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Incidentally Discovered Hepatic Artery Aneurysm: A Case Report with Radiological and Hepatological Insights

Dr. Ms. Oumkaltoum Taiaa[1], Dr. Ms. Maryame El Khayari[2], Dr. Ms. Sara Salim[3]

[1]Radiologist, Radiology, Regionnal Hospitalier Center Of Errachidia
[2,3]Gastroenterlogist, Gastroenterology, Regionnal Hospitalier Center Of Errachidia

Abstract
We present the case of a 75-year-old female patient admitted for evaluation of gastrointestinal symptoms, including bloody diarrhea and abdominal pain. During the diagnostic process, an abdominal CT angiogram revealed an incidental hepatic artery aneurysm (HAA), a rare but potentially life-threatening vascular anomaly. This case emphasizes the importance of comprehensive imaging in assessing unexplained gastrointestinal symptoms and highlights the management challenges and multidisciplinary approach required for such a condition. We further explore the radiological findings, diagnostic work-up, and therapeutic management, providing an in-depth review of hepatic artery aneurysms and their clinical significance in the context of hepatology and vascular medicine.

Keywords: Hepatic artery aneurysm, Abdominal CT angiography, Gastrointestinal bleeding, Vascular anomalies

Introduction

Hepatic artery aneurysms (HAAs) are rare vascular anomalies, with an incidence of approximately 0.002% to 0.1% in the general population. They are often discovered incidentally during imaging studies performed for unrelated conditions, typically when patients present with nonspecific abdominal symptoms such as pain, fever, or gastrointestinal bleeding. Hepatic artery aneurysms can lead to life-threatening complications, including rupture or intra-abdominal hemorrhage. This case report discusses the incidental discovery of a hepatic artery aneurysm in a 75-year-old woman, initially admitted for gastrointestinal symptoms, and emphasizes the role of radiological imaging in diagnosing and managing vascular anomalies.

Clinical Presentation

A 75-year-old woman with a history of hypertension, type 2 diabetes mellitus, and valvular heart disease was admitted to the gastroenterology department for evaluation of bloody diarrhea and diffuse abdominal pain. Her clinical presentation included 4–5 daily bowel movements, associated with fever and significant abdominal tenderness. The patient's vital signs revealed a fever of 38°C and tachycardia of 100 bpm, while

laboratory tests indicated anemia (hemoglobin: 10 g/dL), leukocytosis (25,000/mm³), and elevated C-reactive protein (CRP: 296 mg/L).

Due to the patient's clinical presentation and vascular risk factors, a detailed imaging work-up was performed to rule out ischemic colitis, inflammatory bowel disease, and gastrointestinal malignancy. An abdominal CT angiogram was ordered, incidentally revealing a partially thrombosed hepatic artery aneurysm located in the hepatic artery (a branch of the celiac trunk). The aneurysm measured approximately 5 cm, without signs of rupture or bleeding. There were no signs of ischemic changes in the liver or other gastrointestinal structures, ruling out ischemic colitis and malignancy. The three-dimensional reconstruction of the arterial system provided clear delineation of the aneurysm's location and size, offering valuable information for management planning.

