

IR In the Fog: The Role of IR in the Management of Portosystemic Encephalopathy

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Purpose

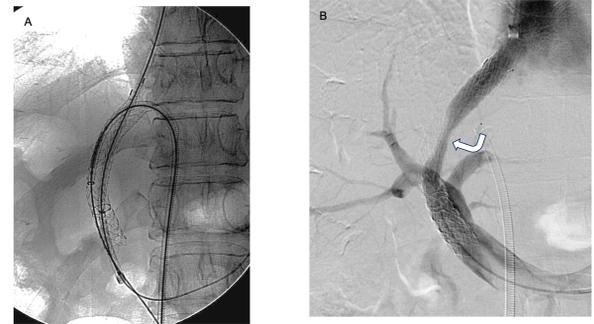
Portosystemic encephalopathy is a neuropsychiatric syndrome that can develop in patients with liver disease. We use the clinical scenarios and management of patients with portosystemic encephalopathy to discuss diagnostic and percutaneous treatment options.

Materials and Methods

Our single institution experience involves patients with either severe post-TIPS hepatic encephalopathy or portosystemic encephalopathy related to large spontaneous portosystemic shunts and small ectopic varices. We describe the imaging and clinical workup to make the diagnosis of portosystemic encephalopathy and the available percutaneous treatment options.

Post TIPS encephalopathy

67 year old man with uncontrolled encephalopathy after TIPS placement for refractory ascites.



Case 1 – (A) A 5 mm balloon expandable Atrium stent was positioned within the existing TIPS from a femoral vein approach and simultaneously deployed with a new Viatarr Stent from the right jugular approach to decrease the lumen of the TIPS. (white arrow)

Discussion: Approximately 3–7 % of patients with TIPS develop hepatic encephalopathy. In the above case, the new lumen measures approximately 4 mm and the portosystemic gradient increased from 4 to 14 mm Hg.

Spontaneous Splenorenal Shunt

56-year-old man with ETOH cirrhosis and medically refractory hepatic encephalopathy. An EGD showed no varices.



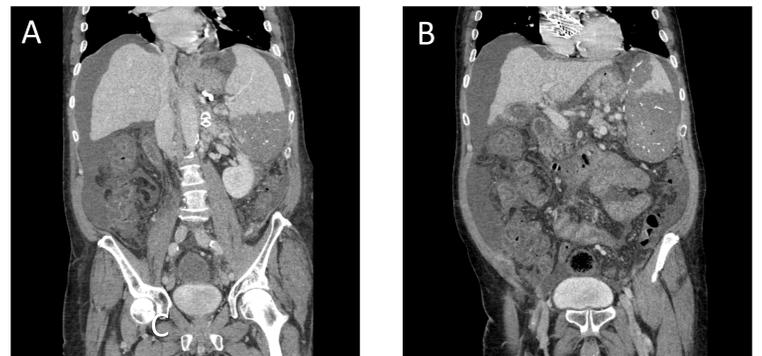
(A and B) Coronal enhanced CT images demonstrated a large splenorenal shunt (yellow circle).

(C) Left renal venogram with catheter tip in the splenorenal shunt. (D) Post-embolization 20mm Amplatzer Vascular Plug 2 (AVP; St. Jude Medical, St. Paul, MN) (yellow circle).

Discussion: Large spontaneous splenorenal shunts can result in a significant amount of unfiltered blood containing Ammonia (NH₃) into the systemic circulation, resulting in episodes of hepatic encephalopathy. A vascular plug approximately 20%–30% larger than the native shunt vessel diameter should be used. Complete single session plug embolization of large SPSSs have been shown to be safe and effective in decreasing severity and recurrence rate in patients with refractory HE with a selection criteria of MELD of 11 or below. The potential benefit to Child Pugh C patients is limited.

Partial Splenic Artery Embolization

Case 1: 64-year-old male with history of embolization of gastric varices now has ascites and hepatic encephalopathy.

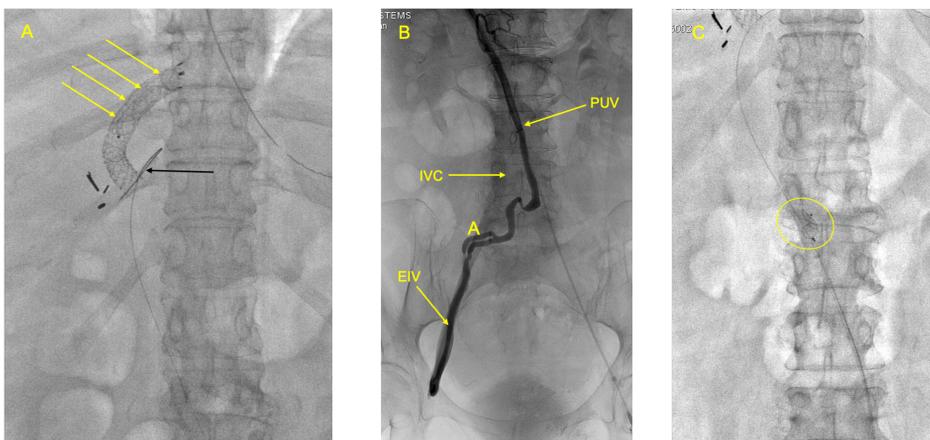


(A) and (B) coronal CT venous phase images show a portion of the spleen that has infarcted after glue embolization of branches of the splenic artery. The glue casts are seen.

Discussion: There is some evidence that partial splenic artery embolization may help reduce the incidence of hepatic encephalopathy. Small studies have been shown to have lasting effects on both serum ammonia levels and encephalopathy grade that persist for up to 2 years. Embolic material vary from particles (300–700 um, gelfoam, coils, plugs, and glue. In this case glue Trufill and lipiodol in 1:5 ratio was used. This procedure can be done safely when total embolization volume is less than 50% and peri-procedural antibiotics are used.

Refractory encephalopathy despite TIPS occlusion

61-year-old lady status post TIPS for refractory ascites. who developed profound encephalopathy requiring TIPS occlusion. Her mental status did not improve.



(A) Amplatzer Vascular Plug 2 (12mm) used to occlude the TIPS (yellow arrows) Black arrow denotes a catheter placed percutaneously in a recanalized paraumbilical vein. The arrow is at the level of the left portal vein (B). Paraumbilical venogram demonstrates the portosystemic shunt to the right epigastric vein, iliac vein and IVC. (C) an Amplatzer 2 plug (circle) was used to occlude the paraumbilical vein to obliterate the shunt.

Discussion: The recanalized paraumbilical vein can be accessed directly from the anterior abdominal wall. Plugs or coils can be used for embolization. AVP 2 (3–22 mm); through 4–7 Fr sheath or 5–9 Fr guiding catheter.

Results

Successful management options we show include TIPS reduction/occlusion, BRTO, BATO, and splenic artery embolization. We highlight the technical details and describe the ideal candidate for each approach. We discuss the clinical concerns related to therapy.

Conclusions

Historically, hepatic encephalopathy has been clinically challenging. Careful evaluation of cross sectional and IR imaging can lead to a diagnosis with a percutaneous treatment option. Embolization is both feasible and safe as adjunctive or curative treatment method for hepatic encephalopathy in patients who are refractory to medical management.

References

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