Acute gastric volvulus secondary to eventration of the diaphragm in a child

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ABSTRACT

We report an 18-month-old boy who presented with acute organoaxial volvulus of stomach secondary to eventration of diaphragm. Clinically, the child exhibited classical triad of epigastric distension, unproductive retching and inability to pass a nasogastric tube. Successful operative management is presented and relevant literature is discussed.

KEY WORDS: Eventration diaphragm, gastric volvulus, paediatric

Acute gastric volvulus is an uncommon condition and more so in the paediatric age group. Rotation of the stomach results in partial or complete obstruction at the inlet as well as the outlet and compromise of the vascularity. Early diagnosis is critical and prompt surgical intervention is required to prevent gastric necrosis and perforation. Gastric volvulus may be idiopathic or secondary to various congenital or acquired conditions. Among the associated problems diaphragmatic defects predominate.\(^{[1-4]}\) We herein report an 18-month-old child who presented with acute gastric volvulus associated with eventration of left hemidiaphragm which was managed successfully.

CASE REPORT

An 18-month-old male child presented with sudden onset nonbilious vomiting, abdominal pain and upper abdominal distension for 3 days duration. The initial vomitus was ingested food and after that the child had unproductive retching. He no significant past history. The referring doctor had tried to insert a nasogastric tube but had failed.

On examination the child had mild pallor and moderate dehydration. There was visible fullness in the epigastrium and umbilical region. Nasogastric tube could not be passed into the stomach. In view of evident Borchardt’s triad (Retching, upper abdominal distension and inability to pass nasogastric tube) acute gastric volvulus was suspected.\(^{[5]}\) Supine X-ray of the abdomen showed grossly distended stomach and paucity of distal gas. Erect X-ray showed distended stomach with an air fluid level and a notch on the right border [Figure 1]. The left hemidiaphragm was raised and left eventration was suspected. A barium swallow showed obstruction in the lower end of esophagus with ‘bird beak’ picture.

After adequate fluid resuscitation, the child was taken up for laparotomy. Left subcostal incision was taken and grossly distended stomach was seen bulging out. Attempt to pass a nasogastric tube failed again. A wide bore needle was inserted and stomach was decompressed and 500 ml of light brown fluid and lot of air was aspirated. Organoaual volvulus was noted and derotation was done. Nasogastric tube could be passed easily now. Spleen and colon were seen to lie high up into the chest against the eventrated diaphragm. The eventration was segmental and was confined to the posterior half and dome of the diaphragm. The colon was dissected free from the diaphragm and the thinned out diaphragm was plicated with rows of 3-0 prolene sutures placed in anteroposterior axes [Figure 2]. Anterior gastropepy was done fixing the stomach at 3 points to the anterior abdominal wall. Postoperatively child was kept nil per orally for 3 days and was discharged uneventfully on day 5. He has remained asymptomatic at 3 months follow-up.
Acute gastric volvulus is a surgical emergency and delay in recognition and treatment can cause strangulation and perforation of stomach. Management includes trial of decompression via nasogastric tube while providing fluid resuscitation. If it fails patient should be hurried for surgery. Surgery involves decompression, derotation, repair of the co-existing anomaly if any and anterior gastroplexy. Even after the correction of underlying defects, most of the authors in literature have elected to pex the stomach also. Anterior gastroplexy supplemented with a gastrostomy has also been described but has the disadvantage of a gastrostomy tube which we think can be avoided. It is not only unnecessary but also may lead to complications.

In conclusion, acute gastric volvulus though rare should be suspected in any child with unproductive retching, abdominal distension and inability to pass a nasogastric tube. The features result from dual obstruction at the gastroesophageal and pyloric ends. This triad may be seen upto 30% in adults and rarely in children. Although, one or more of these criteria may be seen in 70% of the children. In most of the pediatric cases reported in literature, it has been possible to place a nasogastric tube into the stomach, but in the present case, the classical Borchardt’s triad was seen and repeated attempts at nasogastric tube insertion had failed and it was easily passed once the stomach was derotated in operation theatre. A word of caution may be exercised during insertion of nasogastric tube as perforation of stomach has been reported due to overzealous attempts at nasogastric tube insertion. The children may also present with chronic symptoms like vomiting, abdominal distension and failure to thrive due to intermittent or chronic gastric volvulus.

The radiological findings are specific in acute and secondary gastric volvulus. Plain film in acute organoaxial volvulus shows a distended stomach with an airfluid level and paucity of distal intestinal gas. There may be notch seen on the right border with concavity to right side which is considered to be specific for organoaxial volvulus. Barium swallow may show obstruction at the gastroesophageal junction with a ‘Bird’s beak’ appearance. It is important to look for associated defects like diaphragmatic defects as they may be the predisposing cause for volvulus in upto 60% of the cases. In the present case, eventration of the left side was suspected on the preoperative X-ray.

The normal stomach is fixed and prevented from abnormal rotation by the four attachments namely esophageal hiatus, gastrophrenic ligament, gastrosplenic ligament and duodenum. A normal diaphragm also serves to prevent abnormal displacement of abdominal viscera and gastric volvulus. Absence or attenuation of these anatomic factors or excessive mobility due to wide subdiaphragmatic space predisposes to gastric volvulus. The stomach can undergo volvulus either in the Organoaxial (along the long axis of the organ) or mesenterioaxial predisposition. Organoaxial volvulus is less common in children and is often seen in association with other predisposing anomalies like eventration, diaphragmatic hernia, hiatus hernia, asplenia, lack of ligaments etc. Given the rarity of the problem and unusual presenting features, the diagnosis may be difficult.

The clinical symptoms depend on the extent or degree of rotation and gastric outlet obstruction. Children with organoaxial volvulus often present acutely and may exhibit classical triad of Borchardt – epigastric distension, violent unproductive retching and inability to pass a nasogastric tube. Early diagnosis and timely surgery have gratifying outcome.
REFERENCES