

Case Report

Case Report of Gastric Volvulus (Twisted Stomach) with Borchardt's Triad

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ARTICLE INFO

Accepted 23 November 2021

Keywords:

Borchardt's triad,
gastric volvulus,
hiatal hernia

SUMMARY

Gastric volvulus is a rare disease that can be fatal if misdiagnosed or if treatment is delayed. We present the case of a 94-year-old woman who visited our emergency department with classic symptoms of Borchardt's triad (severe epigastric pain, intractable retching, and inability to pass a nasogastric tube). Chest plain radiography revealed an air-fluid level appearance superposed with the cardiac contour. Contrast-enhanced abdominal computed tomography revealed mesenteroaxial gastric volvulus with hiatal hernia of the stomach. The patient underwent surgery and recovered well. Herein, we present the case findings and perform a literature review on gastric volvulus.

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1. Introduction

Gastric volvulus is life-threatening if misdiagnosed or if treatment is delayed. The mortality rate can be as high as 50% among individuals with untreated acute volvulus.¹ Further, the diagnosis of gastric volvulus is clinically challenging because of its nonspecific symptoms. Nevertheless, patients presenting with Borchardt's triad (severe epigastric pain, intractable retching, and inability to pass a nasogastric tube) should be highly suspected as having acute gastric volvulus.² Gastric volvulus can be classified into three types: organoaxial, mesenteroaxial, and combined.³ In this report, we present a case of mesenteroaxial gastric volvulus with Borchardt's triad.

2. Case report

A 94-year-old woman with a medical history of hypertension and coronary artery disease presented to our emergency department with progressive epigastric cramping and retching for 2 days. Additionally, she had neither stool passage nor flatus for 3 days. However, she had no history of abdominal surgery or recent trauma.

Upon arrival, her vital signs were as follows: heart rate, 67 beats/min; body temperature, 36.4 °C; and blood pressure, 147/63 mmHg. A physical examination revealed a distended abdomen and tenderness over the epigastric abdomen with peritoneal signs. We attempted to place a nasogastric tube to relieve abdominal distention but failed. Laboratory examinations showed no obvious abnormalities. Chest plain radiography revealed an air-fluid level appearance superposed with the cardiac contour (Figure 1). We also performed contrast-enhanced abdominal computed tomography (CT) because hiatal hernia with gastric outlet obstruction was highly suspected.

Contrast-enhanced abdominal CT revealed an upside-down

stomach with gastric distention. It also revealed hiatal hernia of the stomach extending to the middle mediastinum (Figure 2). The CT characteristics suggested the presence of mesenteroaxial gastric volvulus combined with hiatal hernia. Owing to the risk of gastric ischemia and perforation, the patient underwent surgical repair of the hiatal hernia and reduction of the gastric volvulus. Thereafter, the patient recovered well without major complications and was discharged after two weeks uneventfully with oral feeding and followed up at the outpatient department.

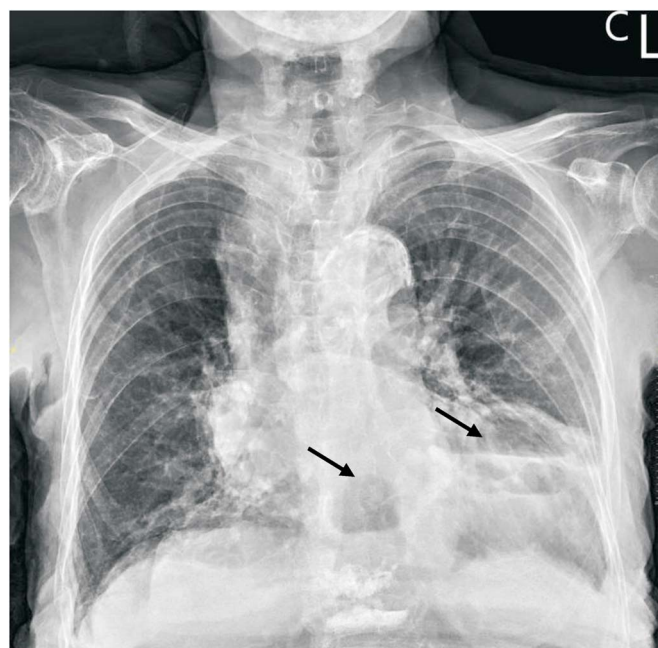


Figure 1. Posterior-anterior view of chest plain radiography. Arrows show multiple radiolucencies and an air-fluid level appearance superposed with the cardiac contour.

