

A Rare Case of a Massive Aneurysm at the SMV-Splenic Vein Confluence

Introduction

Superior mesenteric venous (SMV) aneurysms were first described in the literature in 1982 by Schild et al. Due to the rare nature of visceral venous aneurysms, treatment has not been standardized, and indications for surgical intervention remain contested. Indications for operation have included the occurrence of gastrointestinal bleed, compression of the common bile duct, acute thrombosis, rupture, abdominal pain, portal hypertension, aneurysmal growth, and prophylactic management.

Case Report

A 63-year-old African American male with a history of hypertension, dyspepsia, and Hepatitis C without cirrhosis or portal hypertension presented with six months of progressively worsening, sharp, epigastric pain radiating to the back. During the subsequent evaluation of his epigastric pain, an aneurysm at the superior mesenteric vein-splenic vein confluence was incidentally discovered (**Table 1**, **Figure 1**). This aneurysm was followed with interval scans, which demonstrated enlargement of the aneurysm to 4.5 cm, requiring resection of the portal venous mesenteric aneurysm with primary anastomosis of the superior mesenteric vein to the portal vein, and ligation of the splenic vein. Post-operatively, the patient was instructed to continue taking aspirin indefinitely and final pathological examination revealed cross-sections of dilated veins consistent with a venous aneurysm.

Literature Review

Venous aneurysms are far less common than arterial aneurysms. Visceral venous aneurysms, which include aneurysms of the portal venous system, renal vein aneurysms, and inferior mesenteric venous aneurysms, are among the rarest type of venous aneurysms. Portal venous aneurysms (PVA) were first described by Barzilai and Kleckner in 1956, and are defined as a portal vein diameter greater than 1.9cm in a cirrhotic patient and 1.5cm in a patient with a normal liver^{2,3,4,5,6}. A systemic literature review by Laurenzi et al demonstrated 96 unique reports of 190 patients presenting with a PVA from 1956 to 2014. Portal venous aneurysms have an incidence of 0.06%, a prevalence of 0.43%, and represent less than 3% of all venous aneurysms; however, they account for nearly 90% of visceral venous aneurysms^{1,3,6,7}. Portal venous system aneurysms can be further delineated as: extrahepatic portal vein, intrahepatic portal vein, splenic vein, splenic vein-superior mesenteric confluence, and superior mesenteric vein (**Figure 2**). Superior mesenteric venous (SMV) aneurysms were first described in the literature in 1982 by Schild et al and from 1982 to 2003 there were only 10 published cases. The SMV can have a diameter up to 1.2cm and is defined as an aneurysm when greater than 1.4cm with demonstrated loss of wall parallelism⁸. A systemic review conducted by Sfyroeras et al evaluated the various anatomic locations of a portal venous aneurysms and determined SMV aneurysms account for 9% of the visceral aneurysms⁷.

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Figure 1 Graphic by Missa Starke

Table & Images

| Year | Month | Imaging | Aneurysm Size | Associated Findings | Intervention |
|------|----------|--|---------------------|--|---|
| 2013 | March | Upper Gastrointestinal Series (UGI) | | Hiatal Hernia | |
| 2013 | November | Computed Tomography (CT) | 3.1cm | Mild intrahepatic bile duct dilation | |
| 2014 | February | Computed Tomography Angiography (CTA) | 3 x 3.5cm | Enlarged bile duct extending to the level of the ampulla Slight ectasia of one of the tributaries to the SMV just caudal to the venous aneurysm | No surgery recommended |
| 2014 | June | MRI Magnetic Resonance Cholangiopancreatography (MRCP) | Unchanged | Mild intrahepatic bile duct dilation, dilation of the common bile duct | |
| 2015 | January | CTA | | Limited due to suboptimal contrast timing | |
| 2015 | March | CT | 3.1 x 3.2cm | Stable enlargement of the extrahepatic bile duct seen tapering at the ampulla | Repeat CT in one year, no anticoagulation given Hep C diagnosis |
| 2016 | April | CTA | 3.5 x 3.6cm | Extrahepatic dilation of the common bile duct | Repeat CTA in one year |
| 2017 | June | CTA | 3.7 x 3.8 cm | | Repeat CT in one year |
| 2018 | June | CT | 4.0 cm max diameter | | Clinic consult recommended |
| 2018 | Nov | Esophagogastroduodenoscopy (EGD) | | EGD and subsequent biopsies unremarkable | |
| 2019 | Sep | CTA | 4.5cm | | Operative Intervention |
| 2020 | March | CTA | | No residual aneurysm identified | |

