

Ruptured Common Hepatic Artery Aneurysm Masquerading as an Intestinal Obstruction

Bağırsak Tıkanıklığı Gibi Görünen Rüptüre Ortak Hepatik Arter Anevrizma

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ABSTRACT

Visceral artery aneurysms are uncommon but can present as life-threatening often fatal emergencies when ruptured. Hepatic artery aneurysms account for 20% of splanchnic artery aneurysms and are associated with a 25% rupture rate with 70%-100% mortality. We report a case of a 33-year-old male who presented with a 1-day history of severe epigastric pain associated with hypotension and anaemia with no clinical signs of overt bleeding nor history of trauma. Computed tomography abdomen and pelvis showed a ruptured saccular common hepatic aneurysm which was successfully embolized by our interventional radiologist.

Keywords: Acute abdomen, hepatic artery aneurysm, perforated viscus, ruptured aneurysm, visceral aneurysm

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ÖZET

Visseral arter anevrizmaları nadirdir, ancak yırtıldığında yaşamı tehdit eden, genellikle ölümcül acil durumlar olarak ortaya çıkabilir. Hepatik arter anevrizmaları, splanchnik arter anevrizmalarının %20'sini oluşturur ve %70-100 mortalite ile %25 rüptür oranı ile ilişkilidir. 33 yaşında bir erkek hastayı, 1 gündür hipotansiyon ve anemi ile ilişkili şiddetli epigastrik ağrı öyküsü ile başvuran, hiçbir klinik aşikar kanama belirtisi veya travma öyküsü olmayan bir olguyu sunuyoruz. Karın ve pelvis bilgisayarlı tomografisinde, girişimsel radyoloğumuz tarafından başarılı bir şekilde embolize edilen rüptüre sakküler ortak hepatik anevrizma görüldü.

Anahtar Sözcükler: Akut karın, hepatik arter anevrizması, perforé iç organ, rüptüre anevrizma, visseral anevrizma

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INTRODUCTION

Common hepatic artery aneurysms or hepatic artery aneurysms are rare and represent 20% of visceral aneurysms. Commonly affected vessels are splenic, hepatic, superior mesenteric and celiac arteries (1). A true hepatic artery aneurysm was first documented in 1809 by James Wilson in a postmortem examination involving the left hepatic branch after it had ruptured (2). Hepatic artery aneurysms account for 20% of splanchnic artery aneurysms and are associated with a 25% rupture rate with 70%-100% mortality (3). A review of the literature between 1985 and 1995 showed that the hepatic artery aneurysm had surpassed the splenic artery aneurysm as the most frequently reported visceral artery aneurysm (4). The clinical manifestations depending on the size of the aneurysm include epigastric pain, obstruction of the biliary tract, rupture and death (5). Imaging modalities especially computed tomography and CT-angiography is essential in making the diagnosis and demonstrating the size, location and types of aneurysm which guide treatment planning. We report a 33-year-old male who presented with a 1-day history of severe epigastric pain associated with hypotension and anaemia with neither clinical signs of overt bleeding nor a history of trauma and we discuss our treatment approach.

CASE REPORT

A 33-year-old gentleman presented to the emergency department of our district hospital with sudden onset of severe epigastric pain for a 1-day duration with the inability to pass motion and flatus. He also had painless per-rectal bleeding 3 days prior, which self-resolved. Prior to this, he denies having any significant abdominal pain which requires medical attention. During a clinical assessment, his abdomen was distended with tenderness over the epigastrium and was referred to our Centre to rule out intestinal obstruction. However, prior to the ambulance transfer, he became hypotensive and pale without clinical evidence of overt bleeding. His haemoglobin dropped from 15g/L to 8g/L requiring pack cell transfusion and inotropic support.

Proceeded with an enhanced computed tomography abdominal scan with the preliminary diagnosis of perforated bleeding gastric ulcer to rule out acute pancreatitis as his abdomen was tender and guarded over epigastrium despite serum amylase of 36 with abdominal radiography showing a sentinel loop sign (Figure 1). The patient has no past surgical history except he is an active abuser of methamphetamine with his last usage 3 days prior. Past medical history includes traumatic pneumothorax which was managed non-operatively more than a decade ago. Enhanced computed tomography abdomen pelvis revealed a bleeding saccular aneurysm measuring 1.0 x 1.6 x 1.0 cm, neck size of 0.4cm in diameter causing massive hemoperitoneum (Figure 2).

He was hemodynamically stable after fluid resuscitation and packed cell transfusion. Hence the decision was made for non-operative management. Angioembolization was performed by our interventional radiologist on the very same day. Superselective cannulation of the common hepatic artery was done using a 2.7 Fr microcatheter (Figure 3). A total of five Micro nester coils (5mm x 5mm) were deployed across the aneurysm neck. Post-embolization angiogram showed non-opacification of the aneurysm and the common hepatic artery. The splenic and left gastric artery remains patent (Figure 4). The patient was admitted for a week to the ward for close monitoring of his liver function test and hemodynamics. He made an uneventful recovery and was discharged home without any surgical intervention.



