± 3.9 KPa, p=0.017). However, the one co-infected HBV genotype G case had advanced liver damage (18.40 KPa). Conclusion: Although occult hepatitis B and flaring are common clinical characteristics in HIV patients when HBSAg and viral load are detected, these features are related to HBV genotype mixtures and liver damage. HBV genotype G found mainly in dual and mixed infections was also present in one single genotype case with liver damage.

1952 13C-METHACETIN BREATH TEST DETECTS EARLY CLINICALLY SIGNIFICANT IMPROVEMENT IN LIVER FUNCTION AFTER ACHIEVING SVR IN CIRRHOTIC HCV PATIENTS WHEN COMPAREO TO HVPG AND LIVER STIFFNESS

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Background: The use of direct acting antivirals (DAAs) in chronic HCV infected patients is associated with high rate of SVR. However, the effect of SVR on liver function has not been fully determined. The 13C-Methacetin Breath Test (MBT) using Exalenz BreathIDR System, is a non-invasive real-time molecular correlation spectroscopy assay that measures the abundance of 13C02 in expired breath exclusively that measures the metabolic rate of the cytochrome. Therefore, MBT measures a relevant liver metabolic function that has been shown to reflect the degree of overall liver impairment. Hepatic Venous Pressure Gradient (HVPG), a measurement of portal pressure, correlates with chronic liver disease severity, but is invasive, not universally available and inconvenient for serial use. Liver Stiffness (LS) measured through Transient Elastography (TE) is widely used in clinical practice. The study aimed at investigating improvement in liver function following SVR as measured by MBT, HVPG and TE. Methods: MBT, HVPG, and TE were collected from cirrhotic HCV-patients before and 19 to 53 weeks (median 27 weeks) after treatment with DAAs. Changes were assessed on all patients achieving SVR. Clinically significant improvement or deterioration was defined as a change in MBT ≥20% while repeat tests with changes <20% were considered stable. Results: Analysis was conducted on 23 patients (12 males; mean age 64 years); 87% having a pre-treatment HVPG10mmHg. After reaching SVR, MBT detected clinically significant improvement in 91.3% of patients whereas HVPG and TE detected an ≥20% improvement in 45.5% and 50.0% respectively. Interestingly, only 3 of the 10 patients improving HVPG improved also TE. Improvement in MBT was much more pronounced than in HVPG and TE (see table). Conclusion: MBT is highly sensitive in detecting early substantial improvement in liver function as compared with HVPG and TE in cirrhotic HCV patients after SVR. Liver function improvement was much more pronounced than reduction in portal pressure, which is anticipated to improve later after SVR. Preliminary data shows that MBT can serve as a sensitive non-invasive, point-of-care tool in the clinical follow-up of chronic liver disease patients.

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<tr>
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<th>MBT (n=23)</th>
<th>HVPG (n=23)</th>
<th>TE (n=11)</th>
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<tr>
<td>Mean value pre-treatment</td>
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<td>15.8mmHg&lt;0.15</td>
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<td>Mean absolute improvement</td>
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<td>2.2mmHg&lt;3.9</td>
<td>5.3±8&lt;0.7</td>
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<td>% of patients with static results</td>
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<td>% of patients with significant deterioration</td>
<td>0.0%&lt;6.2</td>
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2097* CONTROLLED ATTENUATION PARAMETER (CAP) DIAGNOSTIC PERFORMANCE IN VIBRATION CONTROLLED TRANSIENT ELASTOGRAPHY (FIBROSCAN®) FOR STEATOSIS STAGING IN COMPARISON TO DIRECT QUANTIFICATION THROUGH DIGITAL MORPHOMETRIC ANALYSIS OF LIVER BIOPSY

Leandro C. Mendes, Paula R. Abrao Ferreiras, Leticia Zanagas, Noelle Miotto, Eduardo S. Goncales, Marcelo N. Pedroa, Maria Silvia K. Lazarini, Fernando L. Goncales Junior, Raquel S. Stucchi, Aline G. Viganis; Infectious Diseases Department, State University of Campinas, Campinas, Brazil; Infectious Disease Department, Federal University of Sao Paulo, Sao Paulo, Brazil

Introduction: Steatosis quantification by Controlled Attenuation Parameter (CAP) is a distinguishing feature of Vibration Controlled Transient Elastography (VCTE) among elastography-based technologies. Steatosis grading has clinical and technical implications for prognosis and potential interference in liver stiffness assessment. CAP performance has been controversial and observer-related variability in liver biopsy may account for conflicting Results. We aimed to assess diagnostic performance for CAP in comparison to quantitative digital morphometric analysis of liver biopsy and evaluate associated factors. This study represents a sub-analysis of a prospective larger study on liver stiffness in chronic hepatitis C (CHC).

