Porto-hepatic Venous Shunt Resulting in Hepatic Encephalopathy Managed by Endovascular Embolization

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Purpose:

Intrahepatic portosystemic shunts are rare malformations between the portal and systemic circulations that can be congenital, spontaneous, or secondary to trauma, surgery or long-standing portal hypertension. Although often asymptomatic, patients with these shunts can present with hepatic encephalopathy. Endovascular embolization may be performed when conservative management fails.

Materials and Methods:

We present the case of a 65-year-old female with a history of NASH cirrhosis who presented to the hospital with altered mental status. On admission, her serum ammonia was 91, which improved to 31 after medical management with rifaximin and lactulose. However, her altered mental status remained. A left portal vein to left hepatic vein shunt was identified on MRI (Figure 1). Interventional Radiology was consulted for endovascular embolization.

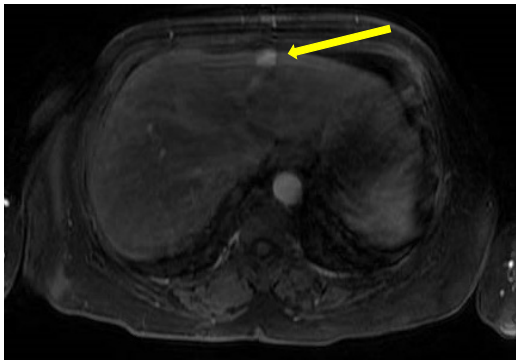


Figure 1: Axial MRI images of the liver demonstrates dilated hepatic veins, and an abnormal anatomic connection between the left hepatic vein and a branch of the left portal vein (yellow arrow).

Results

Initial access was obtained through the right internal jugular vein with a micropuncture set, and ultimately a 5F vascular sheath was placed and the left hepatic vein was selected with a 5F cobra catheter. A wedged portal venogram was performed (Image A) demonstrating the portal vein (yellow arrow) and shunt nidus (red arrow).

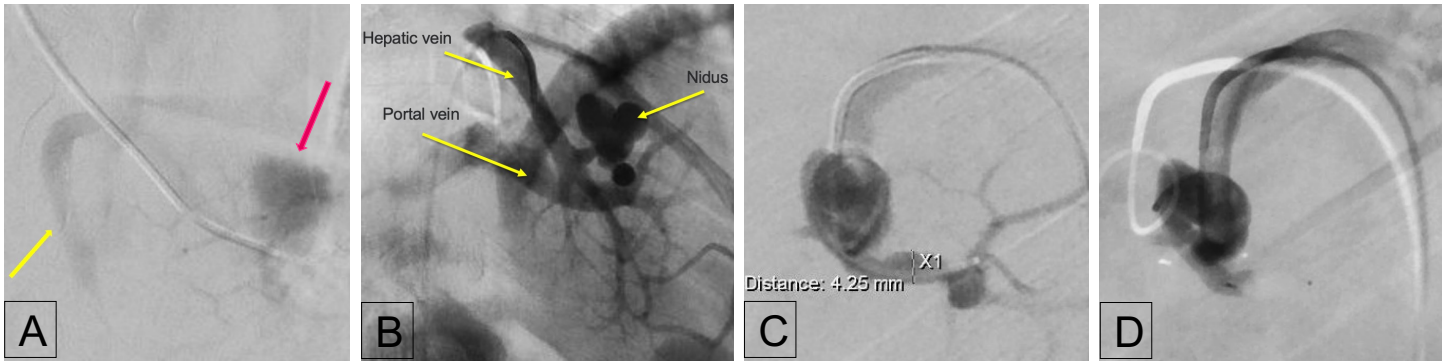
Due to difficulty staying within the left hepatic vein and selecting the shunt, this approach was aborted, and subsequent right common femoral vein access was achieved with a micropuncture set. A 5F vascular sheath was placed, and the left hepatic vein was accessed with a 5F cobra catheter. Another wedged portal venogram was performed (Image B) and a roadmap was used to select the shunt with a 2.8F Progreat microcatheter to reach a branch of the left portal vein, distal to the shunt nidus. The diameter of the vessel was measured as 4.25mm, and subsequently a 6.5mm x12mm microvascular plug was deployed within the portal venous system (Image C). Post plug deployment DSA run showed occlusion of the portal venous inflow (Image D). The patient returned to baseline mental status within 1 day of the procedure.

Conclusion

Intrahepatic portosystemic venous shunts are rare malformations that can be congenital or occur spontaneously. Most lesions are asymptomatic and discovered incidentally, but when symptomatic patients may present with hepatic encephalopathy or hepatic dysfunction[1].

The main classification of intrahepatic portosystemic shunts are as follows:
1: A single large vessel of constant diameter connecting the right portal vein to the IVC.
2: One or multiple connections present between peripheral branches of portal and hepatic veins in a single hepatic segment.
3: Aneurysmal connection between portal and hepatic veins.
4: Multiple communications between portal and hepatic veins involving both lobes of the liver[1].

Symptomatic intrahepatic portosystemic venous shunts refractory to medical management can be safely and efficiently managed via endovascular embolization. Endovascular approaches include transileocolic obliteration, percutaneous transhepatic obliteration, and retrograde transcaval obliteration, as shown in this case.



References

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