CASE REPORT
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Right colic artery pseudoaneurysm in a patient with rheumatoid arthritis: a case report

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ABSTRACT

To describe the clinical presentation, diagnosis, and endovascular treatment of a right colic artery (RCA) pseudoaneurysm in a patient with rheumatoid arthritis, highlighting its rarity as a complication of rheumatoid vasculitis.

A woman in her early 50s with rheumatoid arthritis presented with a three-day history of epigastric pain, vomiting, and melena. Examination revealed anemia, purpuric rashes, and mild abdominal tenderness. Computed tomography (CT) angiography identified an RCA pseudoaneurysm. Following resuscitation and blood transfusion, selective superior mesenteric artery angiography and transarterial coil embolization were performed.

The procedure was successful, leading to symptom resolution. RCA pseudoaneurysms are rare, usually resulting from trauma or pancreatitis, but can also arise from rheumatoid vasculitis.

This is the first reported case of a RCA pseudoaneurysm due to rheumatoid arthritis. CT angiography is the preferred diagnostic tool, and coil embolization is an effective treatment for hemodynamically stable patients.

Keywords: Endovascular treatment, pseudoaneurysm, rheumatoid arthritis, superior mesenteric artery, vasculitis

INTRODUCTION

Pseudoaneurysms from branches of the superior mesenteric artery (SMA) are rare, accounting for only 5.5% to 8% of all visceral artery pseudoaneurysms, with an incidence of 0.01% (1). Trauma and inflammation, such as pancreatitis, are the primary causes, but other factors like hypertension, infections, or medication use also contribute (2,3). While pulmonary artery and aortic artery pseudoaneurysms associated with rheumatoid arthritis have been reported, no prior cases of right colic artery pseudoaneurysms exist in the literature (4,5). Computed tomography (CT) angiography is the diagnostic modality of choice, but selective arterial embolization of the pseudoaneurysm is the treatment modality of choice in hemodynamically stable patients (1,6).

CASE REPORT

A woman in her early 50s presented to our department with a 3-day history of epigastric pain, accompanied by the passage of black stools. The pain was sharp and non-radiating, and its intensity was not associated with food intake. She also experienced nausea and recurrent episodes of non-bilious vomiting. She had no prior history of upper abdominal pain or heartburn, and there was no history of fever, jaundice, or trauma. The patient had a known history of rheumatoid arthritis, for which she had been taking oral methotrexate and methylprednisolone for the past two months. She had no other comorbidities and no history of alcohol consumption or smoking. On general examination, she exhibited pallor, non-blanching purpuric skin lesions on the lower extremities, and abdominal palpation revealed mild tenderness in the epigastric region without a palpable mass.

On admission, laboratory tests revealed a low hemoglobin level of 6.6 g/dL and a white blood cell count of 12,800/µL. Her C-reactive protein level was elevated to 15 mg/L, and her erythrocyte sedimentation rate was raised to 30 mm/hr. Liver function tests, kidney function tests, prothrombin time/international normalized ratio, and

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serum amylase and lipase levels were all within normal limits. Chest X-ray was normal. Abdominal ultrasonography showed no evidence of gallstones, biliary dilation, or pancreatitis. Upper gastrointestinal endoscopy was unremarkable, but colonoscopy revealed clotted blood throughout the colon without an identifiable bleeding source. A contrast-enhanced CT scan of the abdomen with angiography revealed a 17x15 mm saccular outpouching (Figure 1A, B) from a branch of the SMA with a surrounding hematoma. Three-dimensional reconstruction of the CT angiography (CTA) demonstrated that the pseudoaneurysm was originating from the right colic artery (Figure 2).

The differential diagnosis for epigastric pain with gastrointestinal bleeding includes peptic ulcer disease and acute pancreatitis with a splenic artery pseudoaneurysm. In peptic ulcer disease, the pain is typically chronic, often associated with heartburn, and tends to change in intensity with meals. However, the endoscopy showed normal mucosa of the gastric and duodenal walls. In acute pancreatitis, common causes include alcohol consumption and gallstones, neither of which was present in this case. Ultrasonography showed no gallstones, and the pancreas was not enlarged. Furthermore, serum amylase and lipase levels were within normal limits. All of the above features were absent in our case, leading to a radiological diagnosis of right colic artery pseudoaneurysm, and the systemic inflammatory signs suggested the case of rheumatoid vasculitis.

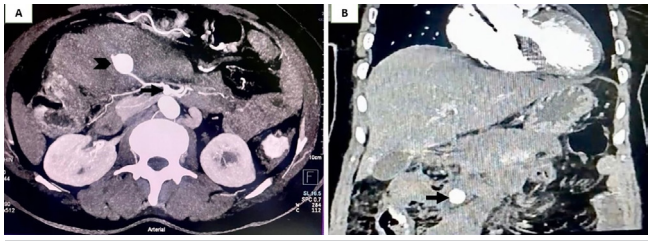

Figure 1. (A) Axial section CT angiography showing a saccular outpouching (arrowhead) from a branch of the superior mesenteric artery (arrow) with a surrounding hematoma. (B) Coronal section showing the pseudoaneurysm (arrow).

CT: Computed tomography

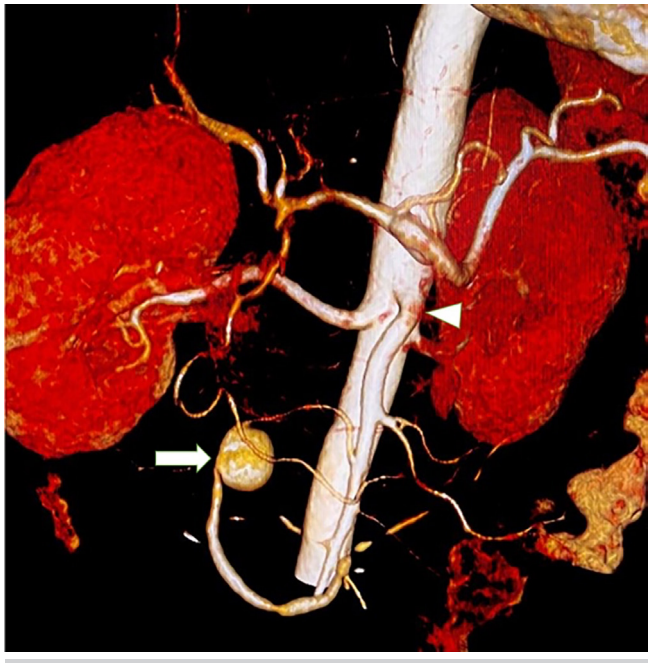

Figure 2. 3D reconstruction of a CT angiogram showing the pseudoaneurysm (arrow) arising from a branch of the superior mesenteric artery (arrowhead).

CT: Computed tomography

The patient was initially resuscitated with intravenous fluids, broad-spectrum antibiotics, antiemetics, and analgesics. Three units of packed red blood cells (PRBCs) were transfused due to anemia. After achieving normal hemoglobin levels, the patient underwent selective SMA angiography via the right femoral arterial route, which localized the pseudoaneurysm to the right colic artery (Figure 3A, B). Additionally, the pseudoaneurysm received blood supply from another collateral branch of the SMA. Despite several attempts, gaining direct access to the pseudoaneurysm was difficult. Consequently, transarterial coil embolization was carried out using multiple titanium micro-coils (2 mm and 3 mm in size), targeting both the right colic artery (Figure 4A) and another collateral branch from the SMA (Figure 4B). This procedure resulted in complete occlusion and the absence of filling in the pseudoaneurysm. For the vasculitis, the patient was started on an intravenous corticosteroid along with oral methotrexate.

The abdominal pain was relieved within two days of conservative treatment. Vomiting also subsided, and an oral diet was tolerated post-procedure. Blood counts showed no further drop in hemoglobin (12 g/dL), and white blood cell levels returned to normal (6.500/µL). No recurrence of lower gastrointestinal

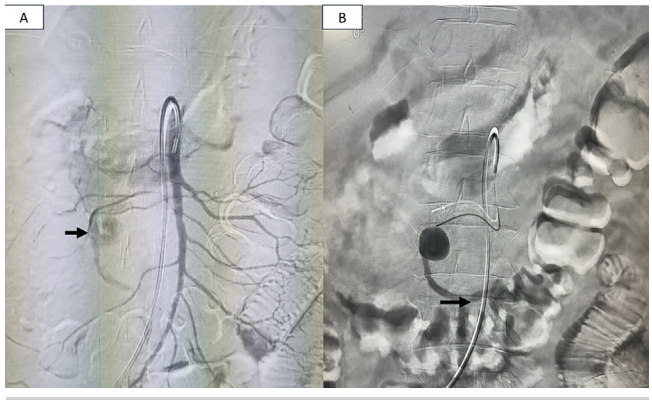

Figure 3. (A) Selective superior mesenteric artery angiography showing the pseudoaneurysm (arrow) arising from the right colic artery, a branch of the superior mesenteric artery. (B) Angiography demonstrates a pseudoaneurysm arising from the right colic artery, which supplies the transverse colon (arrow).

