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Case Report

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Spontaneous rupture of splenic artery aneurysm: A rare complication leading to hypovolemic shock

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ABSTRACT

Spontaneous rupture of the splenic artery aneurysms (SAAs) is a rare complication (2% to 10%), it carries a significant mortality risk. We report a case of a 48-year-old male who presented with acute severe epigastric pain radiating through to the back. He was in class 3 haemorrhagic shock. Following stabilisation, a computerised tomogram (CECT) of the abdomen was done, which revealed a ruptured SAA with blood in the retro pancreatic area. As haemodynamic status deteriorated again, the patient underwent laparotomy and ligation of the splenic artery and splenectomy. He recovered well. Therefore, early recognition and early intervention for the ruptured visceral artery aneurysms is critical.

Keywords: Splenic artery, splenic artery aneurysm, splenectomy

INTRODUCTION

Splenic artery aneurysms (SAAs) are the third most prevalent type of abdominal aneurysm, following aortic and iliac artery aneurysms (1). The SAAs account for one third of all visceral artery aneurysms (2, 3). While the natural progression of these aneurysms is well documented, there is ongoing debate regarding their causes and the specific criteria for surgical intervention (2, 3, 4). In a review of 28,512 autopsies, there were 46 cases of SAAs (incidence - 0.16%) (4). in another study of angiograms, the incidence of SAAs was 0.78% (4, 5). However, in patients with cirrhotic portal hypertension, the incidence of SAAs was 7.1% (6). SAAs are asymptomatic in most cases. Spontaneous rupture occurs in 2% to 10% of cases, with a 25% mortality rate. (7, 8). Here we report a patient who presented following ruptured SAA managed successfully with surgical intervention.

CASE REPORT

A 48-year-old otherwise healthy male with no known comorbidities, presented to the Emergency Treatment Unit (ETU) with sudden onset epigastric pain, accompanied by dizziness. The abdominal ultrasound revealed a retroperitoneal hematoma posterior to the pancreas. He denied any history of trauma. There were no stigmata of chronic liver disease. He was in class 3 haemorrhagic shock (1). He was having tachycardia with a blood pressure

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of 70/50 mmHg. His haemodynamic status improved with initial resuscitation.

An urgent contrast-enhanced computed tomography (CECT) revealed a saccular aneurysm of the splenic artery approximately 7 cm distal to its origin from the celiac trunk, measuring 1.5 x 1.9 cm. A retroperitoneal haematoma was present (Figure 1, Figure 2). A moderate volume of free fluid was noted in the sub diaphragmatic space. The liver, spleen, and pancreas were normal.

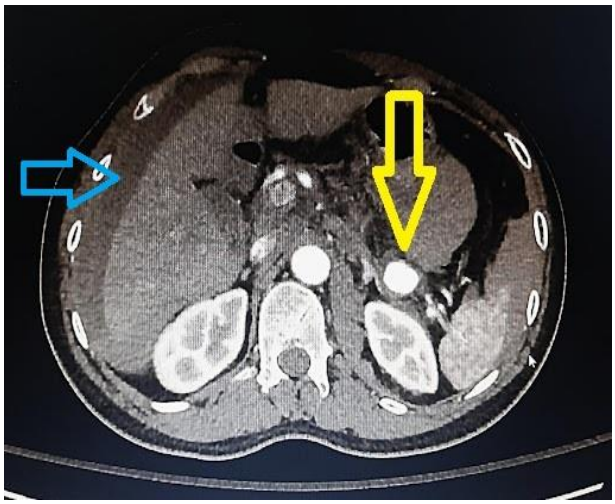

Figure 1: Computed tomography (CECT) of the abdomen showing ruptured splenic artery aneurysm (yellow arrow) and free fluid (blue arrow)