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3. Discussion

Gastric volvulus was first described during autopsy by Berti in

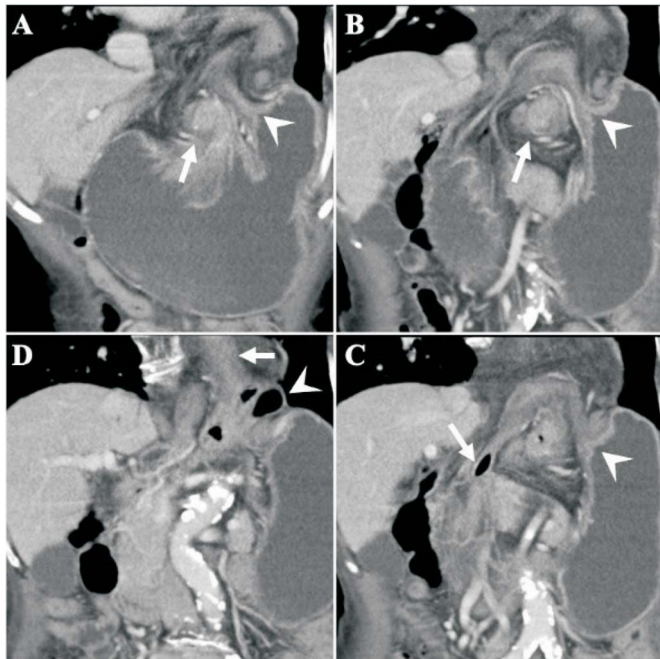


Figure 2. Contrast-enhanced computed tomography (CT) images of the patient. (A to D) Anterior-posterior contrast-enhanced CT images in the coronal view: (A, B) the stomach appears upside-down with the pylorus (arrowhead) located in the left upper abdomen and is superior-anterior to the gastroesophageal junction (arrow); (C) the pylorus (arrowhead) connects to the duodenum (arrow) and across the gastroesophageal junction anteriorly; (D) the upper part of the stomach bulges through the diaphragm indicating hiatal hernia (arrowhead) and the esophagus (arrow).

1866.⁴ It is defined as the rotation of the stomach about one of its axes by more than 180°.⁵ Based on its etiology, gastric volvulus can be classified as either primary or secondary. Primary gastric volvulus (incidence, 25–30%) is associated with ligament laxity and the absence of diaphragmatic defects. Secondary gastric volvulus (incidence, 70–75%) is related to structural abnormalities, such as hernia and abdominal wall defects.⁶ However, the exact incidence and prevalence of gastric volvulus remain unknown because it is rarely diagnosed.⁴

Gastric volvulus can also be classified into three types depending on the axis of stomach rotation (Figure 3).³ Organoaxial volvulus (incidence, 59%) is characterized by the stomach rotating along the longitudinal axis anteriorly (gastroesophageal junction to pylorus);⁶ the phenomenon is visually analogous to “wringing out a wet rag” (Figure 3D).⁷ Mesenteroaxial volvulus (incidence, 29%) is characterized by the stomach rotating along the short axis (perpendicular to the cardiopyloric line), and it usually presents as chronic volvulus (Figure 3E).⁶ The combined type of gastric volvulus is the least common (incidence, 12%), and it is usually found in patients with chronic volvulus and rarely presents with acute symptoms.⁸

The classical clinical presentation of acute gastric volvulus, known as Borchartt’s triad, is observed in 70% of patients and is characterized by severe epigastric pain, retching without vomiting, and an inability to pass a nasogastric tube.⁶ Acute gastric volvulus may induce vascular compromise and lead to severe complications, including bowel obstruction, gastric ischemia, and gastric perforation.⁷ The mortality rate can be as high as 50% if the diagnosis or treatment is delayed.¹ The symptoms in chronic cases include dysphagia, dyspnea, and chest pain. The disease is commonly confused with peptic ulcer disease, gastroesophageal reflux disease, and cholecystitis, and it even mimics acute coronary syndrome.²

However, the early diagnosis of gastric volvulus is challenging.