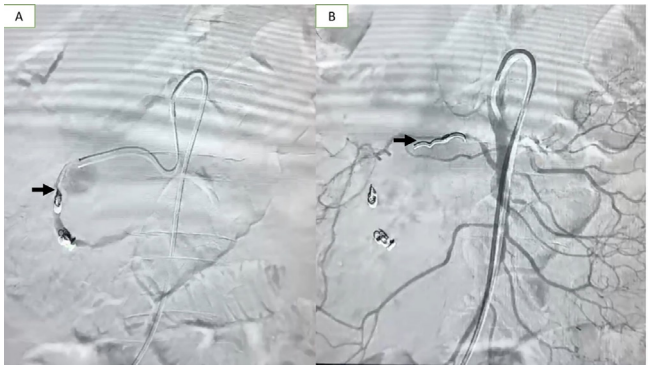

Figure 4. (A) Transarterial coil embolization of the right colic artery pseudoaneurysm (arrow). (B) Another coil embolization of an additional blood supply (arrow) from a collateral branch of the superior mesenteric artery, resulting in complete occlusion of the pseudoaneurysm without contrast filling.

bleeding was observed. The patient was discharged in stable condition on day 4 post-procedure. At her two-month follow-up, she remained asymptomatic and was doing well.

DISCUSSION

Visceral artery pseudoaneurysms are extremely rare, with splenic artery pseudoaneurysms being the most frequently observed. Pseudoaneurysms arising from the branches of the SMA have a prevalence ranging from approximately 5.5% to 8% of all visceral artery pseudoaneurysms, and an overall incidence of 0.01%. However, nearly half of the patients with these pseudoaneurysms are at risk of rupture (1,7-10).

The most common causes of pseudoaneurysms in branches of the SMA are trauma and inflammatory conditions, such as pancreatitis. Less common causes include uncontrolled hypertension, infective endocarditis, anticoagulation medications (e.g., apixaban), iatrogenic factors, or idiopathic origins (3,6,11-14). While autoimmune diseases like rheumatoid arthritis can cause pseudoaneurysms in the pulmonary and aortic arteries, no prior cases of right colic artery pseudoaneurysms associated with rheumatoid arthritis have been reported. The probable underlying cause was rheumatoid vasculitis, which leads to vessel wall weakness (4,5). In our case, the diagnosis was established after ruling out other potential causes of the right colic artery pseudoaneurysm through comprehensive history taking, skin lesions, biochemical tests, and CT angiography.

The usual presentations of pseudoaneurysms are gastrointestinal bleeding or intraperitoneal hemorrhage. Massive gastrointestinal hemorrhage, which can be life-threatening, may present as hematemesis, hematochezia, or melena. Intraperitoneal hemorrhage can occur due to the rupture of a pseudoaneurysm into the peritoneum, typically presenting with acute abdominal symptoms such as epigastric pain in association with fever and recurrent vomiting (2,6,11). In our case, the patient presented with intraperitoneal hemorrhage, which was manifested as a localized hematoma, and melena.

CTA of the abdomen is the preferred diagnostic tool for detecting pseudoaneurysms originating from abdominal arteries. It distinguishes between true aneurysms and pseudoaneurysms. It also identifies underlying causes, such as pancreatitis, or vascular abnormalities, as well as intraperitoneal hemorrhage. Beyond confirming the diagnosis, CTA provides essential information for selecting between endovascular procedures and surgery (1,2,14). In the present case, CTA confirmed the diagnosis and provided crucial information for guiding therapy.

Selective arterial angiography is considered the gold standard investigation for diagnosing vascular-related diseases, offering the additional benefit of therapeutic intervention (14). In hemodynamically stable patients, the preferred treatment options are endovascular coil embolization or covered stent placement. However, endovascular embolization is the preferred method due to better outcomes and lower morbidity. Coils, thrombin, gel foam, cyanoacrylate glue, or combinations of these agents are used in the embolization process (11). Limitations of endovascular techniques include occasional difficulties in accessing target vessels and managing tortuous arteries (3,9). Hemodynamically unstable patients are optimally managed with emergency abdominal exploration, and in some cases, bowel resection with mesenteric vessel ligation may be required to control the bleeding (6,11). In this case, selective angiography of the SMA was performed, followed by successful coil embolization of the pseudoaneurysm, eliminating the need for surgical exploration. This study has limitations. It is a single case, which limits generalizability. Long-term follow-up data are lacking, making it difficult to assess recurrence risk and treatment durability. While endovascular embolization was successful, its long-term efficacy for pseudoaneurysms due to rheumatoid vasculitis remains uncertain. Larger studies with extended follow-up are needed to establish optimal management strategies for this rare condition.

CONCLUSION

Right colic artery pseudoaneurysm is extremely rare among visceral artery pseudoaneurysms. Autoimmune disorders, such as rheumatoid arthritis, can be contributing factors to conditions like rheumatoid vasculitis. CTA is crucial for diagnosing pseudoaneurysms, as it reveals the vascular origin and helps guide the treatment plan. Selective arterial angiography followed by endovascular coil embolization is an effective treatment for right colic artery pseudoaneurysms.

Ethics

Informed Consent: Informed consent was obtained from the patient who participated in this study.

Footnotes

Author Contributions

Concept - S.B.; Design - S.B., R.K.; Data Collection or Processing - B.S.; Writing - B.S.

Conflict of Interest: No conflict of interest was declared by the authors.

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