Acute Portal Vein Thrombosis, No Longer a Contraindication for Transjugular Intrahepatic Porto-Systemic Shunt (TIPS) Insertion

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Portal vein thrombosis, once considered as a contraindication to transjugular intrahepatic porto-systemic shunt (TIPS) is now considered as an indication. We report a case with clinical and technical success in a patient with Budd Chiari syndrome and acute portal venous thrombosis. Though it is a well-established option, with the best of our knowledge, we could not find a report from India. (J CLIN EXP HEPATOL 2015;5:259–261)

The prevalence of portal vein thrombosis (PVT) in cirrhosis, ranges from 1 to 25%. However it can complicate Budd Chiari syndrome (BCS) in 20% of cases. PVT in the absence cirrhosis is rare, and is thought to occur as a consequence of reduced portal vein flow secondary to raised hepatic resistance. Acute PVT, if left untreated, can progress, leading to life-threatening complications like mesenteric infarction, and/or variceal bleeding and worsening of ascites. We report this case to emphasize the role of transjugular intrahepatic porto-systemic shunts (TIPS) in acute portal vein thrombosis.

CASE REPORT

A 36 year old lady who had painless, progressive ascites for 15 months, diagnosed elsewhere as Budd Chiari syndrome, was being managed on anticoagulation. She had an episode of variceal bleed one month prior, which was managed endoscopically along with temporary interruption in anticoagulation. An ultrasonographic (USG) evaluation showed gross ascites, obliterated hepatic veins, patent inferior vena cava and a patent portal vein (PV). A TIPS procedure was planned a week later. However 2 days before the scheduled TIPS procedure, she presented with pain abdomen and an USG showed an acutely thrombosed PV,

confirmed on contrast enhanced computed tomography (CECT) (Figure 1). The patient was taken up for TIPS as an emergency procedure, considering treatment of portal venous thrombosis as well as Budd Chiari syndrome. TIPS was done under general anesthesia in a Siemens Multistar DSA suite. Right internal jugular vein was accessed. A modified Rosch-Uchida liver access set (RUPS-100; Cook, Bloomington, Ind) was used to create a tract from the right hepatic vein to the right branch of portal vein under USG and fluoroscopic guidance. Using a hydrophilic glide wire 0.035 (Terumo, Japan) the thrombus in the PV was “laced” (Figure 2). The intrahepatic tract was balloon plastied with a 10 mm × 4 cm balloon (Advance[®] ATB PTA Dilatation Catheter, Cook, Bloomington, USA), following which e-PTFE covered stents (Viatorr; W.L. Gore & Associates, Flagstaff, Arizona, USA) were deployed. A suction thrombectomy was performed with a 6F Envoy guiding catheter (Cordis Endovascular, Miami Lakes, Fla). Subsequently chemical thrombolysis was performed with 10 mg tPa (0.17 mg/kg/h) infusion for 1 h. Post thrombectomy portogram showed good recanalization (Figure 3).

The subsequent clinical course was marked by a gradual reduction in ascites. She was re-initiated on anticoagulation and was discharged from the ward. At re-evaluation 1 month post procedure, she remained asymptomatic and on examination, she had no ascites. She is on follow up for the last one year.

DISCUSSION

PVT was considered a contraindication for TIPS. However, the literature series and experience of other centres demonstrate that this is not always the case, and indeed may be an ‘indication’ for TIPS in some cases.¹ The access to the thrombosed portal vein could be either through a TIPS tract or percutaneous.² The latter approach may limit the duration of catheter stay as well as potentially increase

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Abbreviations: BCS: Budd Chiari syndrome; CT: Computed tomography; DSA: Digital subtraction angiography; HCC: Hepatocellular carcinoma; HV: Hepatic vein; PV: Portal vein; PVT: Portal vein thrombosis; RUPS: Rosch-Uchida liver access set; TIPS: Transjugular intrahepatic porto-

Figure 1 a shows an axial CT scan in the venous phase with thrombosis of the main portal vein that extends into the right branch of the portal vein (arrow). Differential enhancement of the liver is marked. b shows a coronal CT section depicting the same finding. The thrombus is also seen to extend into the superior mesenteric vein (arrow).