Methods: Adult CHC patients were prospectively enrolled for paired liver biopsy and VCTE. LB samples were subjected to digital morphometric quantitative analysis for steatosis by mean area of steatosis in comparison to total tissue area. CAP was performed with Fibroscan 502 M probe. Diagnostic performance indicators were calculated according to published cut-offs. Patient characteristics and technical variables were evaluated for interaction with CAP performance. Results: A total of 312 patients were included in the final analysis. Mean liver stiffness was 8.7 +/- 2.1kPa. Digital morphometric analysis showed 50 level of steatosis (<5%) in 29 patients (9.3%), S1 (<5 to <33%) in 99 patients (31.7%), S2 (<33% to <66%) in 164 (53.5%) and S3 (>66%) in 20 (6.4%). CAP

Asterisk (*) denotes abstract of interest

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measurement resulted in absence of steatosis (<248db/m) in 35 (11.2%) patients, level I steatosis (<268db/m) in 83 (26.6%), level II steatosis (<280db/m) in 177 (56.7%) and level III steatosis (>280dm/m) in 17 (5.4%). Spearman coefficient showed positive and independent correlation between CAP and digital morphometric analysis (r=0.48, p<0.05) except for distinguishing between level I and level II (p=0.11). AUROC for presence or absence of steatosis was 0.944, distinction between levels I, II and III were 0.812, 0.776 and 0.879. CAP IQR was independently associated with accuracy (<40db vs >40db, OR 2.81, 95% CI 1.67 - 3.99) as well as elevated LS (>20kPa vs <20kPa, OR 0.78, 95% CI 0.51 - 0.80). **Conclusions:** Our study is the first to externally validate CAP for steatosis grading against the objective quantification provided by digital morphometric analysis of LB. Recently published cut-off values seem to be adequate for grade distinction, except for S1 vs S2 differentiation to where improvements efforts should be directed. CAP variability and advanced fibrosis are independent factor affecting diagnostic performance and should be taken into account for result interpretation.

**2098** ELASTOGRAPH QUALITY IN VIBRATION CONTROLLED TRANSIENT ELASTOGRAPHY: IMPLICATIONS FOR CONTROLLED ATTENUATION PARAMETER STEATOSIS GRADING COMPARED TO DIGITAL MORPHOMETRIC ANALYSIS OF LIVER BIOPSY.

Leandro C. Mendes, Paulo R. Abrao Ferreiras, Noelle Miottos, Leticia Zangas, Eduardo S. Goncales, Marcelo N. Pedro, Maria Silvia K. Lazarinis, Fernando L. Goncales Junior, Raquel S. Stucchi, Aline G. Viganis; Infectious Diseases Department, State University of Campinas, Campinas, Brazil; Infectious Diseases Department, Federal University of Sao Paulo, Sao Paulo, Brazil

**Background:** Patient characteristics and technical variability can affect Controlled Attenuation Parameter (CAP) performance for steatosis grading in Vibration Controlled Transient Elastography (VCTE). Recently, a score was developed for evaluation of the spatiotemporal representation of shear-wave propagation in VCTE – the elastogram – based on simple criteria and independently correlated with accuracy in fibrosis staging. We aimed to evaluate how elastogram quality influences CAP performance in comparison with steatosis quantification by digital morphometric analysis of liver biopsy (LB). **Methods:** This is a sub-analysis of a larger prospective study on liver fibrosis evaluation in chronic hepatitis C (CHC). Adult CHC patients were enrolled to undergo LB paired with VCTE. As previously described, individual VCTE elastograms were classified according to: extension of wave propagation (represented by the length of the graphic representation) and shear wave dispersion (represented by parallelism in the elastogram). Then, a score based on these criteria stratified the individual elastogram in 3 classes (I, II and III - highest to lowest technical quality). Diagnostic performance indicators were compared between digital morphometric steatosis quantification in LB and individual CAP measurements among different elastogram classes. **Results:** 3242 individual VCTE/CAP measurements were included in the final analysis (comprising 312 patients). Digital morphometry showed absence of steatosis (<5%) in 29 patients (9.3%), S1 (>5% to <33%) in 99 patients (31.7%), S2 (33% to <66%) in 164 (53.5%) and S3 (>66%) in 20 (6.4%). CAP measurements were as follows: S0 (<248db/m) in 246 (7.6%), S1 (<268db/m) in 940 (29%), S2 (<280db/m) in 1784 (55%) and S3 (>280dm/m) in 272 (8.4%). Elastogram quality analysis resulted in 1345 class I (41.5%), 1174 class II (36.2%) and 723 (22.3%) class III. Spearman correlation showed that AUROC for steatosis grading for 50 vs S123 and S012 vs S3 were similar among different elastogram classes (p=0.18). However, for distinguishing between S1 and S2, AUROC for class I elastogram (0.911) was significantly higher than for classes II and III (0.838 and 0.799, respectively, r=0.70, p<0.05). In multivariate analysis, elastogram quality remained independently associated with CAP accuracy regardless of previously described associated factors (CAP variability <40 vs >40db and LS <20kPa vs >20kPa). **Conclusions:** Ours is the first study to correlate elastogram quality with CAP. Especially in distinguishing lower levels of steatosis, which has proven challenging in previous studies, achieving higher quality measurements may considerably improve accuracy.

**2109** THE PREVALENCE OF LIVER STIFFNESS AND HEPATIC STEATOSIS AS MEASURED BY VIBRATION-CONTROLLED TRANSIENT ELASTOGRAPHY IN A COMMUNITY-BASED COHORT: THE FRAMINGHAM HEART STUDY.

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**Background and Aims:** Nonalcoholic fatty liver disease (NAFLD) is increasing in prevalence and will soon be the most common chronic liver disease. Liver stiffness, as assessed by vibration-controlled transient elastography (VCTE), correlates with hepatic fibrosis, which is an important predictor of liver-related and all-cause mortality. The prevalence of increased liver stiffness in the general United States population is not known. We report data from an ongoing ancillary study of the Framingham Heart Study. **Methods:** Adult participants of the Third Generation Cohort who presented for their routine examination visit between April 2016 and April 2017 were included in our interim analysis (n=1,367). All participants, with the exception of those with implanted medical devices, were offered VCTE at the time of their routine study visit. Hepatic steatosis, as estimated by controlled attenuation parameter (CAP), and liver stiffness were recorded using VCTE ( Fibroscan®). **Results:** 1,367 participants underwent VCTE. Overall, 96.9% of VCTE examinations were considered valid (defined by interquartile range (IQR)/median liver stiffness measurement (LSM) ≤30%) and 93.1% examinations were considered successful (defined by number valid measures/number attempted measures ≥60%), yielding a total sample of 1,234 participants (mean age 54.7±8.8 years, 53.3% women). The mean LSM was 5.6 KPa and mean CAP was 252.8 dB/m. Women had a lower mean CAP (mean difference= -22.0 dB/m) and lower mean LSM (mean difference= -0.64 KPa) (p=0.001). The prevalence of hepatic steatosis (defined as a CAP ≥ 300 dB/m) was 21.5% and the prevalence of increased liver stiffness (defined as LSM ≥ 8 KPa) was 8.9% in our sample. Among participants with obesity, the prevalence of hepatic steatosis was 51% and the prevalence of increased liver stiffness was 15.4% compared to those with normal weight with a prevalence of hepatic steatosis of 1.5% and a prevalence of increased liver stiffness of 4.1% (p<0.0001 for all). **Conclusions:** VCTE can be performed in the context of a community-based cohort study in participants without known liver disease with most VCTE examinations considered valid and successful. The prevalence of fatty liver and increased liver stiffness is high, particularly among
those with obesity. Additional studies in similar samples are needed to confirm the findings and determine the significance of LSM on incident morbidity and mortality.

2111 ASSESSING THE SEVERITY OF LIVER FIBROSIS AND STEATOSIS IN BIOPSY-PROVEN NAFLD PATIENTS USING MR IMAGING, TRANSIENT ELASTOGRAPHY AND SERUM BIOMARKER

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Background: Because nonalcoholic fatty liver disease (NAFLD) is becoming a leading cause of chronic liver disease, a non-invasive diagnosis of the disease severity is urgently needed. To diagnose liver fibrosis, transient elastography (TE) has an acceptable accuracy in viral related liver disease. However, in patients with severe steatosis, TE falls short in terms of the accuracy. The Aim of our study is to analyze hepatic fibrosis, steatosis, and inflammation in patients with biopsy-proven NAFLD using MR imaging, TE, and serum biomarkers. We plan to enroll one hundred patients until 2018. This is a preliminary report of our study. Methods: This is a multicenter prospective study of patients with biopsy-proven NAFLD. The patients underwent liver biopsy, MRI and TE 6 months before enrollment. Sera were collected at the time of enrollment. MRI examination included mDIXON, MR spectroscopy (MRS), and MR elastography (MRE). TE measured liver stiffness and controlled attenuation parameter (CAP). Twenty serum biomarkers were analyzed with the Luminex Multiplex Assay. Results: Thirty-five patients with biopsy-proven NAFLD were enrolled from October 2016 to March 2017. Mean age and BMI were 50.6 ± 0.48 years and 28.50 ± 4.87 kg/m², respectively. Female patients were dominant (23, 65.7%), and other co-morbidities were diabetes (n=15, 42.9%), hypertension (n=12, 34.3%) and dyslipidemia (n=11, 31.4%). For the diagnosis of advanced fibrosis (stage 3-4), the AUROC of the MRE tended to be superior (0.89; 95%CI, 0.72-0.98) compared with the TE (0.83; 95%CI, 0.66-0.93) (P=0.40). For the diagnosis of severe steatosis (stage 2-3), CAP (0.7; 95%CI, 0.52-0.84) had a lower AUROC compared with the mDIXON (0.83; 95% CI, 0.65-0.94; P=0.11) and MRS (0.82; 95%CI, 0.63-0.93; P=0.28), respectively. In the serum biomarker analysis, increased resistin had a significant association with severe steatosis (stage 2-3) compared to mild steatosis (stage 0-1) (OR=1.44; 95%CI, 1.01-2.06; P=0.04). Increased IFN-γ was associated with severe inflammation (stage 2-3) compared to mild inflammation (stage 0-1) (OR=1.36; 95%CI, 1.01-1.83; P=0.04). Total PAI-1 showed a tendency for association with the presence of NASH (OR=1.063; 95%CI, 0.99-1.14; P=0.07). Conclusion: In our preliminary Results, MRI (mDIXON, MRS and MRE) tended to identify more severe steatosis and fibrosis compared to TE in patients with biopsy-proven NAFLD. Serum IFN-γ was significantly associated with inflammation, and serum resistin was also associated with steatosis. Non-invasive modalities using MRI and serum biomarkers could be potential tools for the diagnosis and classification of disease severity in patients with NAFLD.

