Case Report

Gastric Volvulus Due to Splenomegaly - A rare Entity.

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Abstract:
Gastric volvulus is a rare condition which typically presents with intermittent episodes of abdominal pain. The volvulus occurs around an axis made by two fixed points, organo-axial or mesentero-axial. Increased pressure within the hernial sac associated with gastric distension can lead to ischemia and perforation. Acute obstruction of a gastric volvulus is thus a surgical emergency. We present an unusual case of gastric volvulus secondary to tropical splenomegaly. Tropical splenomegaly precipitating gastric volvulus is not documented till date.

Key Words: Gastric volvulus, Tropical splenomegaly.

Introduction:
Gastric volvulus is abnormal rotation of the stomach of more than 180 degrees. It can cause closed loop obstruction and at times can result in incarceration and strangulation. Berti first described gastric volvulus in 1866; to date, it remains a rare clinical entity. Berg performed the first successful operation on a patient with gastric volvulus in 1896. Borchardt (1904) described the classic triad of severe epigastric pain, retching without vomiting and inability to pass a nasogastric tube. We are presenting a case of gastric volvulus secondary to huge tropical splenomegaly (which acted as a pendulous) with laxity of ligaments which underwent surgical repair. To the best of our knowledge, this report is the first article about a gastric volvulus secondary to tropical splenomegaly.

Case Report:
A 28 years old lady presented to the Department of Surgery with complaints of intermittent pain in abdomen, vomiting with distension for last seven years. She was treated by antacids multiple times (details of specific drugs could not be gathered) but the symptoms recurred intermittently. There was no history of fever in the past.

Since last fifteen days she had pain in the upper abdomen aggravated with nausea and intermittent vomiting of gastric contents. She reported to general practitioner but as symptoms persisted she was referred to our tertiary care centre for expert opinion and management.

On examination, vital parameters and hydration was adequate with marked tenderness in epigastric region with vague lump. Her routine investigations were inconclusive but she did partially responded to antispasmodic and antacid drugs. Ultrasound of abdomen and Barium studies revealed gastric volvulus (Fig.1 & 2) with splenomegaly for which she was taken up for abdominal exploration. Abdominal exploration confirmed organoaxial gastric volvulus due to huge spleen. Laxity of supporting ligaments was evident; volvulus was precipitated by splenomegaly (acting as pendulous) on which rotation occurred. No gangrenous changes were noted. Splenectomy with gastropexy was done. Post operative course was uneventful. Histopathological report revealed tropical splenomegaly. She is under our follow-up and is asymptomatic.

Anatomy and Aetiology:
The stomach is maintained in its normal position by four ligaments. The lesser curvature and...
liver are joined by the gastrohepatic ligament, the greater curvature is attached to spleen and transverse colon by the gastroplenic and gastrocolic ligaments, and the cardia is held fixed by the phrenicoesophageal ligament. Some form of ligament abnormality (extreme laxity, absence or disruption) is essential to allow rotation; the direction of rotation is determined by which ligaments are lax and which points remain relatively fixed.

Gastric volvulus (Latin *volvere*, to roll) is rotation of full or part of the stomach by more than 180°, which may lead to a closed-loop obstruction and possible strangulation. We report a case of gastric volvulus secondary to splenomegaly, diagnosed on imaging and managed surgically.

Gastric volvulus can be classified on the basis of its location in reference to the diaphragm and on the basis of the axis of rotation. Subdiaphragmatic, or primary volvulus accounts for approximately one third of cases and it is not associated with diaphragmatic defects. Supradiaphragmatic or secondary volvulus accounts for approximately two thirds of cases and it is associated with diaphragmatic defects.

Gastric volvulus is also classified on the basis of its axis of rotation. In the more common, organoaxial volvulus, the stomach rotates on its longitudinal axis. This axis is defined as the line connecting the cardia and pylorus. The greater curvature moves from an inferior to a superior position. When compared with other types of gastric volvulus, organoaxial volvulus is more commonly associated with strangulation. In our case though it was organoaxial volvulus timely intervention probably prevented strangulation.