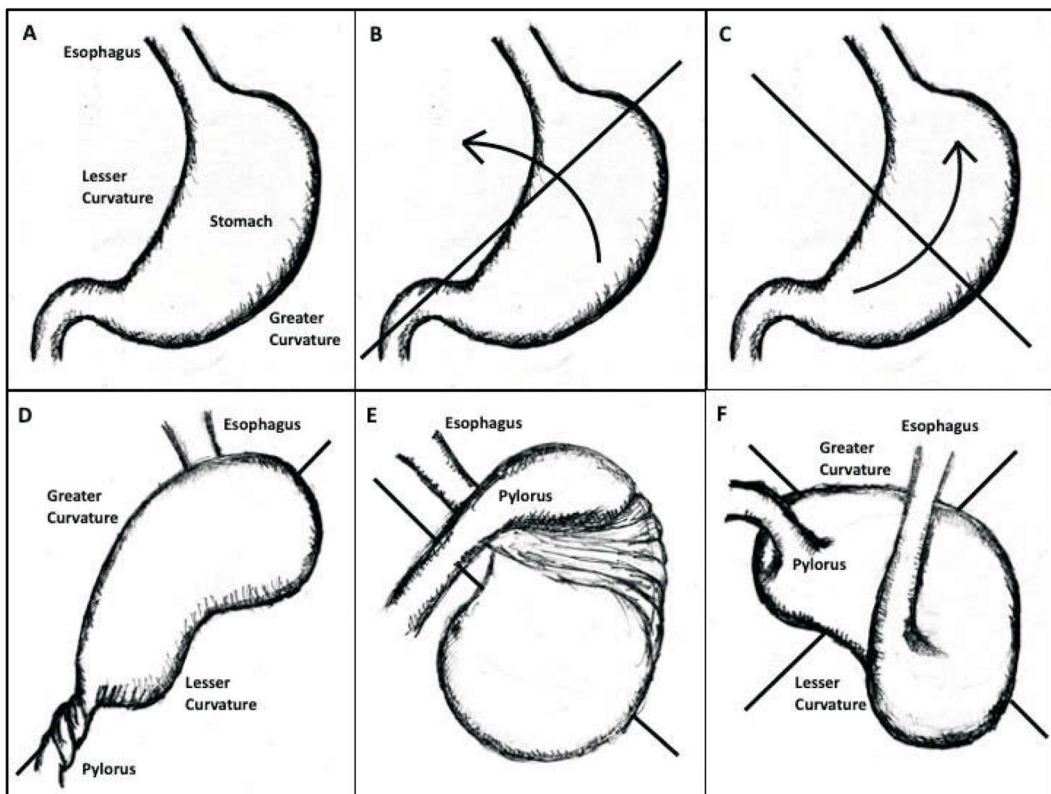


Figure 3. Illustrations of the three types of gastric volvulus. (A) Normal stomach; (B) longitudinal axis of the stomach (gastroesophageal junction to pylorus); (C) short axis of the stomach (perpendicular to the cardiopyloric line); (D) organoaxial gastric volvulus; (E) mesenteroaxial gastric volvulus; (F) combined gastric volvulus.

Plain radiography may reveal retrocardiac air-fluid level and an upside-down stomach.¹ Further imaging studies, such as CT, upper gastrointestinal endoscopy, and barium contrast study, are usually performed to confirm the diagnosis and anatomic abnormality. The gold standard for diagnosis is barium contrast study.⁹

As for disease management, acute gastric volvulus becomes a surgical emergency if symptoms of gastric ischemia or perforation are present.⁷ Surgical treatments for gastric volvulus include gastric reduction with fixation and repair of the structural abnormality to reduce the risk of recurrence.⁸ Chronic volvulus with stable clinical symptoms in older patients can be managed conservatively with the application of upper gastrointestinal endoscopic treatment to decompress and reduce the volvulus. However, the rate of recurrence is quite high (64%).¹⁰

Gastric volvulus is rarely encountered in the emergency department and is often unrecognized. The mortality rate of gastric volvulus is also high in cases of misdiagnosis or delayed treatment. Therefore, the presence of symptoms of Borchardt's triad should alert emergency physicians to the potential risk of gastric volvulus, especially in patients presenting with hiatal hernia.

Acknowledgements

Not applicable.

Funding and support

The authors declare that they have no competing financial interests.

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