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Gastric Volvulus in An 11-Year-Old Girl; Case Report

Reem Mohammed Alayoubi[1], Abdullah Mohammed Alahmadi[2], Hussam Salem Aljohani[3], Talal Almogethwey[4], Logain Almogthwey[5], Ahmed Mohammed Albashir[6], Raif Mohamed Nassir[7], Dr. Fatma Dawood Abdulhameed[8], Dr. Hasan Alahmadi[9], Abdulaziz Saud Alharbi[10]

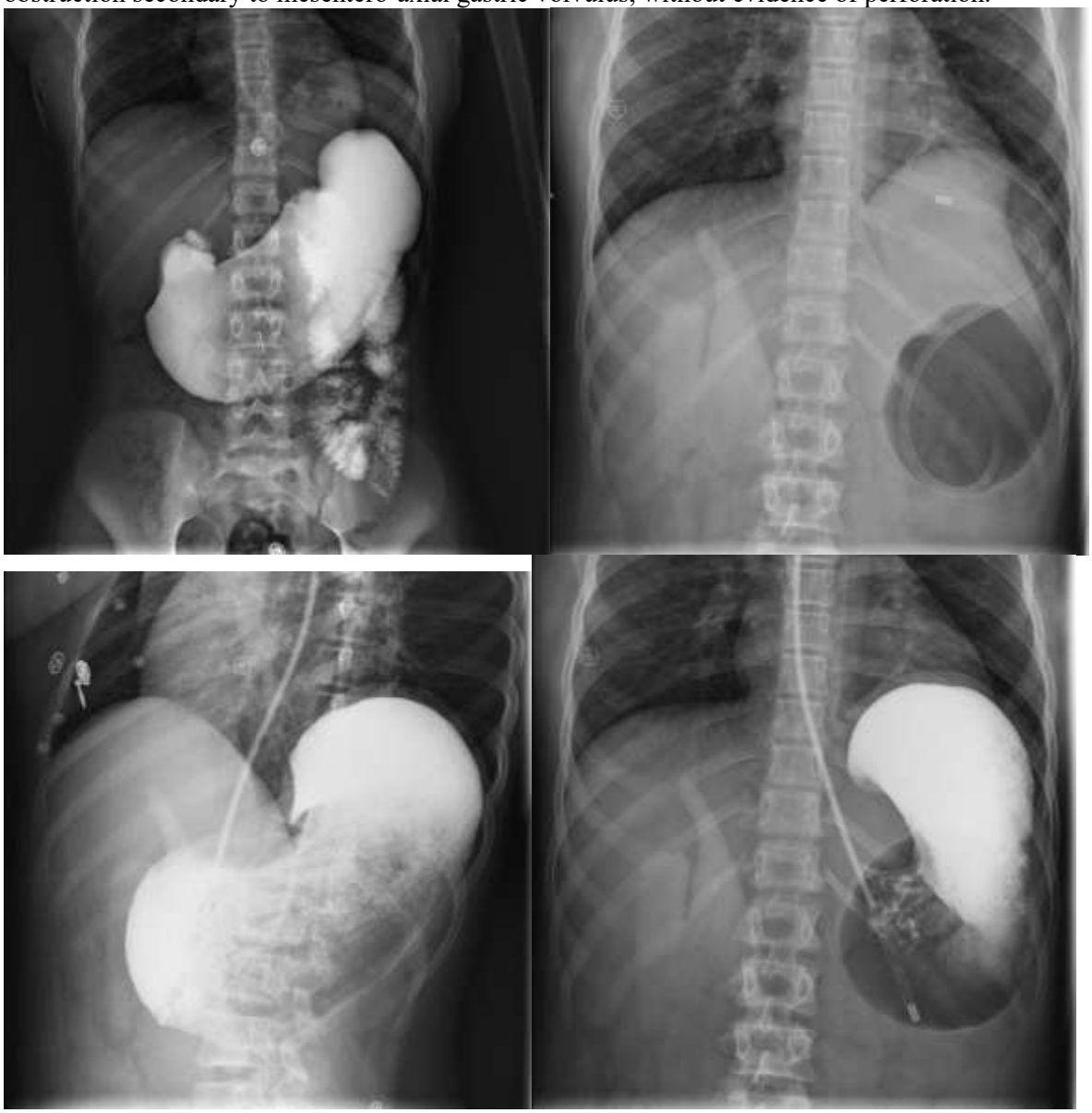
[1]ID Consultant, Ohud Hospital.
[2]Pediatric Specialist, Ohud Hospital.
[3]Pediatric Specialist, Ohud Hospital.
[4]Consultant Radiologist, Ohud Hospital.
[5]Medical Intern, Taibah University.
[6]Kashhah, Pediatric Surgery Senior, Maternity and Children's Hospital, King Salman Medical City, Madinah.
[7]Pediatric Surgery Senior Registrar, King Salman Medical City.
[8]Consultant Pediatric Surgeon, Pediatric Surgery Department, King Salman Medical City.
[9]Consultant Radiologist, Ohud Hospital.
[10]Pediatric Consultant, Ohud Hospital.

