

## Hemoperitoneum secondary to a rupture of a left gastroepiploic artery aneurysm

Published on 01.11.2018

**DOI:** 10.1594/EURORAD/CASE.15945

**ISSN:** 1563-4086

**Section:** Abdominal imaging

**Area of Interest:** Abdomen Arteries / Aorta Vascular

**Procedure:** Diagnostic procedure

**Imaging Technique:** CT-Angiography

**Special Focus:** Aneurysms Case Type: Clinical Cases

**Authors:** Maria Jesús Gayán Belmonte, Juana María Plasencia Martínez, Eduardo Alcaraz-Mateos, Irene Cases Susarte, Amalia García Chiclano, Marina Lozano Ros

**Patient:** 83 years, female

### Clinical History:

An 83-year-old woman was admitted to the emergency service of our hospital complaining of an intermittent epigastric pain for three days; abdominal distension and constipation. The patient suffered from hypertension, dyslipidemia and atrial fibrillation treated with anticoagulant therapy. The blood test showed a hemoglobin level of 6.7 g/dl.

### Imaging Findings:

A Computed Tomography (CT) angiography of the mesenteric circulation was performed, obtaining arterial and venous phases.

The CT angiography showed a nodule with significant contrast enhancement, similarly to arterial vessels in both phases (white arrowheads in fig. 1a-b), adjacent to the greater curvature of the stomach, compatible with visceral artery aneurysm. Moreover, there was abundant high-density ascites (up to 60 Hounsfield Units) compatible with hemoperitoneum (white arrows in fig. 1b). A perianeurysmal hematoma (black asterisk in fig. 1a-b), indicating the probable origin of the bleeding, was also observed and no active bleeding was demonstrated.

The relationship between the aneurysm and the vessels was demonstrated by maximal intensity projection (MIP) reconstructions. The aneurysm was located on the left gastroepiploic artery (black arrowhead in fig. 2a) which is a branch of the splenic artery (fig. 2a) and it is anastomosed with the right gastroepiploic artery, originated from the gastroduodenal artery (fig. 2b).

### Discussion:

The patient underwent an emergency laparotomy for clinical deterioration. Abundant hemoperitoneum and an aneurysm depending on the gastroepiploic artery were confirmed at surgery. The histological examination of the surgical specimen revealed an aneurysmal dilatation of an arterial vessel (white asterisk in fig. 3a and black asterisk in fig. 3b) with a rupture on its wall (white arrow in fig. 3a and black arrow in fig. 3b) and an infiltrating hemorrhage in the adjacent tissue. The deterioration of the histological samples did not allow us to determine the etiology of the aneurysm.

The most common visceral artery aneurysms are those affecting the splenic artery, which account for over 60 % of

cases [1]. It must be taking into account that they can have complications such as compression of adjacent structures, thrombosis with or without distal embolization or hemorrhage due to rupture [1].

The incidence of gastroduodenal artery aneurysms among all the visceral aneurysms is as low as 0.2-0.4% [2]. However, rupture rates of these aneurysms of about 75% have been reported and the mortality after rupture has been reported to be as high as 70 % [2]. Given its rarity and its non-specificity symptoms, it is not surprising that it is seldom clinically suspected, being the imaging tests which often give the accurate diagnosis.

The most frequently used diagnostic procedure is multiphase CT angiography, which should be the first emergency radiological option when there is suspicion of abdominal hemorrhage of non-gynecologic origin [3]. The presence of hemoperitoneum in the CT images, manifested as high density ascites (over 30-45 HU), should cause us to look for an abdominal bleeding point [3, 4]. For that, we should have previously obtained both arterial and portal phases after intravenous contrast media injection, since active bleeding will be demonstrated in presence of contrast extravasation.

Visceral aneurysms can be congenital or acquired [5]. It is important trying to establish the cause of the aneurysm, usually combining radiological and histological findings, since it can be the manifestation of a potentially risky systemic disease. The main cause is atherosclerosis, although we must take into account other less common causes such as arteritis, fibromuscular dysplasia, connective tissue diseases, segmental arterial mediolysis, traumas or mycotic aneurysms [5, 7]. There are no established guidelines for the therapeutic management of this entity, however, emergency surgery or aneurysm embolization is usually the indicated treatment when aneurysms present complications [5- 10].

Written informed patient consent for publication has been obtained.