2128 LIVER FUNCTION TESTS DO NOT PREDICT LIVER

Asterisk (*) denotes abstract of interest

DAMAGE IN DIABETES. ANALYSIS OF LIVER STEATOSIS AND FIBROSIS BY TRANSIENT ELASTOGRAPHY IN ROUTINE DIABETES CARE

Rosa Lombardi, Lorenza Airaghi, Vittorio Borrani, Cristina Bertelli, Larry Burdick, Erika Fatta, Federica Iuculano, Serena Pelusi, Luca Valenti, Silvia Fargion, Anna Ludovica Fracanzani; Department of Pathophysiology and Transplantation, Ca’ Granda IRCCS Foundation, Policlinico Hospital University of Milan, Milan, Italy

Background: Diabetes is a known risk factor for the onset and progression of non-alcoholic fatty liver disease (NAFLD) to non-alcoholic steatohepatitis (NASH) and liver fibrosis. Liver biopsy is the gold standard for the staging of liver disease but it is not routinely applicable to the wide and otherwise asymptomatic cohort of diabetic patients. We non-invasively estimated prevalence and predictors of NAFLD and fibrosis in a cohort of diabetic patients by using FibroScanR. Methods: Ninety-seven consecutive patients attending the outpatient diabetes clinic and without any history of liver disease were enrolled over a 6-month period. All patients underwent liver ultrasound (US) and transient elastography (FibroScanR), using the M probe or, in case of failure, the XL probe. Controlled attenuation parameter (CAP) values >250 dB/m and liver stiffness measurement (LSM) >7.9 kPa defined the presence of steatosis and fibrosis, respectively. CAP values were then correlated to US steatosis. Results: Mean age was 65±6 years, 71% patients were males and all were on anti diabetic therapy (oral agents in 84% and insulin in 16%). Hypertension was present in 80%, dyslipidemia in 83%, 74% of whom on statins, overweight in 75% of patients (27% of these obese). Deranged AST, ALT and GGT were present in 1%, 6% and 7% of patients, respectively. Prevalence of hepatic steatosis was 78% evaluated by CAP and 91% by US. CAP values significantly correlated with US steatosis grades (p for trend<0.006) and were associated at univariate analysis with BMI (p=0.05), ALT (p=0.02), GGT (p=0.02) and insulin levels (P=0.02) while at multivariate analysis only with insulin levels (OR 1.14, 95% C.I. 1.0-1.3). Mean LSM was 5.5 ± 2 Kpa and 8 (9 %) patients had values > 7.9. LSM values > 7.9 kPa were associated with BMI (p=0.001), ALT (p=0.001), GGT (p=0.0001), insulin levels (p=0.001) and CAP values (p=0.001), at age and gender adjusted analysis. Three of these patients were classified as cirrhotic according to FibroScanR Results. No association between any anti-diabetic drugs and either steatosis or fibrosis was observed. Conclusions: Liver damage is highly prevalent in diabetic patients as shown by FibroScanR, which detects not only fibrosis but also steatosis. Given the highly significant correlation between LSM values and liver tests, although within normal ranges, studies are needed to define whether the use of revised liver test cut-offs might increase the detection of liver damage in these patients. A careful screening for liver disease in all diabetic patients in primary care is mandatory also considering their high risk to develop cirrhosis and hepatocellular carcinoma.

2147* COMPARISON OF PUBLISHED NONINVASIVE BIOMARKERS TO RELIABLY EXCLUDE SEVERE FIBROSIS IN NAFLD PATIENTS.