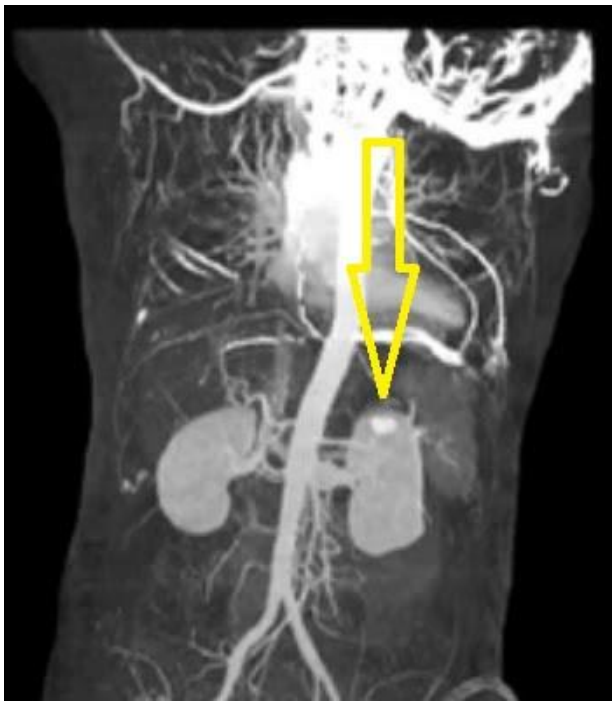

Figure 1: Computed tomography (CECT) of the abdomen showing ruptured splenic artery aneurysm (yellow arrow)

Despite temporary stabilisation, the patient's clinical condition deteriorated. Therefore, an urgent laparotomy was done. At laparotomy, a retroperitoneal hematoma with a ruptured SAA was noted (Figure 3). The splenic artery was ligated and a splenectomy was done. Patient had an uneventful recovery.

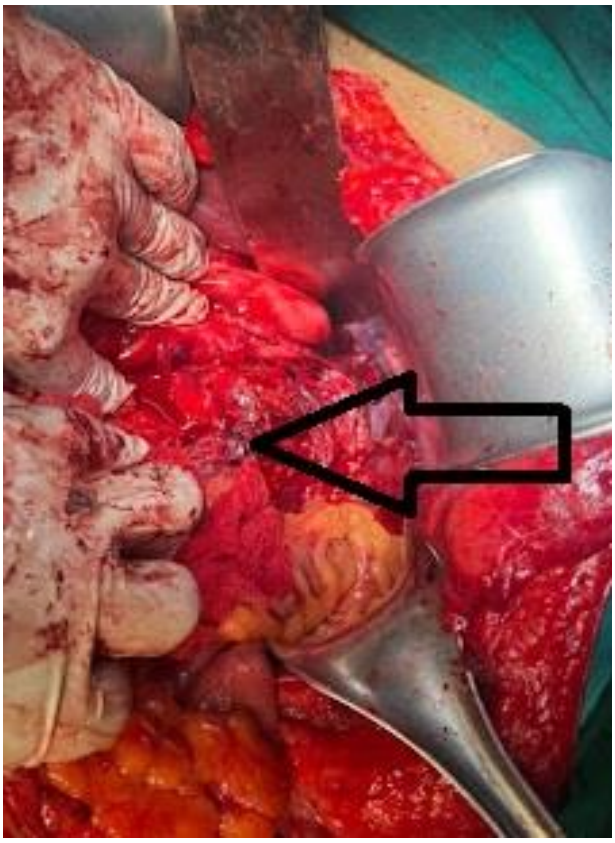

Figure 2: Intra-operative image showing ruptured splenic artery aneurysm sac (arrow)

DISCUSSION

The splenic artery originates from the celiac trunk at the level of the twelfth thoracic vertebra (T12). The splenic artery follows a tortuous path, along the superior border of the pancreas, ultimately reaching the splenic hilum.

The identified risk factors for SAAs include pancreatitis, atherosclerosis, portal hypertension, collagen vascular diseases and autoimmune disorders (3-9). The above described patient did not have any of these conditions. SAAs are common in women (3). Although hormonal

influences on arterial structure have been proposed, they remain unverified (3).

The most significant complication associated with SAAs is spontaneous rupture (7, 8), which occurs in 2% to 10% of cases and carries a significant mortality risk. Pregnant women, particularly in their third trimester, face a heightened risk of SAAs rupture, with pregnancy-related cases representing 20% to 50% of all rupture incidents. The SAA rupture during pregnancy can lead maternal mortality rates as high as 80% and foetal mortality rates reaching 90% (3, 7, 11).

Rupture may result in bleeding into the peritoneal cavity, gastrointestinal tract, or erosion into adjacent structures such as the splenic vein, potentially forming a splenic arteriovenous fistula (3, 7). In rare situations, high blood flow through such a fistula can lead to mesenteric steal syndrome, which may result in ischemia of the small bowel (3, 7, 10).