**Differential Diagnosis List:** Hemoperitoneum secondary to a rupture of a left gastroduodenal artery aneurysm, There is no differential diagnosis for this case, There is no differential diagnosis for this case

**Final Diagnosis:** Hemoperitoneum secondary to a rupture of a left gastroduodenal artery aneurysm

## References:

- Robert A. Jesinger, Andrew A. Thoreson, Ramit Lamba. (2013) Abdominal and pelvic aneurysms and pseudoaneurysms: Imaging review with clinical, radiologic and treatment correlation. *Radiographics* 33: E71-E96.
- S.J. Go, S.G. Lee, M.S. Lee, et al (2014) Ruptured gastroduodenal artery aneurysm as an unusual case of hemoperitoneum. *European Journal of Vascular and Endovascular Surgery* 27: 27-28
- Meghan Lubner, Christine Menias, Creed Rucker, et al (2007) Blood in the belly: CT findings of hemoperitoneum. *Radiographics* 27:109-125
- José M. Artigas, Milagros Marti, Jorge A. Soto, et al (2013) Multidetector CT angiography for acute gastrointestinal bleeding: technique and findings. *Radiographics* 33: 1453-1470
- Gabriel Pivawer, Jay L. Lee, Peter M. Nardi (2007) Case 105: Left gastric artery aneurysm. *Radiology* 242: 312-314 (PMID: [17185676](#))
- R. Montisci, G. Cuccu, F. Serra, et al (1992) Spontaneous rupture of an aneurysm of the left gastroduodenal artery. *Eur J Vasc Surg* 6: 95-97 (PMID: [1555678](#))
- P. García- Barquín, J.I. Bilbao, A. Quílez, et al (2016) Hallazgos de angiografía computarizada de la mediólisis arterial segmentaria. *Radiología* 58: 435-443
- Hirokuni Ikeda, Masahiko Takeo, Ryuuichi Mikami, et al. (2015) A case of a huge gastroduodenal arterial aneurysm. *Journal of Surgical Case Reports* 8: 1-3

Amith Kumar Choudhury, Shabuddin Khan, Graham Hoadley, et al (2007) Ruptured left gastroepiploic artery aneurysm- a diagnostic dilemma. Indian J. Surg 69: 198-200 (PMID: [23132982](#))

Byron Faler, Dipankar Mukherjee (2007) Hemorrhagic shock secondary to rupture of a right gastroepiploic artery aneurysm: case report and brief review of splanchnic artery aneurysms. Int J Angiol 16: 24-26 (PMID: [22477245](#))

**Figure 1**

a



**Description:** Arterial(a) and portal(b) phases showing a gastroepiploic artery aneurysm (white arrowheads). Hemoperitoneum (white arrows in b) and perianeurysmal hematoma (black asterisks) indicating the origin of the bleeding. **Origin:** Department of Radiology, H.G.U. Morales Meseguer, Murcia, Spain



**Description:** Arterial(a) and portal(b) phases showing a gastroepiploic artery aneurysm (white arrowheads). Hemoperitoneum (white arrows in b) and perianeurysmal hematoma (black asterisks) indicating the origin of the bleeding. **Origin:** Department of Radiology, H.G.U. Morales Meseguer, Murcia, Spain