Abstract:
Acute gastric volvulus is an uncommon but potentially life-threatening condition in children in which the stomach undergoes abnormal twisting, carrying risks of ischemia, perforation, or splenic involvement if not promptly recognized and treated [1]. Most reported cases occur either in adults or in children with predisposing conditions. We report an 11-year-old girl with primary acute mesentero-axial gastric volvulus. She presented with abdominal pain and non-bilious, non-projectile, blood-tinged vomiting. The diagnosis was confirmed by upper gastrointestinal contrast fluoroscopy, which demonstrated gastric outlet obstruction secondary to mesentero-axial volvulus. The patient underwent exploratory laparotomy and anterior gastropexy. Prompt diagnosis and surgical intervention are essential for a favorable outcome in this rare pediatric emergency.

Case description:
An 11-year-old girl presented to the emergency department with a two-day history of recurrent vomiting. The emesis was non-bilious and non-projectile, consisting of food contents, and was blood-tinged on two occasions. She also had intermittent moderate epigastric pain associated with nausea and decreased oral intake. There was no history of fever, diarrhea, or constipation. The parents denied recent consumption of food from outside the home, and no similar symptoms were reported among family members. The patient had no respiratory or urinary symptoms.
Her parents reported a similar but milder episode a few weeks earlier that resolved spontaneously without medical attention. She had no previous abdominal surgery and was otherwise healthy.
On examination, the patient was mildly dehydrated and tachycardic but otherwise hemodynamically stable on room air. The abdomen was soft without guarding or rigidity. Mild epigastric tenderness was present, with no organomegaly. The remainder of the systemic examination was unremarkable.
Laboratory investigations showed a normal complete blood count and coagulation profile, with mild hypokalemia. She was admitted with a provisional diagnosis of gastritis and managed with gastrointestinal rest, intravenous fluids, and potassium correction.
Despite initial management, she continued to experience nausea and vomiting and developed severe epigastric pain that prevented her from sitting upright; she remained leaning forward in bed. Serum amylase and lipase, urinalysis, and urine culture were obtained to exclude pancreatitis and urinary tract infection. Abdominal ultrasound was limited by excessive bowel gas; the liver, pancreas, urinary bladder, and ovaries appeared normal, the appendix was not visualized, and free fluid was noted in the right lower quadrant. The radiologist recommended computed tomography (CT).

Contrast-enhanced CT of the abdomen and pelvis revealed a markedly distended stomach with an air-fluid level. The gastroesophageal junction was positioned inferior to the gastric antrum. Gastric wall enhancement was preserved, with no wall thickening. Moderate free fluid was present in the pelvis, without pneumoperitoneum. The spleen was displaced medially by the distended stomach but appeared otherwise normal. The small and large bowel loops were unremarkable.

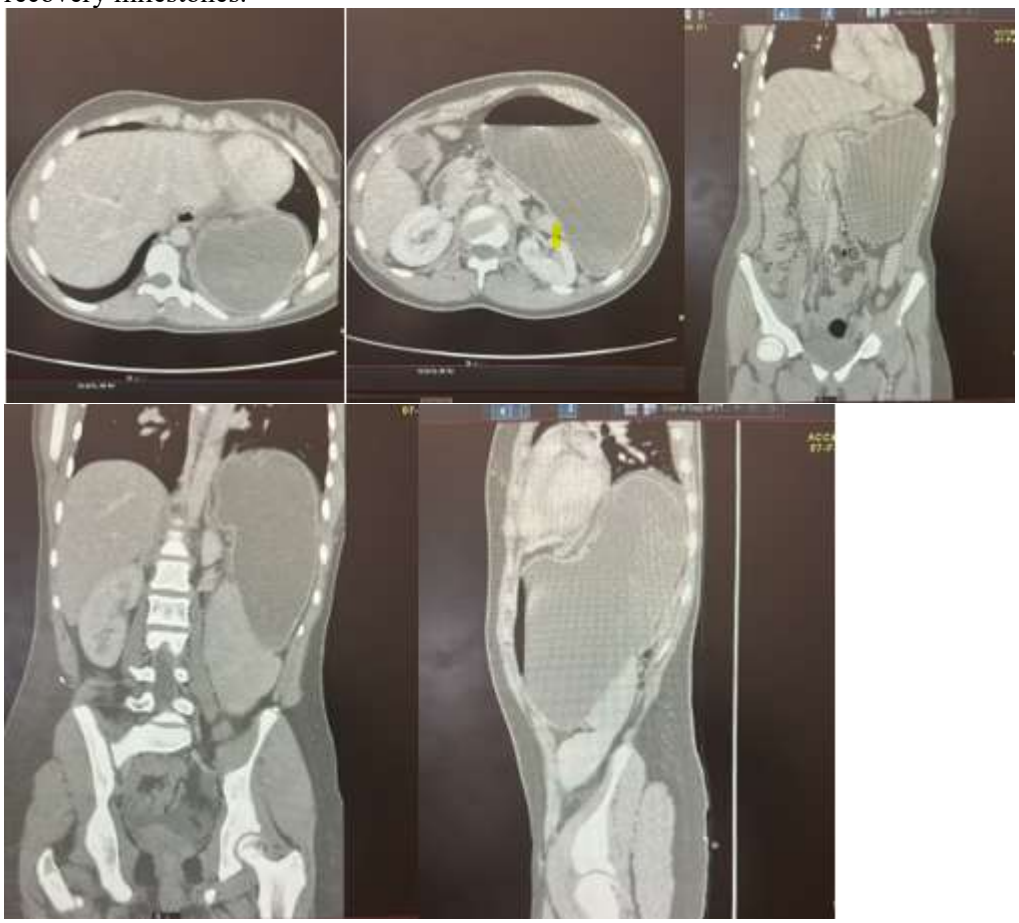
The patient was transferred to the pediatric surgery center, where urgent upper gastrointestinal contrast fluoroscopy was performed after nasogastric tube placement. Approximately 700 mL of coffee-ground gastric aspirate was drained. Imaging demonstrated a distended stomach with an abnormal axis (gastric antrum located above the gastroesophageal junction and to the left), consistent with gastric outlet obstruction secondary to mesentero-axial gastric volvulus, without evidence of perforation.



