Frequent hospitalisations and high mortality make prevention of OHE essential. Current treatment options for OHE include nonabsorbable disaccharides (e.g. lactulose) and antibiotics (e.g. rifaximin-alpha 550 mg). We conducted a network meta-analysis (NMA) of data from a previously published literature review (Hudson M, Schuchmann M. Eur J Gastroenterol Hepatol 2019;31:434–50) to determine the comparative long-term efficacy, in terms of number needed to treat (NNT) to prevent an additional OHE episode, of lactulose versus placebo and lactulose + rifaximin-alpha versus placebo.

Method: Literature searches were previously conducted in PubMed of titles and abstracts only, with language restricted to English and the data range unrestricted up to the cut-off date (05 March 2018), using the following search terms: 'hepatic encephalopathy + rifaximin' and 'hepatic encephalopathy + lactulose'. Randomized controlled trials (RCTs) with long-term (>/= 6 months) effectiveness endpoints for lactulose and/or rifaximin-alpha were selected for NNT analysis if statistically significant between-group differences were reported in the rate of OHE recurrence. In this analysis, we conducted an indirect treatment comparison analysis using the odds ratio (OR) for OHE recurrence for NNT mapping. The NMA was conducted using the Mantel-Haenszel approach, with placebo used as the reference treatment and only the fixed effect analysis considered.

Results: A total of 570 articles, including 201 with primary clinical data, were identified. Long-term treatment was reported in 8 articles for lactulose alone and in 19 articles for rifaximin-alpha, alone or in combination with lactulose. NNTs were calculated from 4 studies. When the ORs for the relative efficacy of each treatment versus each of the remaining treatments were calculated, the ORs (95% confidence intervals) for lactulose versus placebo and lactulose + rifaximin-alpha versus placebo were 0.276 (0.164–0.466) and 0.081 (0.042–0.158), respectively. The resulting NNTs were lower for lactulose + rifaximin-alpha versus placebo (2.28) than for lactulose versus placebo (3.46; Figure).

NNT (95% CI) for prevention of one additional OHE episode following long-term (>/=6 months) treatment with lactulose versus placebo and lactulose + rifaximin-alpha versus placebo. CI, confidence interval; NNT, number needed to treat; OHE, overt hepatic encephalopathy

Conclusion: This NMA based on NNTs demonstrated that, in comparison with placebo, lactulose + rifaximin-alpha may be more effective than lactulose alone in preventing OHE recurrence.

FRI493

Transjugular intrahepatic portosystemic shunt versus balloon-occluded transvenous obliteration for the management of ectopic varices

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Background and aims: Bleeding ectopic or non-gastroesophageal varices occur uncommonly in the setting of portal hypertension. Both transjugular intrahepatic portosystemic shunt (TIPS) and balloon-occluded antegrade or retrograde transvenous obliteration (BA-RTO) are potential treatment options. Our study is the first to assess and compare TIPS vs. BA-RTO for the management of ectopic varices.

Method: This is a retrospective cohort study at a tertiary liver center. All interventional radiology procedures performed for bleeding varices between 2006 and 2020 were identified. Only patients undergoing TIPS and BA-RTO for bleeding ectopic varices were included. Demographics, pre-procedural data and outcome data was collected and compared between BA-RTO and TIPS groups.