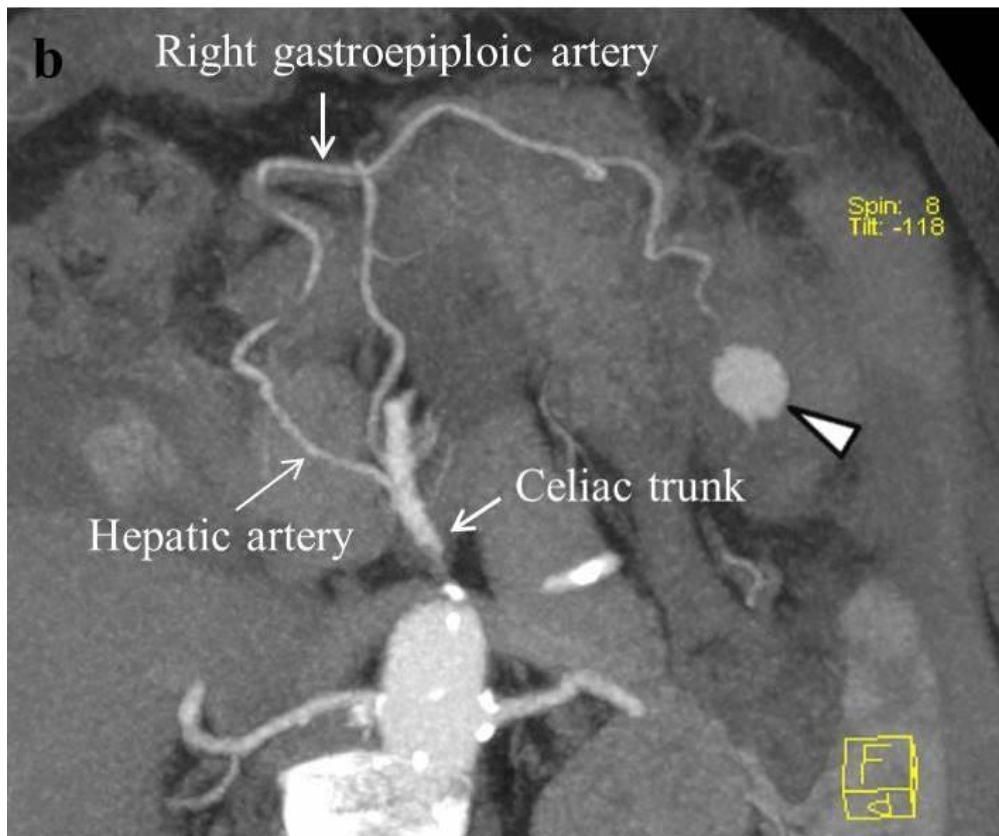
**Figure 2**

a



**Description:** The aneurysm (white arrowheads) depends on the left gastroepiploic artery (2a, black arrowhead), which is a branch of the splenic artery (2a) and anastomoses with the right gastroepiploic artery (branch of the gastroduodenal artery (2b)). **Origin:** Department of Radiology, H.G.U. Morales Meseguer, Murcia, Spain

b



**Description:** The aneurysm (white arrowheads) depends on the left gastroepiploic artery (2a, black arrowhead), which is a branch of the splenic artery (2a) and anastomoses with the right gastroepiploic artery (branch of the gastroduodenal artery (2b)). **Origin:** Department of Radiology, H.G.U. Morales Meseguer, Murcia, Spain

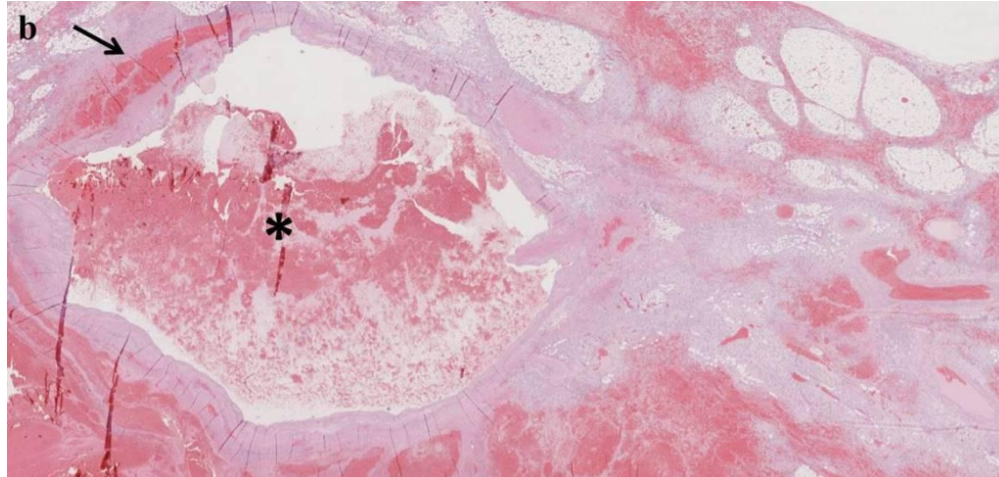
## Figure 3

a



**Description:** Aneurysmal dilatation of the arterial vessel (white and black asterisks in 3a and 3b) with a rupture on its wall (white and black arrows in 3a and 3b). **Origin:** Department of Pathology (Dr. Alcaraz-Mateos), H.G.U. Morales Meseguer, Murcia, Spain

b



**Description:** Aneurysmal dilatation of the arterial vessel (white and black asterisks in 3a and 3b) with a rupture on its wall (white and black arrows in 3a and 3b). **Origin:** Department of Pathology, H.G.U. Morales Meseguer, Murcia, Spain