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Aneurysm of a Proper Hepatic Artery : A Case Report of a Rare Clinical Presentation

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Abstract:

This report describes the complex surgical management of a proper hepatic artery aneurysm in a 77-year-old male patient. He was admitted to the clinic with alcohol intoxication, arterial hypotension, hypoglycemia, severe abdominal pain, and nausea. His medical history included bilateral cerebral arterial syndromes, coronary artery disease.

Computed tomography revealed a 2.8 cm aneurysm of the hepatic artery proper compressing the portal vein, along with a large hematoma (18×9 cm) extending between the stomach and pancreas, and splenic injury. Emergency multi-stage surgery included laparotomy, abdominal drainage, splenectomy, epicystostomy, and vascular reconstruction of the ruptured aneurysm. Three drainage tubes were placed.

Postoperative complications included acute respiratory failure, shock, renal and hepatic insufficiency, post-hemorrhagic anemia, and coagulopathy. The patient required intensive care, mechanical ventilation, hemotransfusions, vasopressor support, antibiotics, and gastroprotective therapy. Under nephrologist supervision, the patient showed gradual improvement in renal and liver function, hemodynamic stability, and correction of anemia. Extubation was performed on postoperative day 8, and after two weeks, the patient was transferred to the surgical department.

Hepatic artery aneurysms are rare and often asymptomatic, but pose a high risk of rupture and life-threatening bleeding. In this case, despite an APACHE II-predicted mortality rate of 82%, the patient responded well to treatment and showed steady recovery.

Keywords: Proper Hepatic Artery Aneurysm, Splenectomy, Vascular Pathology.

Introduction

Aneurysms of the proper hepatic artery (PHA) are rare vascular abnormalities, accounting for a small fraction of all visceral artery aneurysms. Despite their low incidence, these aneurysms carry a significant risk of rupture, which can result in life-threatening intra-abdominal hemorrhage. Most PHA aneurysms are asymptomatic and incidentally discovered during imaging studies performed for unrelated reasons. However, when symptomatic, they may present with vague abdominal pain, gastrointestinal bleeding, or, in severe cases, hemorrhagic shock.

The complexity of managing such aneurysms increases when they are accompanied by additional complications, such as hematoma formation, compression of adjacent structures, or concomitant organ injury. Prompt diagnosis and a multidisciplinary treatment approach are essential to prevent morbidity and mortality.

This case report describes the clinical course, diagnostic evaluation, and complex management of a 77-year-old male patient with a ruptured proper hepatic artery aneurysm, presenting with hemodynamic instability, hemoperitoneum, and splenic trauma. The case underscores the challenges of managing visceral artery aneurysms in acute settings and highlights the importance of individualized, rapid intervention.

Case Presentation

A 77-year-old male was admitted to the hospital in a state of alcohol intoxication, arterial hypotension, and hypoglycemia. According to his neighbours, the patient had sustained a fall at home earlier, due to acute intoxication, which was the reason for calling emergency services. A few hours after admission, he developed acute, diffuse abdominal pain, accompanied by nausea and dry mouth.

On physical examination, the abdomen was generally tender with muscular guarding, most notably in the right upper quadrant, where deep palpation was restricted due to rigidity and distension. Vital signs indicated ongoing hemodynamic instability.

Medical history included:

- Bilateral cerebral arterial syndromes
- Coronary artery disease
- Coronary angioplasty and stenting
- Essential hypertension

CT scan revealed:

- A 2.8 cm aneurysm of the proper hepatic artery, compressing the portal vein
- A high-density hematoma measuring 18×9 cm, extending toward the small intestine, located between the stomach and pancreas

- Associated splenic trauma

Figure 1. CT scan of PHA aneurysm

Surgical Intervention

The patient underwent emergency surgery under general anesthesia. Positioned supine in the Trendelenburg position, a midline laparotomy was performed. A significant volume of intra-abdominal blood and organized hematoma was evacuated and drained.