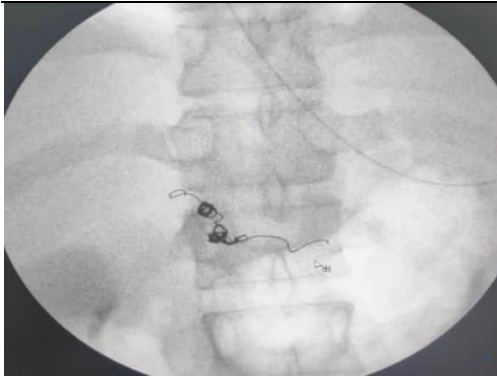
Figure 1: Plain abdominal radiography showed an isolated dilated transverse colon – sentinel loop sign.



Figure 2: Bleeding saccular aneurysm measuring 1.0 x 1.6 x 1.0 cm, neck size of 0.4 cm in diameter causing massive hemoperitoneum.



Figure 3: Angiogram of the common hepatic artery aneurysm measuring 12.5mm x 8.5 mm.



Figures 4: Post embolization angiogram shows coils within the aneurysm sac with non-visualization of the common hepatic and proper hepatic artery.

DISCUSSION

A hepatic artery has recently become the most frequently affected vessel mainly due to the increasing number of endoscopic procedures worldwide (6). The pathophysiology of a common hepatic artery aneurysm is incompletely understood. Most commonly, they are believed to be caused by atherosclerosis, trauma, or iatrogenic in nature (5). Other common associations reported in the literature are pregnancy and portal hypertension, fibromuscular dysplasia, cystic medial necrosis, collagen vascular diseases, and congenital forms (3,6). Pregnancy is associated with 20-25% of all ruptures (6). Hypertension has been documented as one of the most common comorbid conditions in patients with hepatic artery aneurysms and is common in males (2:1), and most often present in their sixth decade of life (5).

The natural history of hepatic artery aneurysm is unclear and there is no association between aneurysm size and risk of rupture (7). Aneurysms smaller than 2 cm are unlikely to rupture and in asymptomatic patients, they can be safely observed (8). Symptomatic patients often present with Quincke's triad which includes jaundice, biliary colic and gastrointestinal haemorrhage. Half of the hepatic artery aneurysms rupture into the biliary tract leading to haemobilia or gastrointestinal haemorrhage, while the other half of ruptures present signs and symptoms of intraperitoneal haemorrhage (9).

On the subject of treatment of hepatic artery aneurysms, the current Society for Vascular Surgeons guidelines recommend intervention in the following: (i) all hepatic artery pseudoaneurysms; (ii) all symptomatic hepatic artery aneurysms regardless of size; (iii) asymptomatic patients without significant comorbidity with the size of >2 cm, if the aneurysms enlarge by 0.5 cm/year or if a patient with significant comorbidities has an aneurysm greater than 5 cm (10). In patients with comorbidities, open repair is recommended if the AHA is larger than 5.0 cm. Society for Vascular Surgeons guidelines also recommends a one-time screening CT angiogram of the head, neck, and chest for non-atherosclerotic causes of hepatic artery aneurysm (10).

Treatment modalities include percutaneous angioembolization to achieve endovascular exclusion of the aneurysm, by occluding the hepatic artery using coils or stents or open surgical repair by resecting the aneurysmal sac and reconstruction using either autologous or prosthetic grafts. With regards to endovascular techniques, since maintenance of perfusion to the distal organ is important, a covered stent is always preferable to coil embolization (10). Open surgery repair is primarily indicated when there is no collateral vascularization to the hepatic segment involved (11). The principle of treatment is to exclude the aneurysm sac from circulation, preserving the distal flow. However, if this is not possible, the aneurysmal artery is occluded.

In our present case, the choice to adopt the percutaneous endovascular approach to coil the aneurysm was based on the hemodynamic stability of the patient and the anatomic viability of the aneurysm. Although a covered stent is preferred in the above scenario, the size-specific stent was not available during acute emergency settings.

Post-coiling, his liver function test and other blood parameters remained normal without worsening abdominal pain hence distal end-organ perfusion was preserved. Repeated computed tomography angiography of the abdomen during a one-month follow-up showed non-visualization of the common hepatic and proper hepatic artery due to artefacts from coiling materials with reconstitution of right hepatic artery receiving supply from superior mesenteric artery and left hepatic artery from the left gastric artery.

CONCLUSION

Due to the rarity and low incidence of hepatic artery aneurysms, an individualized case-by-case basis is recommended to decide on the type of treatment approach depending on anatomical complexity, size of the aneurysm and patient's surgical risk surgical approach is reserved for patients who are high risk for rupture and carry high morbidity. The long-term results of any of these interventions remain unknown.

Conflict of interest

No conflict of interest was declared by the authors.

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