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Letter to the editor: Porto-systemic shunt embolization and recurrent ascites: a single centre case series.

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Dear Editors:

We read with interest the recent international multicenter retrospective study published in *Gastroenterology* by Simòn-Talero et al.[1] assessing the prevalence, characteristics and outcomes of spontaneous porto-systemic shunts (SPSS) in patients with cirrhosis. The authors clearly demonstrate an association of SPSS with HE, independent of liver function, and a further association with transplant-free survival in patients with MELD 6-9.

These findings are in agreement with prior, smaller studies demonstrating an association of SPSS with refractory HE [2,3], and accordingly shunt occlusion has been suggested as a second-line therapeutic strategy for refractory HE [4].

Based on this, we report our retrospective single-centre experience gathering a cohort of 15 patients with refractory HE evaluated for percutaneous embolization of large SPSS between 2008 and June 2016 at the Royal Free Hospital, London.

The presence of a previous TIPS was considered as an exclusion criteria. Similar to the findings of Simòn-Talero et al., ~~t~~he most common type of shunt present was splenorenal shunt (n=6, 40%). In regards to the technical aspects, 14 (93%) received Amplatzer occluders, and 1 (7%) underwent micro-coil embolization. Vascular access was transhepatic in 6 (40%) patients, via inferior vein cava (IVC) in 5 (33%) and the remainder were via femoral vein. In all cases, embolization was successful, with the complete occlusion of the portosystemic shunt. One-month follow-up was available for all patients. Of the enrolled patients, 13 (87%) experienced a significant improvement of their HE within the first month. Of the remaining 2 patients, 1 had no improvement of HE grade, and 1 developed grade 3 HE during a septic episode requiring hospitalization. Additionally, 3 patients developed severe ascites, requiring large volume paracentesis.

Intermediate follow-up at 3 months was available for 13 patients. Two patients died during follow up – causes of death were acute-on-chronic liver failure and end-stage liver failure. Among the 13 patients available for intermediate follow-up after embolization, 12 reported a durable HE improvement, while 1 patient developed recurrent episodes of HE. One of the 3 patients who previously exhibited large volume ascites, experienced also variceal bleeding. Long-term follow up at 6 and 12 months after embolization was

available for 11 patients. Of these, 2 patients died, one due to intracerebral haemorrhage and one following acute myocardial infarction. Two patients out of 11 reported recurrent episodes of HE requiring hospital admission despite maximal therapy with lactulose and rifaximin. As noted above, adverse events from the SPSS embolization were related to portal hypertension. Thus, 3 patients developed severe ascites requiring large volume paracentesis and 1 of them also experienced variceal bleeding.

The data presented by Simòn-Talero et al demonstrate a high prevalence of SPSS (60%). In view of the increased risk of refractory HE in this population, our single-centre experience supports the efficacy of the embolization of large PSS as a procedure for the treatment of refractory HE. In keeping with other reports [4-6], we found significant neurological improvement of patients undergoing the procedure. Unlike suggestions by other authors, we did not find an association between pre-procedural MELD score and outcome, suggesting that MELD>11 may not be an optimal method for stratification.

Furthermore, as noted by Simòn-Talero et al, other portal hypertension-related complications, such as GI bleeding, are more common in the SPSS group. In our experience, a substantial proportion of patients undergoing shunt embolization developed portal hypertension-related complications. Therefore, our data support a role for SPSS embolisation as a bridging therapy to liver transplantation, rather than a definitive therapy for refractory HE. More detailed patient assessment through portal pressure measurement (eg HVPG), or quantitative liver function testing (eg. ICG clearance) may better define a subgroup at lower risk of complications.

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