Following stabilization, exploratory laparotomy was performed through a supra-umbilical midline incision. Intraoperatively, the stomach was markedly dilated with a thickened wall. There was no perforation, hemorrhage, ischemia, or necrosis. The distal duodenum was of normal caliber, and no additional intra-abdominal pathology was identified. Anterior gastropexy was performed using multiple interrupted non-absorbable seromuscular sutures placed at several points to secure the stomach and prevent recurrence [1,2].

The postoperative course was uneventful. The patient remained nil per os until postoperative day 3, when oral intake was started with sips of water and advanced to a regular diet by day 4 with good

tolerance. Intravenous antibiotics and analgesia were administered. Nasogastric tube output decreased progressively and the tube was removed on postoperative day 3. She was discharged after meeting recovery milestones.



Discussion:

Gastric volvulus is a rare but life-threatening condition defined as abnormal rotation of the stomach of more than 180°, resulting in closed-loop obstruction that can lead to incarceration and strangulation [1,3]. Rotation of less than 180° causing only partial obstruction is termed gastric torsion.

Gastric volvulus is classified as acute or chronic, and as primary or secondary. Three anatomic types are recognized: organo-axial, mesentero-axial, and combined. Organo-axial volvulus is the most common type overall, while mesentero-axial volvulus is more frequent in young children and is often associated with ligamentous laxity [1,2,4].

The stomach is normally held in place by the gastrocolic, gastrohepatic, gastrophrenic, and gastrosplenic ligaments, together with the pylorus and gastroesophageal junction. Absence or laxity of these ligaments predisposes to volvulus [3,5].

Patients typically present with features of gastrointestinal obstruction: vomiting, abdominal pain, and distension. Acute symptoms may include epigastric or chest pain, nausea, and bloody vomiting. Difficulty in passing a nasogastric tube is a classic finding (Borchardt triad: unproductive retching, epigastric distension, and inability to pass a nasogastric tube) [2,4]. Subacute or chronic presentations may include upper abdominal pain, dysphagia, bloating, early satiety, heartburn, or melena.

Diagnosis can be challenging because of the non-specific nature of the symptoms. Plain radiographs may show a distended gastric bubble. Upper gastrointestinal contrast studies remain valuable for demonstrating the axis of rotation and the site of obstruction. Ultrasound has limited diagnostic accuracy (reported <25%). CT provides rapid acquisition, detailed anatomical assessment, and high diagnostic accuracy in the emergency setting; characteristic findings include an antropyloric transition point without intrinsic abnormality and the antrum lying at the same level as or higher than the fundus [1,6].

In the present case, CT demonstrated a markedly distended stomach with the gastroesophageal junction inferior to the antrum, while upper gastrointestinal contrast fluoroscopy confirmed the diagnosis of mesentero-axial volvulus and guided timely surgical intervention.
Initial management consists of nasogastric decompression and prompt surgical consultation. Surgical options include detorsion with gastropexy (open or laparoscopic), repair of any associated diaphragmatic defect, and resection of non-viable gastric tissue if present. Anterior gastropexy with non-absorbable sutures, as performed in this case, is an effective method to prevent recurrence [1,2].
Acute gastric volvulus carries a significant risk of morbidity and mortality if diagnosis and treatment are delayed. Early recognition and a multidisciplinary approach involving pediatricians, radiologists, and pediatric surgeons are essential for optimal outcomes [1,2].

Conclusion

Primary gastric volvulus in an otherwise healthy child is rare but well documented. A high index of suspicion, careful clinical assessment, and appropriate imaging are required for timely diagnosis. Prompt surgical intervention remains the cornerstone of management and is associated with excellent outcomes when performed before the development of ischemia or perforation.

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