In mesenteroaxial volvulus, the stomach rotates about a vertical axis passing through the middle of the greater and lesser curvatures. The pylorus moves anteriorly and superiorly, whereas the greater curvature remains inferior. Mesenteroaxial volvulus is more often seen in young children and is associated with ligamentous laxity but not with diaphragmatic defects (Stavros et al, 2006).

The signs and symptoms of gastric volvulus depend on the type of volvulus (primary or secondary) and chronicity, as well as the degree of obstruction. Chronic volvulus may be detected incidentally on plain chest radiographs or on upper gastrointestinal studies. Symptoms and signs are not specific and may include vague intermittent abdominal pain upper abdominal fullness etc. Our patient seems to be of chronic type with acute superimposition.

Acute cases represent a surgical emergency. Triad of typical symptoms and signs is described by Borchardt (1904):

- Severe upper abdominal pain and distention
- Violent retching with an inability to vomit
- Inability to pass a nasogastric tube into the stomach

Barium study is highly sensitive and specific. However, the diagnosis may be missed in cases of intermittent torsion.

In mesenteroaxial volvulus, the distended stomach appears spherical on supine images. Two air-filled or fluid levels are visible on the upright film i.e.
in the fundus and in the antrum. In addition, the upright image often demonstrates a beak where the gastroesophageal junction is seen on normal images. If barium moves through the gastroesophageal junction, the upside-down configuration of the stomach and the degree of obstruction can be documented. Organoaxial volvulus is difficult to diagnose on plain images. The stomach lies horizontally and contains a single air-fluid level on upright views. No characteristic beak is observed. Decreased air is noted within the remaining Gastro - intestinal tract. Barium study shows that the esophagogastric junction is lower than normal. Marked gastric dilatation and the slow passage of contrast material through the site of twisting are noted.

Reduction of acute gastric volvulus is first attempted with nasogastric decompression. However, this is often unsuccessful, particularly in cases of organoa axial volvulus with obstruction. Surgical goals include reduction, prevention of recurrence, and the correction of predisposing factors. Specifically, treatment involves anterior gastropexy or gastrostomy in order to fix the stomach in its anatomically correct position. In our case gastropexy was done to prevent recurrence after derotation and predisposing enlarged spleen removed.

Several reports were published over the last century describing patients from tropical areas with massive splenomegaly. After excluding known causes of splenomegaly, tropical splenomegaly syndrome was defined as a separate entity. This condition was later redefined as hyperreactive malarial syndrome (HMS; Vikramjit, 2007). This is prevalent in native residents of regions where malaria is endemic and in visitors to those regions. Patients with HMS have high levels of antibody for Plasmodium falciparum, Plasmodium vivax, or Plasmodium malariae. Deposition of large immune complexes in Kupffer cells in the liver and spleen, leads to reticuloendothelial cell hyperplasia, and hepatosplenomegaly.

The hallmark of HMS is splenomegaly, which is usually moderate to massive. The spleen is firm and regular, with notches that may be well palpable. The enlarged spleen may be seen to protrude against the abdominal wall. Patients are usually afebrile at presentation. This seems to be the presentation in our case.

Wandering spleen is a rare condition characterized by the absence or underdevelopment of one or all of the ligaments that hold the spleen in its normal position in the left upper quadrant of the abdomen. (Ugolini et al, 2000). Wandering spleen and gastric volvulus share a common cause, the absence of an intraperitoneal visceral ligament. As there were lax ligaments, this possibility cannot be entertained in our case.

Massive tropical splenomegaly presenting with gastric volvulus is not documented till date. In our case we had splenomegaly (tropical splenomegaly) which acted as pendulous for rotation of stomach, laxity of attachments predisposed to rotation; timely surgical intervention prevented complication in this case.

Conclusion:

Gastric volvulus is a rare disease. Clinical and radiological assessment can make the diagnosis with reliability in most cases but it is the rare presentation which requires a high index of suspicion from the treating clinician to avert delay or error in diagnosing the disease. Massive tropical splenomegaly precipitating as gastric volvulus is not documented yet. We report this rare case which was managed successfully with surgical intervention for gastric volvulus.

Bibliography: