Case Report

Multiple Giant Splenic Artery Aneurysms with Hypersplenism and Portal Hypertension: A Case Report

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Multiple giant splenic artery aneurysms (>10cm in diameter) are rare. We report a patient presenting with these aneurysms who had also associated portal hypertension and massive splenomegaly. Almost all the aneurysms were sealed by endovascular means at the first stage. Later, for the residual aneurysms at splenic hilum and enlarged spleen, splenectomy was performed. She made an uneventful recovery.

Keywords: splenic artery, giant aneurysm, endovascular treatment

Introduction

Giant splenic artery aneurysms (SAAs) measuring more than 10cm in diameter are rare.¹⁾ Multiple giant SAAs associated with portal hypertension and hypersplenism are even more rare. We report a case in which patient presented with abdominal pain and was found to have multiple SAAs and portal hypertension. She was treated successfully using both endovascular and surgical options.

Case Report

A 22-year-old female reported left upper abdominal pain for one month. It was mild to moderate and not associated

with any gastrointestinal symptoms. It was relieved by analgesics. She did not give history suggestive of tuberculosis or pancreatitis. Abdominal examination revealed splenomegaly and a pulsatile abdominal mass. On abdominal ultrasound, she was found to have multiple SAAs and massive splenomegaly. The findings were confirmed by abdominal computed tomography. It did show multiple SAAs, the largest one was measuring 10cm (Fig. 1). It also showed a thrombosed portal vein with cavernous formation and splenomegaly measuring 231.9mm. The patient had low platelets and leukocyte counts. Preoperative serological markers were negative for hepatitis B and C viruses. The risks and benefits of intervention were discussed with her. She was admitted for the angioembolization of SAAs (Fig. 2). Initially a C1 catheter was used to cannulate the hepatic artery; an exchange wire was

Fig. 1 Computed tomography showing multiple splenic artery aneurysms.

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Fig. 2 Multiple splenic artery aneurysms being embolized by glue and coils.

Fig. 3 Visceral angiogram showing almost total occlusion of multiple splenic artery aneurysms. The two filling were from short gastric arteries at the splenic hilum. The largest one was measuring 23 mm in diameter.

parked in the right hepatic artery. An 8×40 mm balloon was kept in the celiac artery to occlude the splenic artery origin. A C1 catheter and microcatheter were used to cannulate the splenic artery as distally as possible. Glue was used to embolize the aneurysms. After 24 h, a check angiogram showed the embolized main splenic artery having persistent flow into the aneurysms. There were two gastric arteries supplying gastric fundus and forming multiple short gastric arteries to supply the spleen poles. The lower pole artery showed multiple small aneurysms, the largest measuring 23×18 mm. The splenic artery was again cannulated and completely embolized with Glubran 2 Glue (N butyl 2 Cyanoacrylate and MS) (GEM Srl, Viareggio, Italy). No residual flow was noted in the splenic artery. However, on the final angiographic run, the short gastric arteries were still filling the aneurysm in the splenic hilum.

The aneurysm measured 23 mm (Fig. 3). For the residual aneurysm and hypersplenism, she underwent surgery with splenectomy and ligation of the residual aneurysm through an upper midline incision. The liver had a normal color and texture with no ascites and little inflammation. The lesser sac was entered by dividing the gastrocolic ligament. Previously embolized aneurysms were embedded in the mass of the pancreas. There were residual true aneurysms noted around the splenic hilum. Multiple large varicosities were divided in the splenic hilum along with the vessels of splenic hilum. Later splenocolic, linorenal, and splenodiaphragmatic ligaments were divided and the spleen was brought in the midline. Splenectomy was performed with less than 100 ml of blood loss. The patient had a smooth recovery. Her platelets and white blood cell counts improved post operatively. The final spleen histopathology showed features of congestive splenomegaly with the surface of spleen and hilum showing congested and dilated vessels. An aneurysm near the splenic hilum was looking true since it was fusiform, involving all the walls and with no surrounding inflammation. We do not have final histopathology. No organism was cultured from the specimen.

Discussion

SAA has an incidence of 0.2 to 2%.²⁾ It is the most common of visceral artery aneurysms comprising 50–75% of all cases. In addition, they are the third most frequent intra-abdominal aneurysm, following abdominal aorta and iliac artery aneurysms.³⁾ The annual risk of rupture is 2–10%. They are more prevalent in females (4:1). They present as clinical emergencies in 22% of the cases with an overall mortality rate of 8.5%.⁴⁾ Most small SAAs (up to 2 cm) are asymptomatic and diagnosed incidentally.⁵⁾ In contrast, most large SAAs (5 cm) are symptomatic and can result in complications.⁶⁾ A giant SAAs is more than 10 cm in size. There are many case reports and case series describing giant SAAs but very few describing multiple SAAs. The risk of rupture in giant SAAs is as high as 28%,⁷⁾ with a mortality rate of up to 40%.⁸⁾

Our intention was to seal all aneurysms by endovascular means to save the patient from surgical intervention. We were expecting that by reduction of size of aneurysms, the compression effect on the portal system will decrease. We were not able to completely occlude all the aneurysms, especially one in the splenic hilum which was filling through short gastric arteries. One stage intervention with ligation of aneurysms and splenectomy can be an option. Beksac and Karakoc reported surgical treatment of a patient with multiple SAAs in which the patient presented with portal hypertension and splenomegaly.⁹⁾ A two-staged procedure provided a more controlled situation, as noted by the

minimal blood loss in our case.

This patient was having non-cirrhotic portal hypertension. Her preoperative liver function tests were normal. Preoperative serological markers were also negative for hepatitis B and C viruses. Intra-operatively her liver was looking normal. Her portal hypertension was due to the compression effects of multiple giant SAAs. Khan et al. also reported a patient in 2016 with a giant SAAs which led to non-cirrhotic portal hypertension in that patient.¹⁰⁾

Multiple SAAs can present in patients with collagen vessel or connective tissue disease. Our patient had no particular symptoms related to Marfan's syndrome or other connective tissue diseases. There was no familial history of aneurysms. Performing specific genetic and collagen testing to identify selective patients may be useful.

This case highlights that, with the help of both endovascular and surgical means, patients with multiple SAAs can be managed successfully.

Conclusion

Patient with multiple SAAs can be treatable using both endovascular and surgical interventions together safely.

Disclosure Statement

The author has no conflict of interest.

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