

## Splenic Artery Pseudoaneurysm in a Septic Patient with Acute Pancreatitis

Mahmoud Mahdi, M.D., Aastha Bharwad, M.D., Rajeev Seecheran, M.D., Joud Zakhour, M.D., Majd Kayali, M.D., Ahmad Mahdi, M.D.

University of Kansas School of Medicine-Wichita, Wichita, KS  
Department of Internal Medicine

Received Nov. 16, 2022; Accepted for publication Dec. 20, 2022; Published online Jan. 18, 2023  
<https://doi.org/10.17161/kjm.voll6.18696>

### INTRODUCTION

Splenic artery pseudoaneurysm (SAP) is a rare entity with a prevalence of less than 1% in the general population and less than 200 cases in the English literature.<sup>1,2</sup> It presents differently amongst different patients and is associated with high mortality. This case and review highlighted its pathophysiology, clinical presentation, diagnostic approach, and treatment modality. We present a case of SAP in a septic patient with acute pancreatitis.

### CASE REPORT

A 55-year-old female with a past medical history of chronic obstructive pulmonary disease, hypertension, and poly-substance abuse of methamphetamines, opioids, and alcohol presented with a cough productive of green sputum, extreme fatigue, myalgias, back pain, and shortness of breath starting seven weeks prior to presentation. On the day of admission, she was found to be hypotensive, tachycardic, hypoxic, and had diffused crackles bilaterally on lung auscultation. A chest x-ray revealed patchy consolidation involving the left mid-lung field and left lung base concerning for pneumonia. She was placed on 10 L oxygen by nasal cannula and initiated on norepinephrine after failing a trial of intravenous fluids. She was admitted for septic shock and acute-on-chronic hypoxic respiratory failure secondary to pneumonia and started on intravenous cefepime.

Three days later, blood cultures were positive for *Haemophilus influenzae*. Antibiotics were de-escalated to ampicillin-sulbactam. Two days later, the patient began reporting oral intake intolerance and epigastric abdominal pain. An abdominal computed tomography (CT) scan revealed acute pancreatitis and multifocal loculated thick-walled pleural fluid collections in the left lung base. The patient was resuscitated with intravenous fluids and placed on bowel rest with improvement in her abdominal pain.

Eight days later, increasing sharp left upper quadrant abdominal pain and a progressive decrease in hemoglobin prompted another repeat CT scan revealing an increase in the size of the complex fluid collection within the left upper abdominal quadrant with hyperattenuating components concerning for hemorrhage and infarct within the inferior portion of the spleen concerning for compromise of the splenic artery or splenic vein. A subsequent CT angiography of the abdomen revealed a moderate-sized hematoma in the left upper abdominal quadrant with pseudoaneurysm within the hematoma of the splenic artery. The patient underwent angiography (Figure 1) and endovascular

embolization of the splenic artery. The patient was stabilized through auto-splenectomy and was immunized against encapsulated bacteria. The remainder of the hospital stay was uneventful.

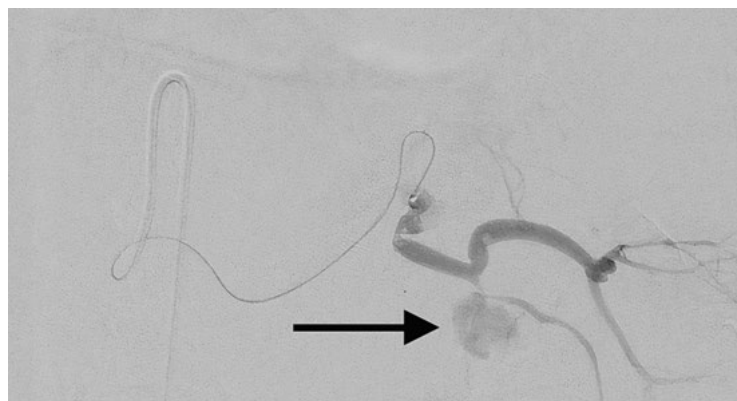


Figure 1. Angiography revealed extravasation from splenic artery pseudoaneurysm (arrow).

### DISCUSSION

SAP differs from a true aneurysm histologically in that the blood collection between tunica media and adventitia causes an abnormal outpouching or dilation of arteries bounded by tunica adventitia, compared to true aneurysms, which are bounded by all three layers of the arterial wall. SAP is attributed to a lack of arterial wall structure likely following infection, trauma, inflammation, vasculitis, or iatrogenic causes.<sup>2</sup> Our case had both *H. influenzae* sepsis (infection) and acute pancreatitis (inflammation) that could have precipitated SAP.

Clinical presentation varies depending on the structures involved. A case series review of 10 patients presenting with SAP showed seven had bleeding, five had abdominal or flank pain, and two were asymptomatic.<sup>2</sup> If hemorrhage develops in the pancreatic duct, it causes hematemesis; while it results in rectal bleeding, if it happens in the large bowel, and circulatory collapse, if in the lesser sac.<sup>3</sup>

Diagnosis is challenging. CT angiography has been used extensively in diagnosis, although, ultrasound also can be useful. The additional benefit of CT angiography is the ability to perform transcatheter embolization if needed in the appropriate patient.<sup>4</sup> Prompt diagnosis is required so that definitive management with transarterial embolization can be attempted. In those who failed angioembolization or are hemodynamically unstable, open surgical ligation of SAP should be performed.<sup>5</sup> In a patient with sepsis and pancreatitis who presents with abdominal or flank pain, it is important to have splenic artery pseudoaneurysm as one of the differentials to avoid potential consequences such as rupture, bleeding, circulatory collapse, or death.<sup>3</sup>

### CONCLUSIONS

Splenic artery pseudoaneurysm is a rare complication of acute pancreatitis. Elastin digestion in the arterial wall renders it highly unstable. Its clinical presentation is variable and can sometimes be asymptomatic. Thus, it potentially can be fatal. Clinical suspicion should warrant further investigation and treatment of the condition.

## REFERENCES

- <sup>1</sup> Holt JN, Schwab HE. A case of splenic artery pseudoaneurysm rupture presenting as rectal bleeding in a regional hospital. *J Surg Case Rep* 2020; 2020(12):rjaa504. PMID: 33365119.
- <sup>2</sup> de Oliveira Mariúba JV. Splenic aneurysms: Natural history and treatment techniques. *J Vasc Bras* 2019; 19:e20190058. PMID: 31839799.
- <sup>3</sup> Tessier DJ, Stone WM, Fowl RJ, et al. Clinical features and management of splenic artery pseudoaneurysm: Case series and cumulative review of literature. *J Vasc Surg* 2003; 38(5):969-974. PMID: 14603202.
- <sup>4</sup> Al-Habbal Y, Christophi C, Muralidharan V. Aneurysms of the splenic artery - a review. *Surgeon* 2010; 8(4):223-231. PMID: 20569943.
- <sup>5</sup> Chia C, Pandya GJ, Kamalesh A, Shelat VG. Splenic artery pseudoaneurysm masquerading as a pancreatic cyst—A diagnostic challenge. *Int Surg* 2015; 100(6):1069-1071. PMID: 26414829.

*Keywords: splenic artery, pseudoaneurysm, sepsis, hemorrhage, pancreatitis*