Results: Eleven patients undergoing BA-RTO were compared to seven patients undergoing TIPS. In 6 of the BA-RTO patients, TIPS was deemed unfeasible. Mean age at procedure was 55.6 ± 10.0. 55.6% were men and 83.3% were white. There were 8 rectal varices, 7 peristomal, one duodenal, one cecal and one superior mesenteric. The mean MELD-Na prior to procedures was 20.8 ± 10.4 in the BA-RTO group vs. 19.0 ± 6.4 in the TIPS groups (p = 0.69). In the BA-RTO vs. TIPS groups, respectively, the mean MELD-Na at 30 days after procedure was 18.8 ± 9.9 vs 21.7 ± 5.5 (p = 0.67) and at 90 days after procedure was 18.0 ± 4.2 vs 24.0 ± 7.5 (p = 0.39). Rebleeding rates during admission were 9.1% for BA-RTO vs. 14.3% for TIPS (p = 1.00). The mean length of stay for BA-RTO vs. TIPS was 10.6 ± 8.9 vs. 7.9 ± 8.1 days (p = 0.41), mean paracenteses 90 days prior and after procedure were 1.9 ± 3.6 vs. 0.0 ± 0.0 (p = 0.12) and 2.0 ± 3.9 vs. 0.0 ± 0.0 (p = 0.082), in the BA-RTO vs TIPS groups, respectively. The rates of hepatic encephalopathy in the BA-RTO vs TIPS groups at 90 days before and after the procedure were 45.4% vs. 57.1% (p = 1.00) and 28.6% vs 33.3% (p = 1.00), respectively. The mortality rates were 27.3% vs 28.6% (p = 1.00) in the BA-RTO vs TIPS groups.

Conclusion: Our results demonstrate that both TIPS and BA-RTO are effective treatment modalities for bleeding ectopic varices, with comparable post-procedure outcomes. Patients undergoing BA-RTO had a higher MELD at procedure but lower MELD at 30 and 90 day post-procedure and less HE though no differences were significant. BA-RTO is an excellent option for bleeding ectopic varices, primarily rectal and peristomal, and especially in patients not candidates for TIPS.

FRI494

Identification of potential new serum biomarkers for clinically significant portal hypertension by proteomic profiling of circulating extracellular vesicles

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Background and aims: Portal hypertension (PH) is a driving force for the progression of chronic liver disease. Complications from PH develop when hepatic venous pressure gradient (HVPG) exceeds 10 mmHg, defining the presence of clinically significant portal hypertension (CSPH). However, measuring HVPG is invasive method, with limited availability. Thus, reliable non-invasive tools would be welcome alternative. Circulating extracellular vesicles (ECV) originating from the cells are valuable source of information pertaining the ongoing pathophysiological process including the molecules which might serve as the biomarkers. In this study we aimed to identify potential new serum biomarkers for CSPH in patients with compensated advanced chronic liver disease (cACLD) by proteomic profiling of serum ECV.

Method: Severity of PH was assessed by HVPG measurement that served as the reference standard. Serum samples were pooled based on HVPG measurement in two groups: with and without CSPH. ECV were isolated from the serum pools using ultracentrifugation and vesicle membranes were lysed by sonication. ECV protein cargo was analyzed by Liquid Chromatography-Mass spectrometry (LC-MS). Samples were analyzed in triplicates and proteins identified with at least one peptide were considered relevant for analysis. Functional enrichment analysis of the isolated proteins was conducted using FunRich 3.1.3 analysis tool.
Results: A total of 48 patients were included (30 in the CSPH group and 18 in the non-CSPH group, 75% males; median age: 59, 9 ± 9, 8 years; majority with alcoholic (48%) and non-alcoholic fatty liver disease (23%)). LC-MS analysis of ECV content resulted in identification of 733 proteins (38 distinctive for CSPH, and 75 for non-CSPH group), that were furtherly classified based on their cellular origin and function. Proteins involved in platelet degranulation, integrin-mediated signaling pathway, receptor mediated endocytosis and regulation of cholesterol efflux were more represented, whereas those involved in opsonization, phagocytosis, complement activation, immune and inflammatory response were less represented in the CSPH group. Among the individual proteins that showed the most significant difference between the studied groups phospholipid transfer protein and beta-2-glycoprotein 1 were more represented, whereas complement C1q, C1r and C1s subcomponents and annexin A2 were less represented in the CSPH group.
Conclusion: Results of this study provide additional insights into pathophysiological processes taking place along the development of PH in patients with cACLD. Distinctive protein profiles are identified between the patients with respect to the presence of CSPH. Several individual proteins are identified that should be furtherly studied as the potential non-invasive biomarkers of CSPH.

FRI495

Factors influencing survival in cirrhotic patients with hepatic hydrothorax

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Background and aims: Hepatic hydrothorax (HH) remains a challenging complication of cirrhosis with limited treatment options. We sought to identify factors associated with mortality in hospitalised patients with confirmed HH treated with current standards-of-care.
Method: We performed a retrospective multi-center cohort study of cirrhotic patients with HH admitted to 3 tertiary hospitals (2010–2018). HH was defined as pleural effusion in the absence of cardiopulmonary disease. The primary outcomes were overall and transplant-free survival at 12-months after the index admission. Cox proportional hazards analysis was used to determine factors associated with the primary outcomes.
Results: 84 patients were included. Mean age 58.3 ± 11.5 years and 54.8% were male. The median Model for End-stage Liver Disease (MELD) score was 29 (IQR 25–33). Management of patients aligned with AASLD guidelines. Diuretics alone achieved resolution of HH in only 12% patients. At least 1 thoracocentesis was performed in 73.8% patients, of which 15% were complicated by pneumothorax. Within 12-months of the index admission, 33% patients received liver transplantation (LT) and 11.9% had transjugular intrahepatic porto-systemic shunt (TIPS) insertion, none of whom subsequently required LT. At least 1 hospital readmission was required in 63 (75%) patients, most commonly due to recurrent hydrothorax (38%) and decompensated cirrhosis (41%). Overall and transplant-free survival at 12-months were 68% and 41% respectively. The majority of deaths occurred early after the index admission, with a 45-day overall survival of 80%. The most common cause of deaths was complications of end-stage liver disease and multiorgan failure (75%). No deaths were recorded in patients receiving LT. In the multivariable analysis, increasing age (per 5-year increase, HR 1.3 (CI 1.1–1.7), p = 0.04), increasing MELD score (per 5 points, HR 1.5 (CI 1.1–1.7), p = 0.02), current smoking (HR 8.7 (CI 3.4–21.9), p < 0.01) and acute kidney injury (AKI) (HR 2.9 (CI 1.2–7.0), p = 0.01) were associated with a significantly increased risk of death. After bootstrapping and correcting for MELD score and age, a current smoker had 8.7 times the hazard of death of a non- or ex-smoker and AKI was associated with a 2.9-fold increase in the hazard of death (Figure).

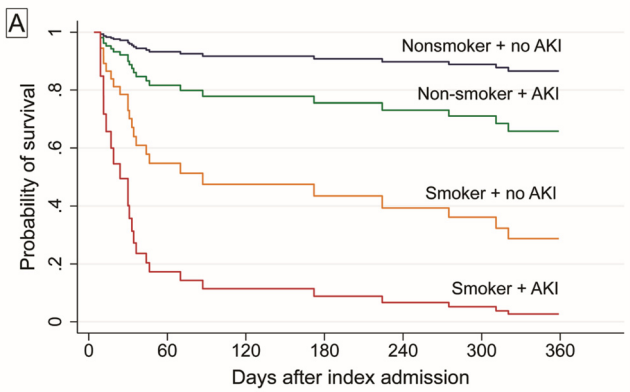

Figure: Multivariable Cox regression of overall patient survival showing survival estimates by smoking and AKI status (age and MELD scores held at mean values).

Conclusion: Cirrhotic patients with HH continue to have a poor 12-month survival despite current treatments and a high-risk of treatment-related complications. LT assessment should be considered in all cases. Current smoking and episodes of AKI are potential modifiable factors affecting survival.

FRI496

Hepatic venous pressure gradient (HVPG) measured at events is lower in non-alcoholic fatty liver disease (NAFLD) associated cirrhosis as compared to alcoholic cirrhosis

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Background and aims: In our region, alcohol-associated liver disease (ALD) and NAFLD are the most prevalent and the fastest-growing cirrhosis etiologies, respectively. We have recently demonstrated, that a natural history of cirrhosis differs in NAFLD as compared to ALD. HVPG is a strong surrogate of cirrhosis severity but its value in NAFLD is yet to be clarified.
We aimed to compare HVPG in NAFLD with ALD according to the indication (compensated and decompensated disease) with a particular focus on variceal bleeding (VB) and refractory ascites (RA).
Method: In our hospital system, we have retrospectively identified patients who underwent HVPG measurement and scrutinized them