Case 4689

CT diagnosis of Acute gastric volvulus
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Patient: 26 years, male

Clinical History:

26 year old male patient presented with severe abdominal pain and nausea. On physical examination there was abdominal distension. No localised tenderness. Pulse rate and Blood pressure were within normal limits.

Imaging Findings:

On presentation with severe abdominal pain and nausea with minimal contributory signs on physical examination, an abdominal X-ray in erect position was taken. X-ray revealed suspicion of gastric dilatation. The patient was then referred for an emergency abdominal ultrasound examination. The ultrasound evaluation was severely limited due to profound bowel gas. Hence a plain CT abdomen was performed. The CT revealed grossly distended stomach with a large air fluid level. The relation between the gastroesophageal junction and the gastric fundus had reversed. The antral fold was lying at a higher level than the G-E junction. The gastric fundus was lying low in the left lumbar region. Based on these findings the diagnosis of gastric volvulus of the mesenterico-axial variety was given. After this diagnosis the surgeons decompressed the stomach using a nasogastric tube. However there was no significant improvement in patients symptomatology. A confirmation of the diagnosis was sought using a upper GI contrast study, which confirmed the diagnosis. The patient underwent a laparotomy, the stomach was detorsed and anterior gastropexy performed. The diagnosis of primary mesenterico-axial gastric volvulus was confirmed. There were no other abnormalities. Patient is now asymptomatic for about a year now.

Discussion:

Gastric volvulus is defined as an abnormal rotation of the stomach of more than 180 degrees, creating closed loop obstruction. Acute gastric volvulus is an uncommon, which usually presents with Borchardt triad of epigastric pain, retching, and inability to pass a nasogastric tube. Gastric volvulus can be classified based on the axis of rotation (organo-axial, mesentero-axial or combined), severity (acute or chronic), extent (total or partial), direction (anterior or posterior) or aetiology (secondary or idiopathic). It is also classified as subdiaphragmatic and supradiaphragmatic. Subdiaphragmatic/primary volvulus accounts for approximately 1/3rd of cases, and it is not associated with diaphragmatic defects. Supradiaphragmatic/secondary volvulus accounts for approximately two thirds of cases, and it is associated with diaphragmatic defects like paraesophageal hiatal hernias, eventration, trauma, paralysis from phrenic nerve injury, gastric ulcer/neoplasm, extrinsic pressure from enlarged adjacent organs/masses, and abdominal adhesions. Plain X-rays are the first imaging modality in a suspected case. Traditionally acute gastric volvulus was diagnosed on chest X-ray showing retrocardiac air bubble or large air-fluid
level in the chest. Although false-negative diagnosis may result if twisted stomach is fluid-filled. A distended air-filled stomach may be secondary to other causes of gastric obstruction, leading to false-positive diagnosis. Plain radiographic findings suggestive of gastric volvulus should be confirmed with a barium study which is highly sensitive and specific and is the criterion standard for diagnosis. However, as stated above, the diagnosis may be missed in cases of intermittent torsion. The upper gastrointestinal series may show only a paraesophageal hernia or eventration of the diaphragm during a symptom-free interval. There are ultrasound features described for diagnosis of gastric volvulus for e.g the peanut sign in a case of chronic gastric volvulus. It consists of a constricted segment of stomach with 2 dilated segments located above and below the constricted part. The CT appearance of gastric volvulus is variable. The extent of diaphragmatic herniation, points of torsion, and final position of stomach determine the appearance. Acute gastric volvulus is rare but needs to be diagnosed quickly to avoid life-threatening complications like ischaemic necrosis, haemorrhage and gangrene. While CT is not necessary to diagnose gastric volvulus, we suggest that a CT finding of the stomach in an unusually high position or an abnormal axis of the stomach with the antrum and gastro-oesophageal junction at the same transverse level in a patient with acute abdominal pain and vomiting should point to suspicion of gastric volvulus. The multiaxial reconstructions afforded by helical CT may be preferred to the images obtained with barium study, particularly in the acutely ill patient who is unable to tolerate a fluoroscopic examination. In addition, chronic gastric volvulus is often discovered incidentally in patients undergoing CT for unrelated conditions. The wandering spleen is frequently associated with gastric volvulus and is easily identified on CT. A whirl sign is rarely seen on CT. Gastric volvulus may be difficult to distinguish from paraesophageal hiatal hernia without torsion on CT, and both false-positive and false-negative diagnoses can result. In such cases upper GI barium study may be performed for confirmation.

**Differential Diagnosis List:** Primary acute mesenterico-axial gastric volvulus.

**Final Diagnosis:** Primary acute mesenterico-axial gastric volvulus.

**References:**

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Description: Grossly distended stomach, fundus inverted position

Origin:
Description: Antral fold at incisura angularis is above the level of the fundus Origin:
**Figure 3 a**

**Description:** the fundus lies below the level of Gastro-esophageal junction (arrow) **Origin:**
Description: Large air-fluid level in the stomach, arrows pointing to GE junction (left) and antral fold (right). Both at same level Origin:
Description: GE junction represented by the nasogastric tube & the twisted antral region lie at the same level

Origin:
Description: In retrospect shows the outline of the gastric fundus & high position of gastric antrum
Origin: