A rare case of thoraco-abdominal pain

Published on 29.06.2020

DOI: 10.35100/eurorad/case.16820
ISSN: 1563-4086
Section: Abdominal imaging
Area of Interest: Abdomen Emergency Gastrointestinal tract
Procedure: Diagnostic procedure
Imaging Technique: CT
Special Focus: Hernia Ischaemia / Infarction Case Type: Clinical Cases
Authors: Iacobellis F1, Di Serafino M1, Scaglione M2,3, Romano L1
Patient: 87 years, female

Clinical History:

An 87-year-old woman presented to the emergency department with a sudden onset of abdominal pain, mild dyspnoea and altered mental status. It was not possible to obtain an adequate clinical history due to patient conditions. The physical examination showed discrete abdominal distention with wall rigidity.

Imaging Findings:

Enhanced-CT showed a giant hiatal hernia containing the stomach, the pancreatic isthmus and body, and the transverse colon. The gastric lumen was dilated with endoluminal mixed stasis; a small amount of free air was noticed adjacent to the second part of the duodenal wall, furthermore, thickening and distention of the gallbladder wall were also present (Figure 1). Multiplanar reformations (MPR) in coronal view clarified the findings, consistent with organo-axial volvulus of the stomach and ischemic perforation of the second part of the duodenum due to the traction on this fixed point (Figure 2). The cholecystitis was related to the impaired bile drainage.

Discussion:

Background:

Gastric volvulus is a rare, life threatening condition associated with hiatal hernia, due to the torsion of the stomach (at least 180°) around its long -organoaxial- or short -mesenteroaxial- axis, causing luminal obstruction. The predisposing condition is the presence of a paraoesophageal or mixed hiatal hernia (1-3).

Clinical perspective:

The patient may experience poor symptoms until a gastric torsion and luminal obstruction occur. The visceral over-distention and the vessels twisting may lead to ischemic necrosis and perforation with a high mortality rate. The wall ischemia may also be related with the traction on fixed points, as in this case, where the duodenum was involved.
Imaging perspective:

In emergency settings, enhanced-CT is the preferred diagnostic tool. The CT examination needs to be performed with intravenous injection of contrast medium and with acquisition of at least arterial and portal venous phases, to adequately depict both arterial vessels and the enhancement of the bowel wall. For accurate vascular and bowel evaluation, a slice thickness ranging from 0.5 to 3 mm, and preferably 0.5–1.5 mm, is recommended to obtain adequate post-processing with MPR, helpful to assess this condition (4).

In axial plane was firstly evident the enlargement of the diaphragmatic hiatus with a giant hernia (Figure 1); coronal plane immediately clarified the abnormal site and orientation of the stomach (Figure 4). Therefore, the next step is to evaluate the gastric wall vascularity that may be impaired due to overdistension, and the duodenal wall, the perfusion of which can be altered due to the traction exerted by the over-distended stomach located in the mediastinum. Indeed, traction on the duodenal wall was detected, with also some small air bubbles adjacent to the thinned wall, suggestive for ischemic perforation (Figure 3). The traction on the duodenum also explains the impaired emptying of the gallbladder with bile stasis, overdistention of the lumen and wall oedema.

Outcome:

The patient underwent surgery, consisting of hernia reduction and conservative treatment for duodenal perforation, but unfortunately died due to the complications related to the development of acute pancreatitis with pseudocysts formation in the posterior mediastinum.

Take-Home Message / Teaching Points:

- Acute gastric volvulus is a rare case of thoracic-abdominal pain.
- Enhanced-CT with MPR allows to make the correct diagnosis.
- Think about vascular complications of gastric volvulus, related with vessel twisting or gastroduodenal wall traction/overdistension.

Differential Diagnosis List: Giant hiatal hernia complicated by gastric volvulus and duodenal perforation., Stomach functional dilation, Hiatal hernia

Final Diagnosis: Giant hiatal hernia complicated by gastric volvulus and duodenal perforation.

References:

Mazaheri P, Ballard DH, Neal KA, Raptis DA, Shetty AS, Raptis CA, Melnick VM. CT of Gastric Volvulus:
Description: Enhanced CT in venous phase in axial plane. Enhanced CT in axial plane showing a giant hiatal hernia containing the stomach (arrow). The stomach is dilated with endoluminal air-fluid mixed stasis, wall enhancement is preserved. Origin: Department of General and Emergency Radiology, “A. Cardarelli” Hospital, Via A. Cardarelli 9, 80131 Naples/ IT
Description: Enhanced CT in venous phase in axial plane. Enhanced CT in axial plane showing the herniation into the posterior mediastinum of the pancreatic body (curved arrow) and of the transverse colon (straight arrow). Origin: Department of General and Emergency Radiology, “A. Cardarelli” Hospital, Via A. Cardarelli 9, 80131 Naples/ IT
Description: Enhanced CT in venous phase in axial plane. Enhanced CT in axial plane showing the presence of free air adjacent to the second part of the duodenum (arrow).

Origin: Department of General and Emergency Radiology, “A. Cardarelli” Hospital, Via A. Cardarelli 9, 80131 Naples/ IT
Description: Enhanced CT in venous phase in coronal plane. Enhanced CT in coronal plane showing the hiatal hernia containing the stomach, the pancreatic body and the transverse colon. The stomach is twisted on its long axis (organoaxial volvulus), free air adjacent to the second part of the duodenum (arrow) is detected. The gallbladder is distended with wall thickening. Origin: Department of General and Emergency Radiology, "A. Cardarelli" Hospital, Via A. Cardarelli 9, 80131 Naples/ IT