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A Perplexing Clinical Picture in a Patient of Acute Gastric Volvulus: A Case Report

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Abstract Acute presentation of a gastric volvulus is rare and it is even rarer in paediatric population. It classically presents with the clinical triad of retching, epigastric pain, and difficulty in passing a nasogastric tube. Patient may have other signs and symptoms of upper gastrointestinal obstruction e.g. abdominal distention with crampy abdominal pain, vomiting and haemodynamic instability. We present an unusual presentation of a patient of gastric volvulus.

Key words Gastric volvulus; Mesentricoaxial; Organoaxial; Paediatric

Patient Report

A 3-year-old female child presented with listlessness, hypotonia, pallor, occasional ocular revulsion and nausea with vomitus sometimes containing clear mucus. The significant past history was similar episodes of discomfort and occasional emesis during the past year but never as persistent or severe as her current symptoms. The child was born at term gestation by vaginal delivery with no history of birth difficulties or surgical treatment in the past. On admission, she looked sick, pale, hypotensive and tachycardic, with a temperature of 37.5°C. Patient had generalised decreased tone and showed ocular revulsion. However the child was conscious and the examination of the cranial nerves revealed intact light reflex, no evidence of ptosis and preservation of conjunctival and corneal reflex. No significant cranial nerve deficit was found. Normal flexor plantar response was seen. Abdominal examination was noncontributory but for mild fullness and hyperresonance in epigastrium. Laboratory investigation revealed white cell count to be $15.5x10^9$/L ($15.5x10^3$/mm^3), haemoglobin to be 12 g%. The results of the rest of her laboratory investigations, including the serum amylase and electrocardiography were normal. An abdominal X-ray was obtained in the emergency radiology suite and it revealed a distended gastric bubble, a nonspecific bowel gas pattern, no air-fluid levels, and no free air under the diaphragm (Figure 1). This was thought to be consistent with gastric outlet obstruction. Based on clinical and radiological

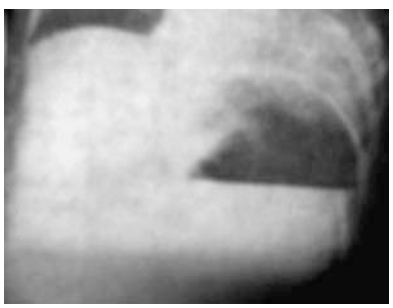

Figure 1 X-ray abdomen erect view showing distended gastric bubble with no specific bowel gas pattern. No evidence of air fluid level or free air under diaphragm.

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examination possibility of malrotation and gastric volvulus causing gastric outlet obstruction was kept. Patient subsequently underwent exploratory laparotomy and was found to have mesentricoaxial type of volvulus with intact diaphragm but there was flimsy, if any, gastrocolic ligament and no evidence of any laxity or absence of any other supporting ligaments. Derotation of stomach to its normal position was done and with no evidence of vascular compromise gastropexy was done.

Results

Postoperative period was uneventful and patient was discharged 1 week later. On follow up assessment, the patient was free from symptoms and her developmental milestones were within normal range.

Discussion

Gastric volvulus defined as a rotation of the stomach more than 180° to create a closed-loop obstruction is extremely rare especially in paediatric population.[1] The peak incidence occurs in the fifth decade of life with only 20% of total cases occurring in children.[2] Between 40 to 60% of paediatric patients with gastric volvulus have associated diaphragmatic abnormalities and 20% involve eventration of the diaphragm.[3]

It can be primary (occurring spontaneously in the absence of any diaphragm defect or other intra abdominal abnormality) or secondary (associated with diaphragmatic defects or derangement, as for example para-oesophageal hernia, trauma to the diaphragm, phrenic nerve palsy, and congenital hernias, laxity of any of the ligaments like gastrophrenic, gastrohepatic, gastrosplenic and gastrocolic ligament).[4]

It can also be classified on the basis of the axis of rotation.[5] Volvulus along the long axis is known as organoaxial and along the short axis of stomach is known as mesentricoaxial volvulus[5] and a third type is a combination of the two. Organoaxial type is the most common and is usually associated with a hiatus hernia. Mesentricoaxial type accounts for approximately one-third of the cases of gastric volvulus and is usually the result of ligamentous laxity without diaphragmatic defect.[2]

The presentation of gastric volvulus can be acute or chronic depending upon the rapidity of onset of rotation, the degree of rotation, the chronicity, the degree of obstruction, and whether the volvulus is above or below the diaphragm. An archetypal presentation of a gastric volvulus consists of Borchardt triad of retching, epigastric pain, and difficulty in passing a nasogastric tube.[6] It may present as a transient event with repetitive episodes of mild abdominal pain and vomiting or complete obstruction with sudden onset severe upper abdominal pain with ischaemia and necrosis of the stomach that can result in haematemesis, shock and death if not recognised and treated promptly.[2]

It is the atypical presentation in our case that presented a diagnostic challenge. It is the presence of acute neurovegetative symptoms in our case which was baffling and suggested volvulus only as a rare possibility. This symptomatology has been explained by the activation of vagal reflex due to gastroesophageal reflux secondary to abnormal position of stomach causing hypotonia and pallor and ocular revulsion as a nonspecific neurovegetative symptom. In rare instances even cardiorespiratory arrest may occur.[7] It needs to be studied whether these findings are more often observed in paediatric population especially in neonates and infants. This association of vagal reflex secondary to reflux of gastric contents might be more so in patients with defective attachments of gastric ligaments.[8]

Gastric volvulus is a true surgical emergency, and a delay in diagnosis can lead to fatal complications. Diagnostic modalities include plain radiograph and usually confirmation is by upper gastrointestinal contrast study. Plain radiograph reveals distended gastric bubble with intrathoracic visualisation of the bubble in cases of diaphragmatic defects. Upper gastrointestinal contrast study reveals delayed passage of the contrast, high greater curvature of the stomach, greater curvature crossing the lower end of the oesophagus and delimitation of the barium column at the kinked end of the stomach. Once the diagnosis is confirmed, nasogastric and gastroscopic decompression should be attempted.[9,10] The surgical treatment involves reduction of the volvulus and prevention of recurrence with some form of fixation procedure involving whole or part of stomach.[1] Since early diagnosis of gastric volvulus is important to avoid complications and significant morbidity, it is imperative to recognise the subtle signs and symptoms of reflux which may be indicative of gastric volvulus especially in paediatric population.

Conclusion

Paediatric 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.

References

1. Miller DL, Pasquale MD, Seneca RP, Hodin E. Gastric volvulus in the pediatric population. Arch Surg 1991;126:1146-9.
2. Godshall D, Mossallam U, Rosenbaum R. Gastric volvulus: case report and review of the literature. J Emerg Med 1999;17:837-40.
3. Oh A, Gulati G, Sherman ML, Golub R, Kutin N. Bilateral eventration of the diaphragm with perforated gastric volvulus in an adolescent. J Pediatr Surg 2000;35:1824-6.
4. Milne LW, Hunter JJ, Anshus JS, Rosen P. Gastric volvulus: two cases and a review of the literature. J Emerg Med 1994;12: 299-306.
5. Carter R, Brewer LA 3rd, Hinshaw DB. Acute gastric volvulus. A study of 25 cases. Am J Surg 1980;140:99-106.
6. Borchardt M. Zun pathologie and therapie des magnevolvulus. Arch Klin Chir 1904;74:243-8.
7. Darani A, Mendoza-Sagaon M, Reinberg O. Gastric volvulus in children. J Pediatr Surg 2005;40:855-8.
8. Cameron AE, Howard ER. Gastric volvulus in childhood. J Pediatr Surg 1987;22:944-7.
9. Honna T, Kamii Y, Tsuchida Y. Idiopathic gastric volvulus in infancy and childhood. J Pediatr Surg 1990;25:707-10.
10. Elhalaby EA, Mashaly EM. Infants with radiologic diagnosis of gastric volvulus: are they over-treated? Pediatr Surg Int 2001; 17:596-600.