

Case Report

Superior Mesenteric Artery Pseudoaneurysm Secondary to Trauma

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Introduction

Pseudoaneurysm (or false aneurysm) is a pulsatile haematoma that may be formed by haemorrhage in soft tissues. It has a fibrous encapsulation and communication between the ruptured vessel and the fluid space [1]. Superior mesenteric artery (SMA) pseudoaneurysm is a very rare condition, typically associated with inflammation, infection and as a postoperative complication. If left untreated, it can lead to serious consequences such as rupture and fatal haemorrhage [2].

We report a case of an elderly male who presented with abdominal pain following a fall. Abdominal imaging revealed a SMA pseudoaneurysm which was successfully treated with embolization.

Case Report

An 86-year-old male patient with a past medical history of essential hypertension, diabetes mellitus, atrial fibrillation, hypercholesterolemia, heart failure with reduced ejection fraction, abdominal aortic aneurysm, leg ulcers and osteoarthritis presented to the emergency department of a tertiary care hospital in London with abdominal pain following a fall. On examination, Glasgow coma scale was 15/15. The chest was clear, and heart sounds were irregularly irregular, with a blood pressure of 179/74mmHg and a heart rate of 80bpm. His abdomen was soft, mildly distended, tender and bowel sounds were present. Neurological examination was unremarkable.

On investigation, serial blood workup revealed a progressive decrease in haemoglobin from 134g/L to 121g/L within 24 hours, a high C-reactive protein level of 75 mg/L and a

high white cell count of $13.5 \times 10^9/L$. All other blood results, including renal, liver function tests and clotting profiles were unremarkable. The differential diagnosis at this point included abdominal infection, abdominal aortic aneurysm or trauma related abdominal pain.

On imaging, pan computed tomography (CT) revealed posterior scalp and posterior cervical haematoma. An abdominal CT scan with intravenous (IV) and oral contrast was performed (Figure 1) which revealed a pseudoaneurysm of the SMA and a haematoma adjacent to the third part of the duodenum measuring 15mm, which was not demonstrated on the patient's prior CT done few months back. A haemoperitoneum was also confirmed.

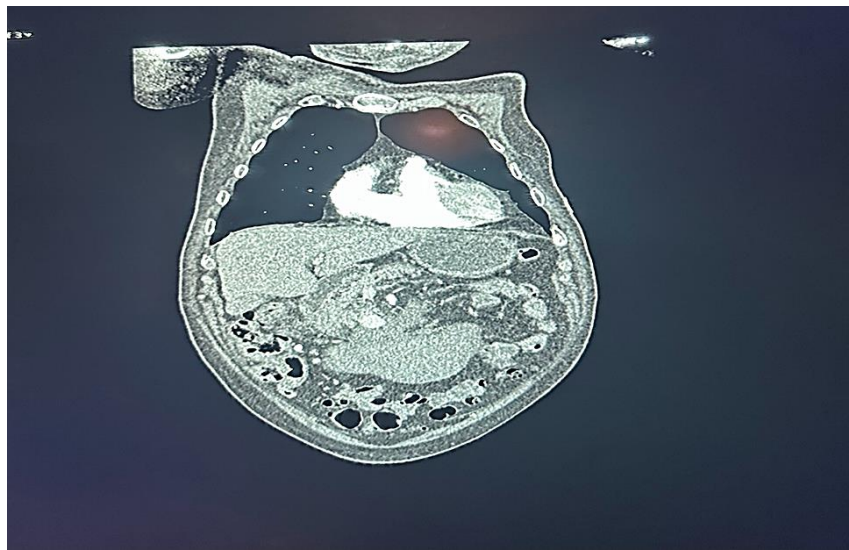


Figure 1: CT abdomen showing the pseudoaneurysm of the SMA (showed by the arrow)

Embolization of the SMA was recommended and was carried out by the radiology team. The patient was haemodynamically stable two days following embolization. A repeat Doppler ultrasound was carried out to check for resolution. It revealed that the SMA was thrombosed and showed no signs of further bleeding.

Discussion

Pseudoaneurysms of the SMA due to trauma are quite rare and can impose a major challenge in treatment. More common causes of visceral pseudoaneurysms are iatrogenic, rupture of an aneurysm, inflammation and infection [3]. Large pseudoaneurysms may rupture or produce signs and symptoms of compression. It is difficult to determine the best option for a visceral pseudoaneurysm. The choice of the procedure depends on the involved artery, the localization of the pseudoaneurysm, general condition of the patient and the urgency of the intervention [1]. Review of the

literature shows that endovascular treatment offers a good and less invasive alternative to conventional surgical intervention [4].

Interestingly, there are only a few case reports of SMA pseudoaneurysms in the available literature. Harthy et al reported a case of SMA pseudoaneurysm induced by accidental ingestion of a foreign body in 2022. The patient in this case was in the paediatric age group, which contrasts with our case [5]. A case report from 2019 described a patient with acute type B aortic dissection, whose ruptured pseudoaneurysm in the SMA branch mimicked acute pancreatitis. The patient in this case was successfully treated by thoracic endovascular aortic repair (TEVAR) without additional branch intervention [6]. Scott Cowan et al presented the first SMA pseudoaneurysm secondary to aortic surgery in a 61-year-old man which was successfully treated with a polytetrafluorethylene covered stent [7]. In 2010, a case report was published on endovascular treatment of a SMA syndrome variant secondary to traumatic pseudoaneurysm. This patient was a 40-year-old driver who had a road traffic accident. In this case, exclusion of the aneurysm and relief of the obstruction were simultaneously achieved by placement of a stent [8]. Most of the cases seen in the review of literature were due to iatrogenic causes in contrast to our case which was secondary to trauma. However, there are a few cases secondary to trauma [9]. Most of the cases were managed with stenting in contrast to our case.

Conclusion

Pseudoaneurysms of the SMA, although rare, are important to rule out because, if left untreated can lead to serious consequences. Visceral artery pseudoaneurysms should be considered in the differential diagnosis of a patient with trauma and nonspecific abdominal symptoms. Diagnosis is often made with CT or CT angiography. Treatment options include endovascular, surgical, or percutaneous interventions. The choice of treatment is case-specific.

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