Operative steps:

- Elevation of the liver for exposure
- Dissection of the lesser sac and hepatoduodenal ligament
- Proximal and distal vascular control of the proper hepatic artery
- Aneurysmectomy and direct vascular reconstruction using 5-0 or 6-0 Prolene sutures
- Splenectomy due to active bleeding from splenic injury
- During surgery bloodloss was 3500ml
- Placement of an epicystostomy catheter into the bladder
- Insertion of three drainage tubes: subdiaphragmatic, pelvic, and right subcostal via auxiliary incisions

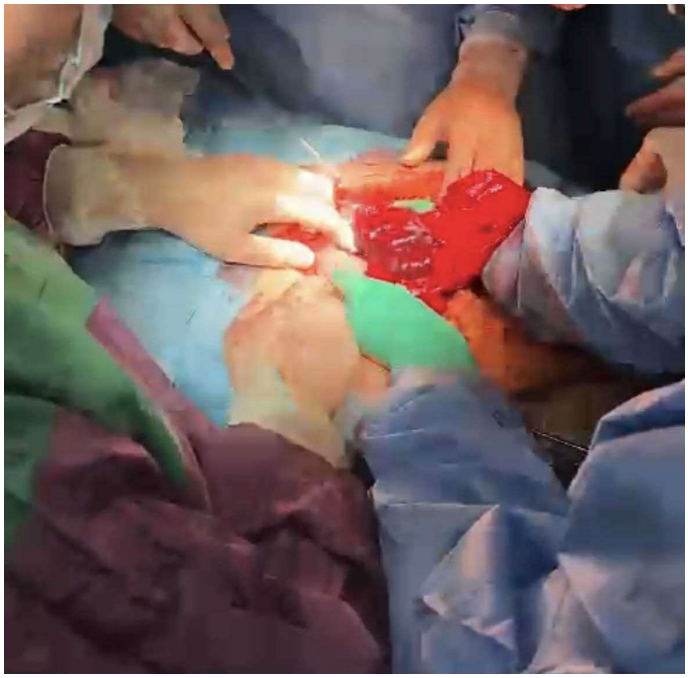

Figure 2. Photo of the spleen, taken during surgery

Postoperative Course

The patient developed several complications:

- Acute respiratory failure
- Undifferentiated shock
- Acute renal failure
- Acute liver failure
- Post-hemorrhagic anemia and coagulation defect

Management included:

- Admission to the intensive care unit
- Blood transfusions
- Vasopressor therapy
- Broad-spectrum antibiotics
- Gastroprotective prophylaxis
- Mechanical ventilation

Due to elevated serum creatinine, nephrology consultation and monitoring were initiated. Clinical improvement followed:

- Restoration of urine output
- Reduction in nitrogenous waste products
- Normalization of liver function tests

- Correction of anemia
- Stabilization of hemodynamic parameters

The patient was neurologically intact and responsive. After progressive respiratory improvement, tracheal extubation was performed on postoperative day 8. Oxygen therapy was continued via humidified mask. Nasogastric feeding was maintained; urine drainage was via epicystostomy.

No further fluid collection was observed from the drainage sites, and all drains were removed. Inflammatory markers improved; mild anemia and moderate hypocoagulability persisted. Hepatic and renal function showed continuous improvement.

By postoperative day 14, the nasogastric tube was removed, and the patient was transferred from the ICU to the surgical ward for ongoing monitoring.

Discussion

Proper hepatic artery aneurysms (PHAAs) are an uncommon subset of visceral artery aneurysms, accounting for less than 20% of all hepatic artery aneurysms and an even smaller proportion of all splanchnic aneurysms. They are often asymptomatic and incidentally discovered during imaging for unrelated conditions. However, once symptomatic—or worse, ruptured—they become true surgical emergencies due to the high risk of fatal intra-abdominal hemorrhage. The risk of rupture increases with aneurysm size, comorbid conditions, and hemodynamic instability at presentation. Mortality from ruptured hepatic artery aneurysms has been reported to be as high as 70–90% in the absence of timely intervention.

In this case, the patient's presentation was further complicated by multiple factors: acute alcohol intoxication, trauma-induced splenic injury, and the rupture of a previously undiagnosed 2.8 cm PHA aneurysm. This sequence of events triggered a cascade of critical complications, including massive hemoperitoneum, hemorrhagic shock, hepatic dysfunction, and acute kidney injury. The clinical course was further burdened by post-operative respiratory failure and coagulopathy. The calculated APACHE II score on admission predicted an 82% mortality risk, underlining the severity of the patient's condition.