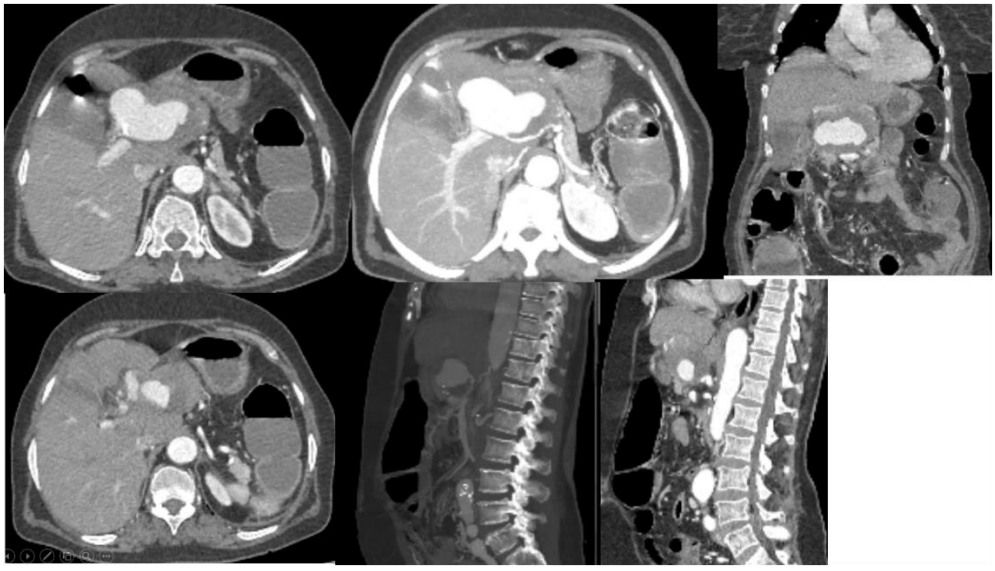

Figure 1: CT angiogram showing a saccular aneurysm of the hepatic artery, partially thrombosed, with no evidence of rupture.

Given the patient's gastrointestinal symptoms, a rectosigmoidoscopy was performed, which showed macroscopically normal mucosa with no signs of ischemic colitis or inflammatory bowel disease. These findings confirmed that the gastrointestinal symptoms were not related to a significant colonic pathology. Given the patient's clinical and radiological presentation, a multidisciplinary approach involving gastroenterology, vascular surgery, and interventional radiology was necessary.

Initial management focused on empirical antibiotic therapy, including third-generation cephalosporins and metronidazole, to address potential infectious causes of the gastrointestinal symptoms. This led to significant clinical improvement, with resolution of the diarrhea and abdominal pain.

A vascular surgery consultation was obtained due to the incidental finding of the hepatic artery aneurysm. The patient's comorbidities, including valvular heart disease and anticoagulant therapy, placed her at increased risk for aneurysm rupture. The team recommended endovascular embolization due to the risk of rupture and the patient's high-risk status for open surgical intervention. However, after thorough discussion, the patient declined the recommended intervention, opting for conservative management with close follow-up.

Discussion

Hepatic artery aneurysms are rare and can be classified as either true aneurysms, where all three layers of the arterial wall are involved, or false aneurysms, which are associated with vascular injury or rupture. The most common causes of HAA include atherosclerosis, trauma, inflammatory diseases, and vasculitis. In some cases, the aneurysm may be idiopathic. These aneurysms are typically found incidentally during imaging studies performed for unrelated reasons, with an incidence of approximately 0.002% to 0.1% in the general population [1, 2].

Radiological imaging plays a pivotal role in diagnosing hepatic artery aneurysms. CT angiography is considered the gold standard for diagnosing vascular anomalies due to its high sensitivity and ability to visualize both the aneurysm and surrounding vasculature in detail [3]. Magnetic resonance angiography (MRA) is an alternative non-invasive imaging modality that provides high-resolution images without ionizing radiation, although it is less commonly used than CT [4]. In our case, the CT angiogram provided detailed information regarding the aneurysm's size, location, and lack of rupture, facilitating a multidisciplinary management approach [5, 6].

The management of hepatic artery aneurysms depends on the size, location, and symptomatic status of the aneurysm. Small, asymptomatic aneurysms are generally managed conservatively with regular follow-up, while larger aneurysms or those associated with complications (rupture, thrombosis) may require surgical intervention, either through open surgery or endovascular techniques. Studies have shown that endovascular embolization is increasingly used for managing hepatic artery aneurysms due to its lower complication rates compared to open surgery [7, 8]. In this case, the aneurysm was relatively small and asymptomatic, and the patient opted for conservative management due to her high surgical risk [9].

The risk of rupture in a hepatic artery aneurysm increases with its size, with aneurysms greater than 2 cm having a higher likelihood of rupture [10]. Additionally, patients with a history of atherosclerosis, trauma, or vascular disease are at a higher risk for developing these aneurysms and experiencing complications such as rupture or thrombosis [11]. For patients at high risk of rupture, early intervention through endovascular embolization or surgical resection is recommended [12]. In this case, the decision for conservative management was made following patient preference and a careful assessment of her comorbidities.

Conclusion

This case highlights the importance of thorough radiological evaluation in patients presenting with nonspecific gastrointestinal symptoms. Hepatic artery aneurysms, though rare, should be considered in the differential diagnosis of abdominal pain or gastrointestinal bleeding. Early detection through CT angiography plays a crucial role in guiding appropriate management. A multidisciplinary approach, including collaboration between gastroenterology, vascular surgery, and interventional radiology, is essential in optimizing patient care.

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