haemorrhagic complications owing to traversing of peritoneal cavity. Previously, TIPS route was not considered because PVT was considered a contraindication and also the procedure mainly depended on fluoroscopic guidance (without USG guidance). Prompt treatment of acute portal vein thrombosis will prevent the occurrence of portal cavernoma which has its inherent clinical complications and renders treatments including surgery or liver transplantation difficult. Luca et al reported³ a 7% increase in the number of non-tumoral PVT with cirrhosis, when compared to the previously published reports. Their report showed that TIPS is an effective treatment in PVT with cirrhosis. Their case series showed a 57% complete resolution of the thrombus. Moreover, a conservative attitude of placing the stent towards the portal side was considered.

The incidence of PV tumor thrombus in end-staged HCC was very high, with 20–30% in small hepatoma (2–3 cm) and 50–75% in those more than 5 cm diameter. Furthermore, 86% of HCC patients with variceal bleeding

had PVT.⁴ In this series⁴ TIPS was performed successfully. The stent was placed covering the entire thrombus to prevent tumor from growing into the shunt. However the long term effect in terms of tumor seeding was not mentioned. The conclusion of the study was, “although patients died of malignancy or liver failure, their quality of life had improved”.⁴ Another study from Bugar et al⁵ raised a concern of the possible risk of the TIPS procedure accelerating the dissemination of malignant cells due to the intervention and the filter function of the liver being partly abolished.

In a patient with underlying chronic liver disease, development of portal vein thrombosis can manifest as worsening of the clinical condition like gastrointestinal bleed, ascites or encephalopathy.⁶ Management of PVT in these patients remains poorly studied. Besides recent reports supporting the use of TIPS, carefully monitored anticoagulation has also been attempted with some success.⁷ The treatment options remain limited and need to be

Figure 2 a shows the longitudinal ultrasound image performed during the TIPS procedure, depicting the direction of the cannula and orientation of the needle (arrow) towards the thrombosed right branch of the portal vein (arrowhead). b demonstrates a transverse ultrasound image, with a hydrophilic glide wire (arrowhead) across the thrombosed main portal vein (arrow).

Figure 3 a shows a portogram performed with an RUPS cannula buried in the liver parenchyma (arrow), with a “marker pig tail” (arrowhead) in the splenic vein (curved arrow) that is devoid of thrombus. b shows a portogram performed following TIPS stent placement (arrow), lacing and mechanical thrombectomy, with residual thrombus in the portal vein (arrowhead). c shows a portogram performed after thrombolysis where prompt flow from the portal vein (arrowhead) to the IVC through the TIPS stent (arrow) is seen.

individualized.⁸ In our case, we were able to perform a TIPS procedure with technical success in a non-cirrhotic patient with acute PVT. We took a proactive step of mechanical and chemical thrombectomy to establish a gradient across the stent, and thereby to keep it patent. The potential concerns in performing TIPS in a patient with acute portal vein thrombosis would be increased technical difficulty in performing the procedure as there blood cannot be freely aspirated from the portal vein after the puncture, a gradient across the stent cannot always be established, and the risk for pulmonary embolism. Transabdominal USG guidance while creating a TIPS tract between inferior vena cava and portal vein is practiced in our centre routinely.⁹ USG guidance is inevitable during the procedure to know the entry into the portal vein, especially when the portal vein is thrombosed. The other concern will be the risk of pulmonary thromboembolism when portal venous thrombolysis is done through TIPS tract; however there is no reported case of pulmonary embolism documented as a complication of this procedure in the literature.

CONCLUSION

Portal vein thrombosis, once considered a contraindication for TIPS, has indeed become an “indication” in the setting of cirrhotic and non-cirrhotic cases. It is a safe, effective and well-established treatment option. However, its effectiveness in chronic thrombosis and tumor thrombus is debatable. In this case report, we have highlighted the use of transabdominal USG guidance and the benefit from TIPS in improving both the background clinical problem of BCS, as well as acutely developed portal vein thrombosis.

CONFLICTS OF INTEREST

All authors have none to declare.

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