Case Report

Gastric Volvulus - Yet another Cause of Pre-Operative Chest Pain

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Abstract

A 55-year-old female was admitted with complaints of intermittent abdominal pain and additional right upper quadrant and shoulder pain. After several hours of inconclusive test results, she was scheduled for abdominal exploration, but upon transfer to the OR pre-operative area she developed tachycardia and chest pain. EKG and troponin studies led to an extensive delay for “cardiology clearance” for surgery. The surgeon decided to proceed with a laparoscopic exploration which revealed organoaxial volvulus of the stomach. The specimen image shows the large curvature of the stomach ischemic and dusky caused by stomach strangulation necrosis (Figure 2). She underwent re-exploration of a dehiscing abdominal wound 2 days later, but visceral anastomotic continuity was intact. She was discharged from the hospital a few days later in good condition.

ABBREVIATIONS

EKG: Electrocardiogram; CT: Computed Tomography

INTRODUCTION

Gastric Volvulus is an uncommon and potentially life-threatening condition defined as a twisting of the stomach resulting in variable degrees of obstruction. Because of its rarity and diverse presentation of symptoms, the diagnosis of gastric volvulus can easily be overlooked in clinical practice. Gastric volvulus is most prevalent in the 5th decade of life, but may also present as a pediatric or geriatric medical condition [1-3].

CASE PRESENTATION

This patient is a 55-year-old female who presented to our hospital, as a transfer from an outpatient surgery center, with long-standing epigastric pain that had become acutely severe 12 hours prior to arrival. The pain was accompanied by nausea, vomiting, and occasional episodes of hematemesis. She had a notable history of gastroesophageal reflux disease and anxiety. Review of computed tomography (CT) imaging studies noted a paraesophageal hernia. However, there were no obvious signs of bowel ischemia on imaging studies and, furthermore, the abdominal physical examination was benign. In light of these findings, the patient was subsequently transferred to the pre-operative staging area to undergo laparoscopic paraesophageal hernia repair. A pre-operative CT is shown in (Figure 1). An initial attempt to place a nasogastric tube was halted due to the patient’s anxiety. However, a subsequent, yet delayed attempt was successful. Just prior to surgery, the patient described having chest pain that radiated to her shoulders, left neck and jaw. These symptoms delayed surgery while a series of EKG and Troponin I studies were evaluated by the cardiology service. The patient was cleared for surgery by cardiology. Anesthesia with rapid sequence induction and intubation was uneventful and an abdominal laparoscopic exploration was performed and revealed a stomach that was firmly incarcerated and twisted within the diaphragmatic hiatus. The patient was diagnosed with an organoaxial gastric volvulus. The proximal 75% of the greater curvature of the stomach was ischemic and dusky due to strangulation necrosis (Figure 2). A total open gastrectomy with esophagojejunostomy was performed in addition to repair of the diaphragmatic hernia. Several days after the surgery, she underwent re-exploration of a dehiscing abdominal wound. All viscera continuity was intact and the patient was discharged from the hospital in stable condition several days later.

DISCUSSION

Gastric volvulus can be classified as primary or secondary depending on the etiology. Primary gastric volvulus implies that it occurred as a consequence of abnormalities in the ligaments that suspend the stomach: the gastrocolic, gastrohepatic, gastrophrenic, and gastrosplenic [4,5]. Increased laxity, agenesis, elongation, or disruption of these ligaments may be idiopathic or the result of neoplasia, skeletal abnormalities (lyphoscoliosis), collagenopathies, and Marfan’s syndrome [2,6-8]. However, in the majority of patients (70%), gastric volvulus presents secondary to another intra-abdominal condition. The most common predisposing factors for secondary gastric volvulus are paraesophageal hiatal hernias, diaphragmatic hernias, and post-operative or inflammatory adhesions [9].

In addition to the primary and secondary classification, gastric volvulus is further distinguished by the axis upon which the gastric torsion occurs. A twisting on the stomach along the longitudinal (or cardiopyloric) axis is considered organoaxial rotation. Conversely, torsion around the transverse axis is considered mesenteroaxial rotation. Organoaxial torsion occurs in approximately 60% of gastric volvulus cases [10]. Clinically, gastric volvulus may present as acute or chronic. The symptoms are highly variable, but most patients initially present with epigastric and/or chest pain. Because it is an uncommon condition, it may be overlooked when a patient presents with chest pain. When the gastric torsion is >180°, gastric obstruction usually occurs. Consequently, the patient will present with retching, and it will be difficult for physicians to place a nasogastric tube. This classical presentation of (1) epigastric pain, (2) retching, and (3) inability to place a nasogastric tube is known as Borchardt’s triad, and is seen in 70% of gastric volvulus cases [11]. With lesser degrees of gastric torsion, symptoms are more mild and chronic, and Borchardt’s triad may not be evident. This twisting of the stomach can lead to gastric ischemia, strangulation necrosis, perforations and abdominal sepsis resulting in this condition being life-threatening. It has been estimated that the mortality rate of gastric volvulus is as high as 50% [12].

This case is interesting for several reasons. The patient’s anxiety resulted in a delayed placement of the nasogastric tube. If gastric volvulus is not initially suspected, the inability to place a nasogastric tube may give enough cause to be suspicious of the condition. Still, a subsequent attempt to place the nasogastric tube was successful, thus our patient failed to meet this classical feature of Borchardt’s triad. Furthermore, given the high mortality rate in patients with gastric volvulus, it brings up the question of when is the appropriate time to for physicians to halt cardiac evaluations in favor of laparoscopic exploration. These decisions may be even more difficult with abnormal EKG readings, which may happen if a herniated stomach is impeding one of the EKG leads. Ultimately, a physician’s intuition may most significantly impact patient outcomes. Therefore, it is prudent to be mindful of this differential diagnosis when a patient presents with chest pain, whether as a chief complaint or in the preoperative setting.

REFERENCES


