ACTA RADIOLÓGICA PORTUGUESA
September-December 2023 | Vol 35 nº 3 | 31-33
https://doi.org/10.25748/arp.28872

Images of Interest /Imagens de Interesse

Mesenteroaxial Gastric Volvulus Complicated by Gastric Ischemia in Adulthood

Vólvulo Gástrico Mesentero-Axial Complicado com Isquemia Gástrica em Idade Adulta

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Received: 11/12/2022
Accepted: 31/07/2023
Published: 29/12/2023

Abstract

Mesenteroaxial gastric volvulus is a rare condition characterized by anomalous rotation of the stomach on its shortest axis potentially resulting in gastric outlet obstruction; if management is delayed, it can result in significant morbidity and mortality.
We describe the clinical case of a 30-year-old woman who presented with symptoms/signs suggestive of gastrointestinal obstruction with onset in the previous day, associated with significant elevation of blood lactate levels. Abdominal and pelvic CT revealed significant distension and anomalous position of the stomach with spatial inversion of the positions of the esophagogastric junction and the gastric antrum/ pylorus, as well as gastric pneumatosis and portal venous gas. Considering these findings, a diagnosis of mesenteroaxial gastric volvulus complicated by gastric ischemia was suggested. Exploratory surgery confirmed the diagnosis and the patient underwent total gastrectomy.

Keywords

Gastric volvulus; Gastric outlet obstruction; Computed tomography (CT).

Resumo

O vólvulo gástrico mesentero-axial é uma entidade rara, caracterizada por rotação anómala do estômago sobre o seu menor eixo com potencial obstrução do outlet gástrico, que, se não for abordada atempadamente, pode associar-se a significativa morbilidade e mortalidade.
Descrevemos o caso clínico de uma mulher de 30 anos de idade que se apresentou com quadro sugestivo de obstrução gastrointestinal com um dia de evolução, associado a significativa elevação dos níveis séricos de lactatos. A TC abdominal e pélvica demonstrou significativa distensão e alteração da posição do estômago, com inversão da relação espacial entre a junção esófago-gástrica e o antro/piloro, assim como pneumatose parietal gástrica e aeroportia. Perante estes achados, foi sugerido o diagnóstico de vólvulo gástrico mesentero-axial complicado com isquemia gástrica. Seguiu-se cirurgia exploradora, que confirmou o diagnóstico, tendo sido realizada gastrectomia total.

Palavras-chave

Vólvulo gástrico; Obstrução do outlet gástrico; Tomografia computadorizada (TC).

Clinical Case

We present the clinical case of a 30-year-old woman, with no relevant medical history, who came to the Emergency Department of our institution due to uncontrollable vomiting and abdominal pain peaking in the epigastrium (intensity grade 9 out of 10) with onset in the previous day. On physical examination, the main findings were significant abdominal distension, abdominal tympanism and decreased bowel sounds. From the laboratory study, the main finding was a significant increase in serum lactate levels.
In this context, abdominal and pelvic CT was requested, which revealed as the most relevant findings marked distension and anomalous position of the stomach with spatial inversion of the positions of the esophagogastric junction and the antrum/pylorus - esophagogastric junction located more caudally and antrum/pylorus located more cranially -, as well as gastric parietal pneumatosis and portal venous gas (Figure 1). The combination of these findings suggested the diagnosis of mesenteroaxial gastric volvulus complicated by gastric ischemia.
The patient underwent exploratory surgery, which confirmed the aforementioned diagnosis, and a total gastrectomy was performed (Figure 2).

Discussion

Gastric volvulus, a rare form of digestive tract volvulus,[1] consists of abnormal rotation of the stomach potentially resulting in gastric outlet obstruction.
According to the axis in relation to which this rotation occurs, the gastric volvulus can be classified as organoaxial or mesenteroaxial.
Organoaxial gastric volvulus is more common, accounting for two thirds of the cases; it is characterized by rotation of the stomach along its long axis, with consequent anomalous positioning of the greater curvature cranially to the lesser curvature.
Mesenteroaxial gastric volvulus is rarer, accounting for one third of the cases and occurring mainly in children; it is characterized by rotation of the stomach on its short axis, with consequent anomalous positioning of the antrum/pylorus cranially to the esophagogastric junction.[2]
Gastric volvulus can occur, for example, in the context of dysfunction of the supporting structures of the stomach in the abdominal cavity or diaphragmatic pathology (such as paraesophageal hernia).[3]
As the mesenteroaxial gastric volvulus is a rare entity (especially in adulthood, as in the case we present) that

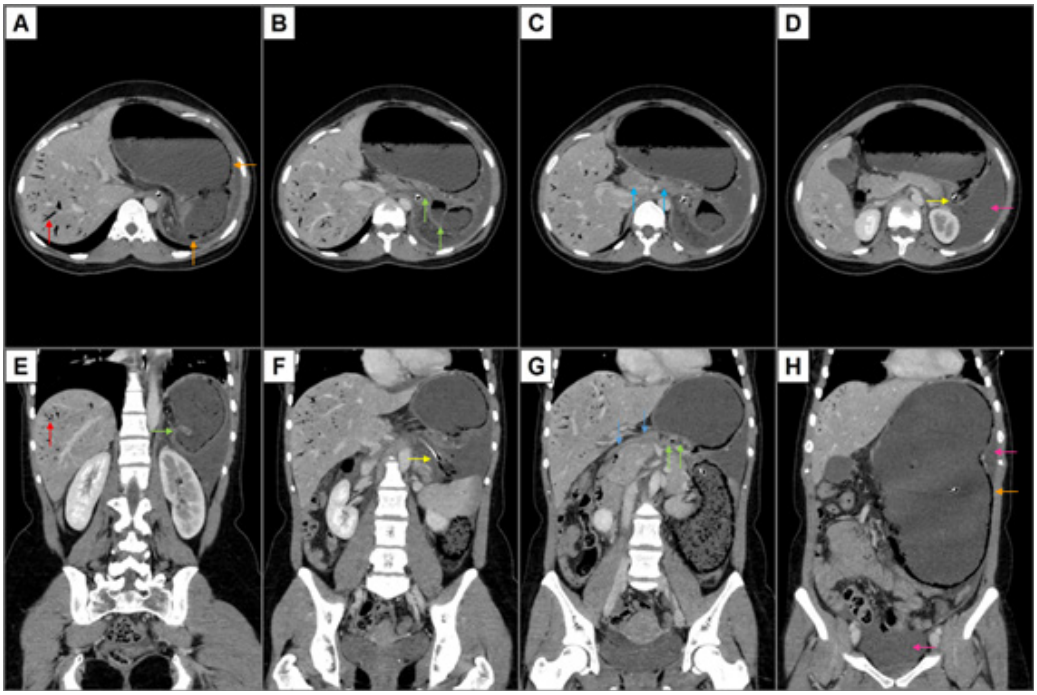

Figure 1 – Abdominal and pelvic CT - Axial – from superior to inferior (A–D) – and coronal sections – from posterior to anterior (E–H) – of abdominal and pelvic CT showing significant distension and anomalous position of the stomach with spatial inversion of the positions of the esophagogastric junction (yellow arrows – Figures 1D and 1F) and the antrum/pylorus (green arrows – Figures 1B, 1E and 1G), associated with collapse of the downstream digestive tract segments (blue arrows – Figures 1C and 1G); it also demonstrates gastric parietal pneumatosis (orange arrows – Figures 1A and 1H), portal venous gas (red arrows – Figures 1A and 1E) and free intra-abdominal fluid (pink arrows – Figures 1D and 1H). The combination of these findings suggested the diagnosis of mesenteroaxial gastric volvulus complicated by gastric ischemia.

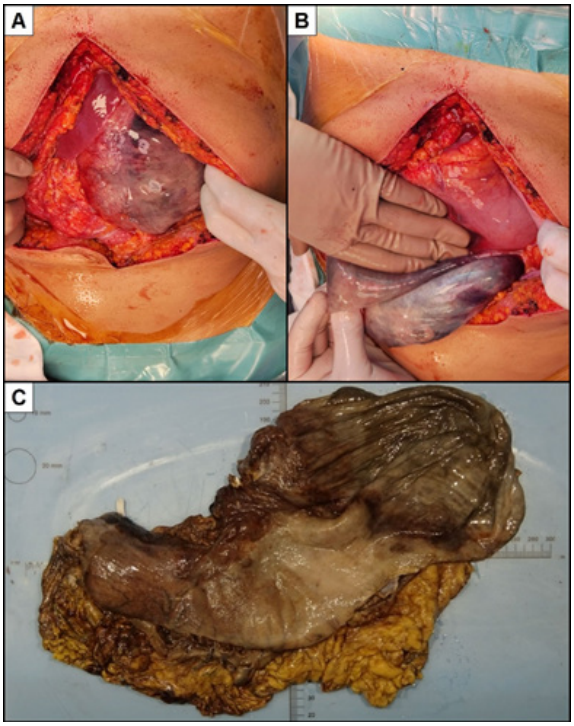

Figure 2 – Total gastrectomy - Surgery and surgical specimen - Photographs of the surgery before (A) and after (B) reduction of the mesenteric-axial gastric volvulus showing macroscopic aspects suggesting non-reversible gastric ischemia, later corroborated by anatomopathological evaluation of the surgical specimen (Macroscopy of the surgical specimen - C).

can manifest clinically with nonspecific symptoms/signs (epigastric abdominal pain, nausea and vomiting), its diagnostic process can be challenging, depending significantly on the imaging techniques.[1] CT has supplemental diagnostic value comparing to simple abdominal radiography and gastrointestinal fluoroscopy in this context, not only because it allows the multiplanar demonstration of the characteristic anatomical changes, but also because it allows better assessment of surrounding structures/better preoperative planning and the detection of potential complications. The classic CT findings of mesenteroaxial gastric volvulus include distension and anomalous position of the stomach with patial inversion of the positions of the esophagogastric junction and the antrum/pylorus (the most relevant finding to establish the diagnosis).[2]

Acute gastric volvulus is a surgical emergency, as the delay in establishing the diagnosis and applying the appropriate treatment can result in serious complications such as gastric ischemia/necrosis, with potential perforation and consequent peritonitis.[1]

The treatment of patients with gastric volvulus depends on several factors, such as the time of presentation and the type and severity of complications. In cases of acute gastric volvulus with suspected established gastric ischemia (as in the case we present), treatment should include immediate surgical exploration with gastrectomy.[2]

Conclusion

Radiologists should be familiar with the CT findings of mesenteroaxial gastric volvulus and recognize that, although rarely, this entity can occur in adulthood. This knowledge will make it possible to avoid delays in approaching these cases and possible serious associated complications (such as gastric ischemia), providing a better prognosis to patients with mesenteroaxial gastric volvulus.

Ethical Disclosures / Divulgações Éticas

Conflicts of interest: The authors have no conflicts of interest to declare.

Conflitos de interesse: Os autores declaram não possuir conflitos de interesse.

Financing Support: This work has not received any contribution, grant or scholarship.

Suporte financeiro: O presente trabalho não foi suportado por nenhum subsídio ou bolsa.

Confidentiality of data: The authors declare that they have followed the protocols of their work center on the publication of data from patients.

Confidencialidade dos dados: Os autores declaram ter seguido os protocolos do seu centro de trabalho acerca da publicação dos dados de doentes.

Protection of human and animal subjects: The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Protecção de pessoas e animais: Os autores declaram que os procedimentos seguidos estavam de acordo com os regulamentos estabelecidos pelos responsáveis da Comissão de Investigação Clínica e Ética e de acordo com a Declaração de Helsínquia da Associação Médica Mundial.

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