Table 1: Timeline of Events

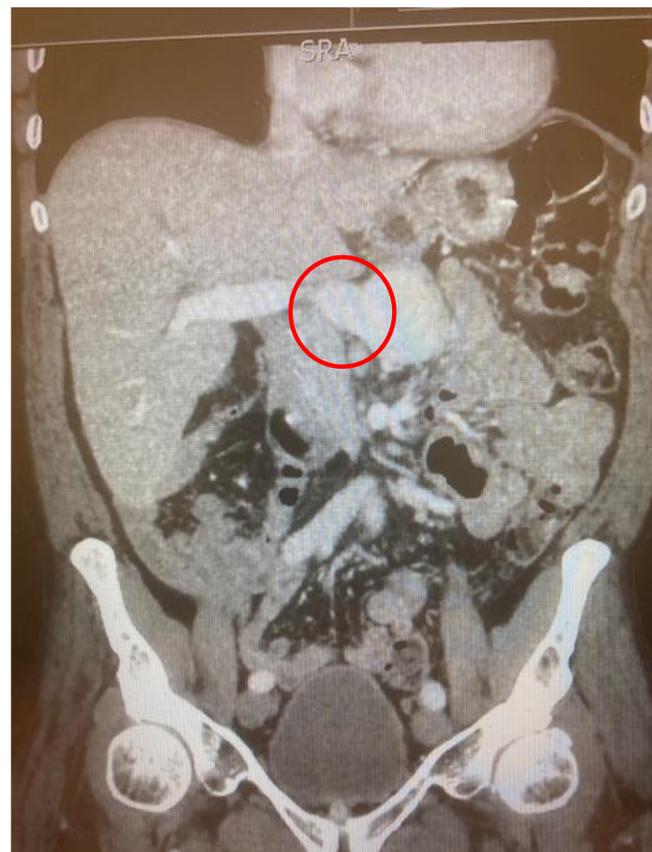


Figure 1:

Portal Venous System

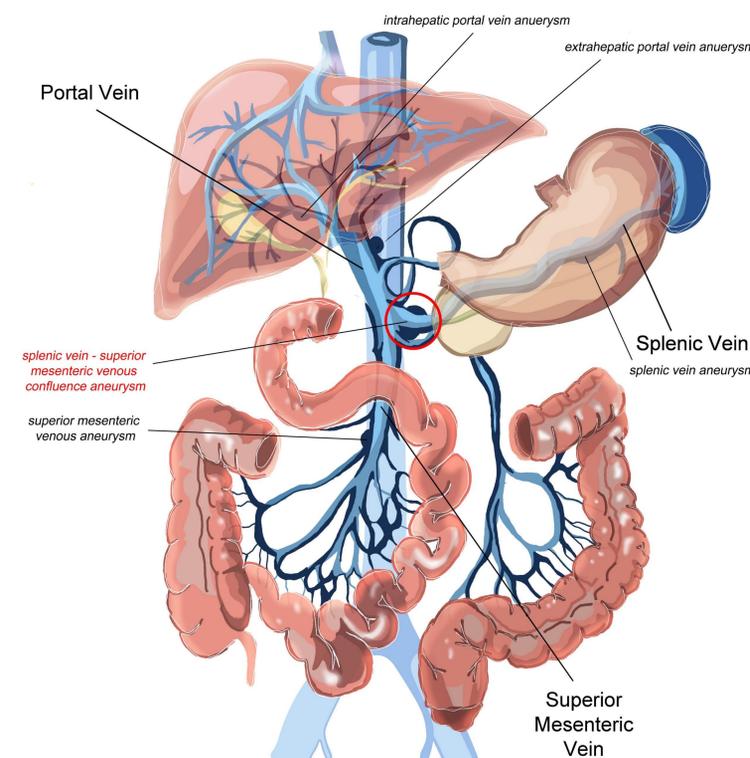


Figure 2:

Discussion

Visceral venous aneurysms including portal venous aneurysms and the SMV subset remain a rare clinical entity. Due to improved imaging modalities, there are growing reports in the literature. No consensus has been reached regarding the optimal management of these aneurysms; however, they can be life-threatening if they rupture or thrombose so prophylactic surgical management is generally recommended for larger sized, rapidly growing, or symptomatic aneurysms. Surgical options include resection, resection with primary anastomosis, or resection with interposition graft, depending upon anatomy. Long-term follow-up and management may include surveillance imaging and antiplatelet therapy.

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