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Background: In non-alcoholic fatty liver disease (NAFLD) the presence of fibrosis is predictive of long-term liver-related complications. The aim of this study is to determine which non-invasive tests among FibroMeter (FM) VCTE, Liver Stiffness Measurement (LSM) by FibroScan, FIB4 and NFS, can reliably exclude severe fibrosis in patients with NAFLD. This study will evaluate performances according to cut point age. Methods: NAFLD patients prospectively underwent FibroScan, liver biopsy (LB) and blood collection at seven British centres. Liver biopsies were read in a blinded manner with consensus by two expert pathologists. Blood samples were analyzed in a central lab and blood scores were then calculated. The accuracy of a FM VCTE score combining LSM and biological parameters was tested and compared against either blood tests (FIB4 and NFS) or LSM alone. Area under receiver operating characteristics curves (AUC) were assessed for each score and compared using DeLong analysis. Ability to exclude severe fibrosis was compared according to Sensitivity (Se)/ Specificity (Sp), Negative and Positive Predictive Value (NPV/ PPV) and Likelihood Ratio (LR). For FIB4 and NFS evaluation, patients were stratified according to age. Results: In 303 proven NAFLD patients the prevalence of F3 fibrosis was 35%. For identifying patient with F3 fibrosis, FM VCTE significantly outperformed (p<0.05) other tests with AUC on the whole population of 0.88 [0.83-0.92]. LSM had an AUC of 0.81 [0.75-0.86], FIB4 0.80 [0.74-0.85] and NFS 0.75 [0.69-0.81]. Using low validated published cut-offs based on age, on the younger group FIB4 had Se 0.63/Sp=0.78 with NPV=81 and LR=-0.47. NFS gets Se=76/ Sp=59 for NPV=83 and LR=-0.41. In the second group composed of patients over 65 years of age, FIB4 had Se=0.63/Sp=0.84 with NPV=66 and LR=-0.44 and NFS obtains Se=0.60/Sp=0.68 with NPV=59 and LR=-0.59. Youden, Se>50% and Sp>90% cut-offs were assessed in the whole cohort for FM VCTE and LSM. Predictive values of each test according to cut-offs are displayed in the table below. Conclusion: FibroMeter VCTE, a test combining biological and physical markers appeared to be the more reliable tool to exclude patients with severe fibrosis, irrespective of age. Age-based cut-offs for FIB4 and NFS enhance specificity in older patients but NPV remains better for FM VCTE.

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<td>Cutoff / Prediction values</td>
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Asterisk (*) denotes abstract of interest

2160 CLINICAL AND HISTOLOGICAL CHARACTERISTICS OF NONALCOHOLIC FATTY LIVER DISEASE IN JAPANESE NON-OBESE PATIENTS

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Background & Aims: Although nonalcoholic fatty liver disease (NAFLD) is strongly associated with obesity, some patients (pts) develop NAFLD despite having normal body mass index (BMI). Recently it was reported that non-obese (non-OB) Chinese NAFLD pts (n=72) tend to have less-severe disease than obese (OB) pts (Hepatology 2017). However, the details of non-OB pts have not been clarified yet. We compared histological and clinical characteristics and genetic Backgrounds between two groups. Patients and Methods: Biopsy-proven 849 Japanese NAFLD (421 males, 428 females, average age: 52 and 62 years) were enrolled. Genome-wide association study (GWAS) was done. The cut-off of obesity in Asia is 25kg/m2 of BMI. A p value <0.01 was considered statistically significant. Results: 1) Among 849 NAFLD pts, 248 (29.2%) pts were non-OB. Gender proportion of non-OB and OB pts was comparable (M/F: 112/136 vs 309/292, p=0.114). Non-OB pts were older than OB (60.6±13.2 y.o. vs 55.5±14.7y.o., p<0.001). 2) NAFLD activity score (NAS) in non-OB pts was lower than that in OB (mean±SD, 3.2±1.6 vs 3.7±1.5, p<0.001). Steatosis (1.5±0.7 vs 1.7±0.7, p<0.001), and lobular inflammation (1.0±0.8 vs 1.2±0.7, p<0.001) in non-OB pts were lower than those in OB, whereas hepatocyte ballooning (0.7±0.8 vs 0.8±0.8, p=0.057) was comparable. Proportions of NASH were comparable between 2 groups (61.3% vs. 70.5%, p=0.011). Proportions of advanced fibrosis (stage 3 or 4 of Brunt’s stage) were comparable between 2 groups (19.0% vs 21.0%, p=0.57). 3) Percentages of comorbidities of non-OB and OB pts were similar; DM: 47.2% vs 52.4% (p=0.19), HT: 62.9% vs 65.0% (p=0.61), dyslipidemia: 70.9% vs 75.5% (p=0.19). 4) Non-OB pts showed lower values of ALT (67±49 vs 82±60, p<0.001) and TG (155±98 vs 175±110, p<0.01) than OB pts, and also revealed lower values of liver stiffness (9.5±8.0 vs 10.6±7.4, p<0.01) and CAP (277±47 vs 298±46, p<0.001) in transient elastography and lower value of visceral fat in CT (125±42 vs 171±53, p<0.001). Other clinical laboratory data in non-OB and OB were as follows; AST:49±30 vs 54±34 (p=0.012), ALT:95±108 vs 94±96 (p=0.040), T.Chol: 203±41 vs 199±37 (p=0.286), creatinine: 0.73±0.20 vs 0.77±0.41 (p=0.265), platelet (x104): 20.0±6.1 vs 20.9±6.3 (p=0.048), type4 collagen 7s: 5.0±1.8 vs 5.2±1.7 (p=0.024). Conclusion: Japanese non-obese NAFLD pts have a tendency of higher age and lower value of NAS than obese pts, whereas proportions of advanced fibrosis and PNPLA3 GG genotype in non-obese pts were comparable to those in obese pts.

2168 EVALUATION WITH TRANSP ENST ELASTOGRAPHY AND CONTROLLED ATTENUATION PARAMETER OF A COHORT OF PATIENTS WITH CHRONIC LIVER DISEASES ADMITTED IN A HEPATOLOGY TERTIARY CENTER

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Background: Among the noninvasive tools, transient elastography

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(FibroScan(R), TE) with controlled attenuation parameter (CAP) has demonstrated good accuracy in quantifying the levels of liver steatosis and fibrosis in patients with different chronic liver diseases (CLD). The aim of our study was to assess the presence of steatosis in different CLD and to correlate it with different clinical and biochemical parameters. Methods: We prospectively evaluated 238 patients with different CLD (HCV, HBV/HDV, NASH, alcoholic, autoimmune diseases) admitted to our hepatology unit with TE and CAP. Results: There were 50% females and 50% males, with a median age of 55 years. There was a moderate correlation between CAP values and body weight (r=0.43, p<0.0001), BMI (r=0.38, p<0.0001), waist (r=0.44, p<0.0001) and thoracic perimeter (r=0.43, p<0.0001). There was a low correlation between CAP values and glycaemia (r=0.28, p<0.0001) or triglycerides (r=0.23, p=0.0009). Steatosis grade was significantly higher in patients with non-alcoholic steatohepatitis (NASH) (CAP 297.7 ±11.5 vs 244.5 ±4.1 dB/m, p<0.0001) and patients with diabetes mellitus (CAP 272.0 ±10.4 vs 248.7 ±4.3 dB/m, p=0.03), but not in other etiologies of CLD. Fibrosis stage was significantly lower in patients with HBV related liver diseases (9.7 ±1.4 vs 18.7 ±1.0 kPa, p=0.001) and reached only marginal significance in patients with NASH (13.1 ±2.4 vs 18.2 ±1.0 kPa, p=0.06). No difference was registered for patients with HCV related diseases with regard to fibrosis. Conclusions: Steatosis evaluated by TE with CAP was significantly higher in patients with NASH and correlated well with features of metabolic syndrome.

2186 QUANTIFICATION OF HEPATIC STEATOSIS IN PATIENTS UNDERGOING LIVER RESECTION: A COMPARATIVE STUDY OF PREOPERATIVE CONTROLLED ATTENUATION PARAMETER (CAP) VERSUS FOURIER TRANSFORM-INFRARED SPECTROSCOPY (FTIR) AND HISTOPATHOLOGICAL ESTIMATION (HPE) ON SURGICAL SPECIMENS

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Background: CAP measured by transient elastography (TE) is a noninvasive method for HSA assessment. FTIR for hepatic triglyceride (TG) content is a new standard for tissue quantification of HS as it avoids the variations associated with conventional HPE by pathologists. Methods: Patients undergoing LR for various liver tumors were enrolled prospectively to undergo TE by FibroScan™ M/ XL probes. HPE and FTIR quantification of the HS were performed on the frozen samples of resected non-tumoral liver. An expert pathologist, blinded to patients’ data, performed HPE of steatotic hepatocytes (%). TG content was quantified using Nicolet™ i20 FTIR spectrometer. Bivariate correlation of CAP, HPE and FTIR was tested by Spearman correlation. Diagnostic performance of CAP was compared with HPE and FTIR according to HS grades using receiver operating characteristic (ROC). Results: 87 patients [61% men] with a median age of 63 years were included. Indications for LR were 53% liver metastasis, 39% primary liver cancer and 7% other liver tumors. Median [range] of CAP was 229 dB/m [118-351]. Median [range] steatosis by HPE and TG content by FTIR were 15% [0-90] and 128 nmol/mg [0-6188] respectively. CAP had a significant correlation with both reference methods, CAP vs FTIR [r=0.4] and CAP vs HPE [r=0.4]. FTIR had an excellent correlation with HPE [r=0.7]. Area under ROC curve (AUROC) for CAP vs HS grades according to NAS score were 0.6 [95%CI:0.5-0.8] for ≤S1 [n=51], 0.7 [95%CI:0.6-0.8] for ≤S2 [n=32] and 0.8 [95%CI:0.7-0.9] for ≥S3 [n=15] respectively [Fig1a]. Similarly, AUROC for CAP vs FTIR (TG) grades were 0.7 [95%CI:0.6-0.8] for ≤S1 [n=56], 0.7 [95%CI:0.6-0.9] for ≤S2 [n=32] and 0.8 [95%CI:0.6-0.9] for ≥S3 [n=19] respectively [Fig1b]. CAP had similar performance when compared with FTIR and HPE for all grades of steatosis. Performance of CAP improved as HS grade increased and it had an excellent performance to diagnose grade 3 steatosis. Conclusion: FTIR should be considered as a gold standard for HS quantification in clinical studies.

