Radiology-guided occlusion of portosystemic shunts for treatment of medically refractory hepatic encephalopathy.

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Body Of Abstract

Background: Spontaneous portosystemic shunts (PSS) are increasingly recognised as a cause of medically refractory hepatic encephalopathy (HE) in up to 70% of patients with cirrhosis. Plug or coil-assisted retrograde transvenous obliteration (RTO) of these shunts, as a modification of the balloon-occlusion retrograde transvenous obliteration technique initially developed for embolisation of bleeding gastric varices, has been used to occlude these shunts with resultant decrease in blood ammonia and resolution of HE. Aim: To evaluate the clinical and radiological outcomes of radiology-guided PSS occlusion for refractory HE, using plug/coil-assisted retrograde transvenous obliteration.

Methods: Retrospective audit of seven patients (5M, 2F; aged 60-65yo) with refractory HE who underwent occlusion of a large spontaneous portosystemic shunt demonstrated on multiphase abdominal CT. Cirrhosis was due to alcohol (n=3), chronic hepatitis C (n=3) or non-alcoholic steatohepatitis (n=1). All patients had failed conventional medical therapy with lactulose +/- rifaximin for persistent HE. Blood ammonia levels were measured prior to the procedure and immediately post-procedure. Radiology-guided plug/coil-assisted retrograde transvenous obliteration of the PSS was performed under general anaesthesia by two radiologists. PSS patency/closure was evaluated at conclusion angiography, and confirmed on repeat multiphase abdominal CT performed between 5-20 weeks post procedure. Clinical symptomatology was elucidated at the follow up appointment with their hepatologist. Patients were also referred for gastroscopy post-procedure to monitor for the development of oesophageal and gastric varices, a recognised potential sequelae of PSS occlusion.

Results: There was complete occlusion of the PSS using a combination of a vascular plug, coils and sclerosant in six patients, with improvement in blood ammonia levels and cognitive function post procedure. One patient who had persistently elevated ammonia levels and altered cognitive function did not have PSS occlusion demonstrated on CT, although they were not overtly encephalopathic. No patient had overt HE at 3-6 month follow up. One patient with confirmed PSS occlusion required banding of new oesophageal varices. No patient had symptomatic oesophageal or gastric variceal bleeding post procedure. One patient with confirmed PSS closure died five months later due to progression of hepatocellular carcinoma.

Conclusion: Radiology-guided occlusion of large spontaneous portosystemic shunts can improve clinical control of HE with minimal morbidity. Patients with medically refractory HE should be assessed for large PSS and considered for this intervention when large shunts are identified.
Figure: Large portosystemic shunt arising from the superior mesenteric vein and draining into the left gonadal vein.
Coronal contrast-enhanced CT demonstrates A) a large portosystemic shunt consisting of large varices (arrow) arising from the superior mesenteric vein and draining into an enlarged left gonadal vein (asterisk) to the left renal vein (open arrow); and B) placement of coils at the shunt (arrow) and retrograde injection of sclerosant into the varices, with resultant shunt occlusion and thrombosis of the left gonadal vein (asterisk).
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