Current clinical guidelines recommend that asymptomatic true SAAs under 3 cm in diameter, with minimal or no growth, can be managed conservatively through observation and regular imaging (3, 7, and 10). Conversely, splenic artery pseudo aneurysms, as well as SAAs in pregnant women, warrant intervention regardless of size due to an increased risk of rupture. Intervention is also advised in cases of portal hypertension, in patients requiring liver transplantation, those exhibiting growth greater than 0.5 cm per year, or in symptomatic presentations (3-6).

Treatment options include either open surgery or endovascular techniques, with endovascular approaches preferred for elective cases. Open surgery is typically reserved for patients who are unstable, or when endovascular methods are not available and when the aneurysm characteristics are not favourable for endovascular intervention. In case of ruptured SAAs, ligation of the splenic artery both proximally and distally and splenectomy is done. In the above mentioned patient, the ligation and splenectomy was done due to the acute nature of the presentation.

Patients who require urgent splenic artery ligation or splenectomy should receive vaccinations after two weeks to mitigate the risk of overwhelming post-splenectomy sepsis (OPSS) and other infections.

Conclusion

This case underscores the importance of suspecting visceral artery aneurysm rupture as a potential etiology for hypovolemic shock and abdominal pain in emergency department settings. Timely and accurate diagnosis and early intervention is essential.

Author declaration

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Conceptualisation, manuscript writing, image preparation, literature survey, and reviewing: DMPWASBD and JA; Conceptualisation and reviewing: STE SSG; Conceptualisation and reviewing: MG.

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All data are available upon request.

REFERENCES

1. American College of Surgeons. Advanced Trauma Life Support, Student Course Manual. 10th edition.American College of Surgeons; 2018.
2. Trastek VF, Pairolero PC, Bernatz PE. Splenic artery aneurysms. World Journal of Surgery. 1985 Jun;9(3):378–83. https://doi.org/10.1007/BF01655271
3. Lakin RO, Bena JF, Sarac TP, Shah S, Krajewski LP, Srivastava SD, et al. The contemporary management of splenic artery aneurysms. Journal of Vascular Surgery. 2011 Apr;53(4):958–65. DOI: 10.1016/j.jvs.2010.10.055
4. Bergner LH, Bentivegna SS. Aneurysms of the splenic artery. Annals of surgery [Internet]. 1967 Nov;166(5):767–72. Available from: https://pubmed.ncbi.nlm.nih.gov/6057085/

5. Stanley JC, Fry WJ. Pathogenesis and clinical significance of splenic artery aneurysms. Surgery [Internet]. 1974 Dec;76(6):898–909. Available from: https://pubmed.ncbi.nlm.nih.gov/4428355/
6. Bedford PD, Lodge B. Aneurysm of the Splenic Artery. Gut. 1960 Dec 1;1(4):312–20.
7. JF. A, P. P, C. H, N. F, A. L. Spontaneous Rupture of Splenic Artery Aneurysm: A Case Report. Asian Journal of Case Reports in Surgery [Internet]. 2025 Jan 11 [cited 2025 Mar 7];8(1):16–20. Available from: https://journalajcrs.com/index.php/AJCRS/article/view/592
8. Al-Habbal Y, Christophi C, Muralidharan V. Aneurysms of the splenic artery – A review. The Surgeon. 2010 Aug;8(4):223–31.
9. Hordiychuk A, Mehanna D. Spontaneous rupture of splenic artery pseudoaneurysm. Journal of surgical case reports [Internet]. 2022;2022(12):rjac604. Available from: https://pubmed.ncbi.nlm.nih.gov/36601098/
10. Chaer RA, Abularrage CJ, Coleman DM, Eslami MH, Kashyap VS, Rockman C, et al. The Society for Vascular Surgery clinical practice guidelines on the management of visceral aneurysms. Journal of Vascular Surgery [Internet]. 2020 Jul 1;72(1):3S39S. Available from: https://www.jvascsurg.org/article/S0741-5214(20)30156-7/fulltext
11. Carvalho M, Mendes J, Pereira-Macedo J, Margarida Vinagreiro, Lemos R. Spontaneous Rupture of Splenic Artery Aneurysm. Cureus [Internet]. 2023 Dec 22 [cited 2024 Aug 27]; Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10800027/