2189 A PROSPECTIVE EVALUATION OF NONINVASIVE MODALITIES OF LIVER FIBROSIS ASSESSMENT IN BIOPSY-PROVEN NONALCOHOLIC FATTY LIVER DISEASE

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Background and Aims: Liver fibrosis stage is the best predictor of liver-related outcomes in patients with nonalcoholic steatohepatitis (NASH). Few studies have prospectively evaluated the noninvasive approaches to liver fibrosis determination in patients with biopsy-proven nonalcoholic fatty liver disease (NAFLD). The aim of this study was to evaluate the diagnostic accuracy of three liver stiffness based imaging modalities and a clinical fibrosis risk calculator in determining liver fibrosis. Methods: We prospectively enrolled 48 consecutive patients with NAFLD/NASH proven on recent biopsy. After informed consent, patients completed Vibration-Controlled Transient elastography (VCTE; Fibroscan), Shear-Wave Ultrasoundography (SWE; LOGIQ E9), and Magnetic resonance elastography (MRE) on the same day. Patients fasted for at least 4 hours prior to testing. The validated NAFLD Fibrosis Score (NFS) was calculated based on clinical and biochemical variables prior the liver biopsy. Statistical analysis was performed using MedCalc and ROC curves were calculated. Significant fibrosis was defined as Metavir score ≥F2 and advanced fibrosis as stage ≥F3. Results: 43 subjects completed all four tests. 15 patients had advanced fibrosis and 28 had non-advanced fibrosis on liver biopsy. The Area Under the Curve (AUC) values (95% confidence intervals) for detecting advanced fibrosis were as follows: VCTE 0.893 (0.761 – 0.966), SWE 0.840 (0.697 – 0.934), MRE 0.921 (0.798 – 0.981), and NFS 0.727 (0.570 – 0.852). 29 subjects had significant fibrosis and 14 had non-significant fibrosis. The AUCs for detecting significant fibrosis were as follows: VCTE 0.659 (0.499 – 0.796), SWE 0.677 (0.518 – 0.812), MRE 0.734 (0.577 – 0.857), NFS 0.730 (0.573 – 0.854). When the analysis included all patients that completed a particular diagnostic modality, the AUCs were as follows: VCTE (n=47): advanced fibrosis 0.872; 95%
Cl = 0.742 – 0.951; P<0.0001, significant fibrosis 0.674; 95% CI = 0.522 – 0.804; P = 0.0319; SWE (n=48) advanced fibrosis 0.820; 95% CI: 0.683–0.916; P<0.0001; significant fibrosis 0.703; 95% CI = 0.554–0.826; P = 0.0255; MRE (n=48) advanced fibrosis 0.927; 95% CI = 0.808 – 0.983; P<0.0001; significant fibrosis 0.758; 95% CI = 0.607 – 0.873; P = 0.0012; NFS (n=47) advanced fibrosis 0.739; 95% CI = 0.591 – 0.856; P = 0.0020; significant fibrosis AUC = 0.727; 95% CI = 0.578 – 0.847; P = 0.0058. Conclusions: VCTE, SWE, and MRE all performed well in the noninvasive diagnosis of advanced fibrosis (F3/4) in patients with biopsy-proven NAFLD/NASH. However, these modalities, along with the NFS score, had only modest accuracy in diagnosing significant fibrosis (F2/3/4).