Early recognition and rapid imaging played a pivotal role in diagnosis. Computed tomography (CT) not only identified the aneurysm and the associated hematoma but also highlighted the ongoing intra-abdominal bleeding and adjacent organ involvement, including splenic injury. The precise visualization of the aneurysm's anatomy was essential in planning the surgical approach.

Successful management hinged on a multidisciplinary strategy involving emergency surgery, intensive care, nephrology, anesthesiology, and interventional radiology teams. Surgical priorities focused on hemorrhage control, vascular reconstruction, and splenectomy. Postoperatively, meticulous

hemodynamic support, mechanical ventilation, blood product replacement, renal function monitoring, and infection control were required to manage the ensuing organ dysfunction.

The patient's recovery emphasizes the life-saving importance of aggressive and well-coordinated intervention, even in cases with a dire prognosis. Although hepatic artery aneurysms are rare, they must be considered in the differential diagnosis of acute abdomen in elderly patients, especially in the context of trauma or sudden decompensation.

This case also underlines the importance of post-discharge planning and follow-up in such high-risk patients, given the potential for delayed complications, organ dysfunction, and the psychological impact of critical illness.

Conclusion

This case highlights the importance of modern surgical techniques and multidisciplinary care in the management of rare but dangerous vascular pathologies such as PHAAs. The successful outcome demonstrates how far surgical practice in Georgia has advanced and underscores the necessity for rapid intervention and tailored patient care.

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ღვიძლის საკუთარი არტერიის ანევრიზმა: იშვიათი კლინიკური შემთხვევის აღწერა

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აბსტრაქტი

წარმოდგენილი შემთხვევა ასახავს 77 წლის მამაკაცში ღვიძლის საკუთარი არტერიის ანევრიზმის ქირურგიული მართვის სირთულეს. პაციენტი კლინიკაში შეიყვანეს ალკოჰოლური ინტოქსიკაციით, არტერიული ჰიპოტენზიით, ჰიპოგლიკემიით, მუცლის ძლიერი ტკივილითა და გულისრევით. ანამნეზში აღენიშნებოდა ცერებრული და კორონარული დაავადებები.

კომპიუტერულმა ტომოგრაფიამ აჩვენა 2.8 სმ-იანი ანევრიზმა ღვიძლის საკუთარ არტერიაში, რომელიც აწვებოდა პორტულ ვენას, და ასევე დიდი ჰემატომა (18×9 სმ) ელენთის დაზიანებით. პაციენტს ჩაუტარდა გადაუდებელი ოპერაცია: ლაპაროტომია, მუცლის ღრუს დრენირება, სპლენექტომია, ეპიცისტოსტომია და ანევრიზმის სისხლძარღვოვანი რეკონსტრუქცია. მოთავსდა სამი დრენაჟი.

პოსტოპერაციულად განვითარდა გართულებები: მწვავე რესპირატორული უკმარისობა, შოკი, თირკმლისა და ღვიძლის უკმარისობა, პოსტჰემორაგიული ანემია და კოაგულოპათია. პაციენტი იმყოფებოდა რეანიმაციაში, მექანიკურ ვენტილაციაზე, ჩაუტარდა ჰემოტრანსფუზია, ანტიბიოტიკოთერაპია და ვაზოპრესორული მხარდაჭერა. მაღალი კრეატინინის გამო საჭირო გახდა ნეფროლოგის ჩართვა.

მკურნალობის ფონზე მდგომარეობა ეტაპობრივად გაუმჯობესდა: აღდგა დიურეზი, ნორმალიზდა ღვიძლის და თირკმლის ფუნქცია, კორექტირდა ანემია. ოპერაციიდან მერვე დღეს პაციენტი ექსტუბირდა, ხოლო ორ კვირაში – გადაყვანილ იქნა ქირურგიულ დეპარტამენტში.

ღვიძლის არტერიის ანევრიზმები იშვიათია, ხშირად უსიმპტომო, მაგრამ რუბტურისას სიცოცხლისთვის საშიშია. მიუხედავად მაღალი რისკისა (APACHE II – 82%), პაციენტის მდგომარეობა სტაბილურად გაუმჯობესდა.

საკვანძო სიტყვები: ღვიძლის საკუთარი არტერიის ანევრიზმა, სპლენექტომია, ვასკულური პათოლოგია.