

Combined Trans Splenic and Trans Arterial Catheter-Directed Thrombolysis for Acute Mesenteric Venous Thrombosis

Acute mesenteric venous thrombosis is rare but associated with high morbidity and mortality. Treatment for patients with clinical evidence of bowel infarction is invariably surgical with exploratory laparotomy. In patients without peritoneal signs, medical therapy is the mainstay. However, percutaneous thrombectomy and thrombolysis may be offered if symptoms persist or peritoneal signs develop despite systemic anticoagulation.^[1,2] Our institutional review board exempts case reports from approval.

We present a 46-year-old female known case of JAK2-positive polycythemia rubra vera complicated by chronic portal vein occlusion for >10 years. She had a history of stroke with poststroke epilepsy controlled on medications and moderate mitral regurgitation with dilated left atrium. The patient presented with a 3-week history of abdominal pain, vomiting, tachycardia, and leukocytosis. On examination, there was diffuse abdominal guarding and splenomegaly. At presentation, white blood cell count was 39×10^3 and lactate level was 2.59 mmol/L. Abdominal computed tomography (CT) showed complete acute/subacute thrombosis of the superior mesenteric and splenic veins with extensive small bowel venous edema and poor wall enhancement, suggestive of venous ischemia [Figure 1].

Percutaneous splenic venous access was chosen due to the known chronic portal vein occlusion and the presence of splenic vein thrombosis, which was the main mesenteric venous outflow toward a very prominent splenorenal shunt. Under ultrasound and fluoroscopy guidance, transsplenic venous access was obtained with 10 Fr sheath. After cannulation of the occluded segment of the splenic vein, superior mesenteric vein (SMV) venography showed extensive acute thrombosis [Figure 2]. Superior mesenteric artery angiography showed severely congested bowel and impaired venous outflow. Catheter-directed thrombolysis of the SMV was initiated for 32 h with a total of 42 mg rtPA. To further accelerate thrombus clearance, simultaneous superior mesenteric artery thrombolytic infusion was also initiated (0.5 mg rtPA/h), in addition to splenic venous outflow stent placement (Sinus-XL stent 16 mm \times 100 mm, Optimed, Germany) and repeated SMV mechanical thrombectomy with 8 Fr Aspirex (Straub medical, Switzerland) and 7 F Cleaner (Argon medical devices, TX, USA) devices. Final angiography showed restoration of venous outflow through the SMV and its tributaries [Figure 3]. Hemostasis of the splenic access was achieved with gelfoam slurry and 4 mm \times 10 mm Amplatzer plug 4 (St Jude Medical, MN, USA). CT

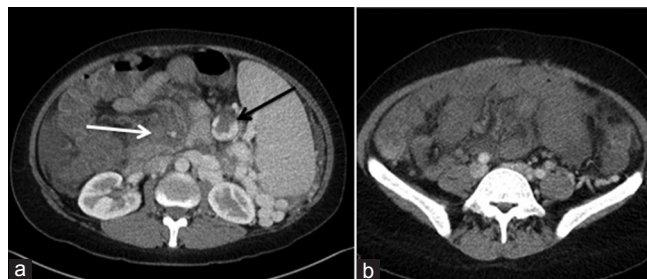


Figure 1: Axial computed tomography scan shows (a) acute thrombosis of the superior mesenteric vein (white arrow) and splenic vein (black arrow) and (b) lack of enhancement of the small bowel associated with extensive wall edema

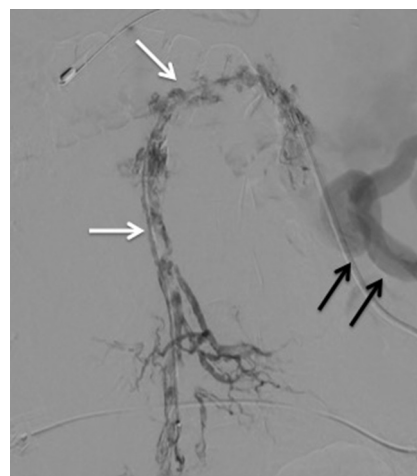


Figure 2: Superior mesenteric vein venography shows extensive acute thrombosis extending into the splenic vein (white arrows) with persistent filling of the prominent splenorenal shunt (black arrows)



Figure 3: (a) Direct superior mesenteric vein venography postthrombolysis and thrombectomy shows resolution restoration of flow toward the splenic vein. (b) Late venous phase of superior mesenteric artery angiography shows improved venous outflow and filling of the superior mesenteric vein

scan of the abdomen few days later showed patent SMV and thrombosis of the stent with improved bowel edema [Figure 4]. There was parallel improvement in white blood cell count and tachycardia. The patient developed few episodes of melena that resolved with withholding the anticoagulation. Although the SMV and splenic vein stent occluded on follow-up scan few weeks later, the patient continued to show gradual clinical improvement with no signs of recurrent ischemia likely due to the development of collaterals. Few weeks later, the patient developed abdominal pain and was found to have small bowel perforation, for which she underwent resection of 70 cm of small bowel with ileostomy. The ileostomy was reversed 8 months later.

Endovascular management of acute mesenteric venous thrombosis includes percutaneous transhepatic catheter-directed therapy with or without transjugular intrahepatic portosystemic shunt creation. Although the use of splenic venous access is traditionally avoided due to concerns of potential bleeding complications,^[3] transsplenic approach is increasingly used to facilitate antegrade recanalization of chronic portal vein occlusion in cirrhotic and noncirrhotic patients.^[4]

This case illustrates the possibility of using percutaneous transsplenic access for catheter-directed thrombectomy and thrombolysis of acute mesenteric venous thrombosis. There was no bleeding complication related to the splenic puncture despite the large access sheath and the use of prolonged simultaneous intravenous and intra-arterial thrombolytic infusion. However, proper hemostasis remains paramount to prevent major bleeding complications.



Figure 4: Follow-up computed tomography scan few days later shows patent superior mesenteric vein (arrow) and improved perfusion of the small bowel

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Access this article online	
Quick Response Code: 	Website: www.arabjir.com
	DOI: 10.4103/AJIR.AJIR_39_18

How to cite this article: Alqubaisi AK, Al-Dulaigan E, Arabi M. Combined trans splenic and trans arterial catheter-directed thrombolysis for acute mesenteric venous thrombosis. *Arab J Intervent Radiol* 2019;3:36-7.