2191. HIGH PREVALENCE OF PROBABLE NAFLD AND ADVANCED FIBROSIS IN A POPULATION OF TYPE 2 DIABETES PATIENTS FOLLOWED BY ENDOCRINOLOGY AND PRIMARY CARE
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Introduction: An estimated 100 million people in the United States have Nonalcoholic Fatty Liver Disease (NAFLD) and approximately 30 million people have diabetes. Type II Diabetes mellitus (T2DM) is a well-known risk factor for the progressive phenotype of NAFLD, Nonalcoholic Steatohepatitis (NASH). The Aim of our study was to determine the prevalence of probable NAFLD and advanced fibrosis in a large cohort of T2DM patients. Methods: We retrospectively identified all patients with an ICD-10 code for diabetes mellitus seen in the primary care or endocrinology clinic from 2011-2017. A patient was characterized as having probable NAFLD if they met the following criteria: (1) elevated ALT or AST: > 30 IU/L in men and > 19 IU/L in women (2) T2DM (3) the absence of recognized liver disease (4) no current alcohol abuse. Metabolic syndrome was defined by meeting 3 of 5 modified criteria from the American Heart Association: (1) DM (2) Hypertension (3) BMI ≥ 30 (4) Triglycerides > 150 mg/dL (5) HDL < 40 mg/dL [male], < 50 mg/dL [female]. For patients with probable NAFLD, fibrosis was staged using the AST to Platelet Ratio Index (APRI), Fibrosis-4 Index (FIB-4), and the NAFLD Fibrosis Score (NFS). A subset of 35 patients underwent a vibration-controlled transient elastography (VCTE) examination to evaluate for steatosis and stage fibrosis. Results: 1,716 T2DM patients were included and eligible for analysis. 40% (n=675) of patients met the criteria for probable NAFLD and 69% (n=1,171) had metabolic syndrome. Patients with probable NAFLD were more likely to be female (p<0.0001), obese (p<0.0001), to have metabolic syndrome (p=0.0001), and to have higher VLDLs (p=0.0001). There was no statistically significant difference in the prevalence of NAFLD between Hispanic and non-Hispanic patients (p=0.2310). APRI, FIB-4, and NFS predicted that 2.9% (n=16), 8% (n=44), and 23% (n=123) of eligible patients may have advanced fibrosis (F3-F4). APRI, FIB-4, and NFS found that 10.3% (n=57), 31% (n=172), and 55% (n=297) were indeterminate. Among patients who had VCTE, 94.3% (n=33) had steatosis and 31.4% (n=11) may have F3-F4. 1% (n=17) of patients underwent advanced work-up and/or were referred to hepatology. Conclusions: It is likely that NAFLD and advanced fibrosis is common among T2DM patients who are being followed by primary care and/or endocrinology. More steps must be taken to increase the recognition of NAFLD in high-risk populations and utilize non-invasive staging mechanisms to begin evaluating these patients.

2233 EVALUATION OF THE PRESENCE OF STEATOSIS AND FIBROSIS IN LIPODYSTROPHIC WITH DIABETES TYPE 2 PATIENTS USING TRANSIENT ELASTOGRAPHY AND COMPARISON WITH ANTPROMETRIC AND DENSITOMETRIC PARAMETERS
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Background: In general population, individuals at higher risk of NAFLD are those with type 2 diabetes and metabolic syndrome. There is a lack of information about the prevalence of NAFLD in patients with lipodystrophy who share similar features of insulin resistance with metabolic syndrome patients. The Aim of this study is to evaluate the use of non invasive markers of liver fibrosis for the early diagnosis of steatosis and fibrosis in this group of patients. Methods: This is a cross-sectional study with prospective inclusion of 24 women over 18 years-old with type 2 diabetes and partial lipodystrophy of the limbs or Dunningan familial partial lipodystrophy. We collected data from anthropometric parameters, body composition analysis with Dual energetic X-ray absorptiometry (DEXA), liver stiffness (LSM) and Controlled Attenuation Parameter (CAP) using transient elastography (TE) with FibroScanR. Results: The medium LSM was 7,50 ± 4,27 Kpa and medium CAP 294,94 ± 49,09 db/m. 13/24 (54,1%) presented LSM >5,8Kpa. 4/24 (16,6%) presented LSM >12Kpa. 21/24 (87,5%) patients demonstrated CAP higher than 238 dB/m. We observed a significant positive correlation between LSM and the following parameters: BMI (r:0,411 ; p:0,046), waist circumference (r: 0,598 ; p:0,002), hips circumference (r: 0,505 ; p:0,012), total body fat (r:0,572 ; p:0,008), troncular fat (r:0,572 ; p:0,008), upper limbs fat (r:0,526 ; p:0,017) and lower limbs fat (r:0,531 ; p:0,016), android (r:0,490 ; p:0,028) and gynoid (r:0,429 ; p:0,029) fat percentage. CAP medium had a significant positive correlation with weight (p:0,048 r: 0,501), waist circumference (p:0,049 r:0,500), upper limbs fat (p:0,035 r :0,588) and android fat (p:0,047 r:0,558). Conclusion: In comparison with literature data about the prevalence of steatosis (CAP> 238dB/m) in diabetes population, lipodystrophic patients have the same prevalence of steatosis. But this population shows higher frequency of significant fibrosis (LSM >5.8KPa) and cirrhosis (LSM > 12KPa) (Sporeea et al, 2016; Grugurevie et al, 2017). Despite the fact that anthropometric measurements and DEXA parameters shows some positive correlation with LSM measurement, there was only a moderated correlation with LSM and CAP. This suggests that patients with lipodystrophy should undergo transient elastography for the screening of steatosis and liver fibrosis.

Asterisk (*) denotes abstract of interest

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