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Case Report:

Double Trouble: Concurrent Sigmoid Volvulus and Gastric Volvulus in Alzheimer's Disease.

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Abstract: Background: Volvulus is the rotation of a hollow viscus either on its mesentery or upwards against its own body. Multiple gastrointestinal volvuli occurring in a single individual is extremely rare. Several reports have suggested sequential dilatation of the proximal sigmoid as the triggering factor for the development of the gastric volvulus. This is only the 4th case of concurrent sigmoid and gastric volvulus to be reported in the world and the first in Asia, making it a rare and unique learning opportunity for surgeons of all ages with varying levels of experience. Case Report: We discuss an acute presentation of concurrent sigmoid and gastric volvulus in an elderly individual with underlying Alzheimer's disease. Despite initial endoscopic treatment, he eventually succumbed as a result of septic shock with multi-organ failure secondary to bowel ischemia. Discussion and Conclusion: The increased morbidity and mortality risk associated with the dual pathology warrants high index of suspicion and prompt management. Clinical symptoms and radiological imaging are often sufficient to reach a diagnosis. Decision to treat the patient conservatively, endoscopically or surgically would depend on the manner of presentation. The relative vascularity of all affected organs should be taken into consideration when prioritizing the order of organs to undergo de-torsion and decompression.
Key Words: Volvulus, Intestinal obstruction, Gastric outlet obstruction, Colectomy, Gastrectomy, Endoscopy

Introduction:
The term volvulus has been described as a condition wherein the gut is distorted on an axis that may result in obstruction and ischemia. It can occur anywhere along the gastrointestinal tract. The sigmoid colon is more likely to be affected by this condition followed by the caecum, while a gastric volvulus is less commonly seen. The co-existence of gastric and sigmoid volvulus in a single patient is extremely rare with only 3 cases reported in the western hemisphere previously. [1-3] To the best of our knowledge this is the first case of such nature to be reported from Asia. With scarcity of information on this subject, we believe that the addition of our case could provide valuable learning points for young and mature surgeons alike.

Case Report
A 91-year-old gentleman was admitted to our hospital for acute onset of severe abdominal pain 4 to 5 hours prior to admission. He also complained of severe retching with the absence of vomiting, progressively worsening abdominal distension and no flatus or bowel output for the same duration. There was positive history for chronic constipation and multiple underlying co-morbidities such as diabetes mellitus, hypertension and Alzheimer's. His neurocognitive function had deteriorated rapidly over the past 2 years causing him to be bed bound. Clinical examination at the emergency department revealed a severely dehydrated elderly gentleman with a grossly distended and tender abdomen. There were no signs of peritonism. Digital rectal examination revealed an empty rectum. Portable abdominal radiograph showed a grossly dilated loop of colon with coffee-bean appearance (Fig.1) Multiple attempts to insert a nasogastric tube in order to decompress the bowel was met with failure. Working diagnosis at that time was acute intestinal obstruction. The patient was resuscitated with intravenous fluids before being sent for urgent colonoscopy and oesophagoduodenoscopy (OGDS).

Figure 1: Abdominal X-ray showing the coffee-bean appearance of the sigmoid colon pre-endoscopic reduction.

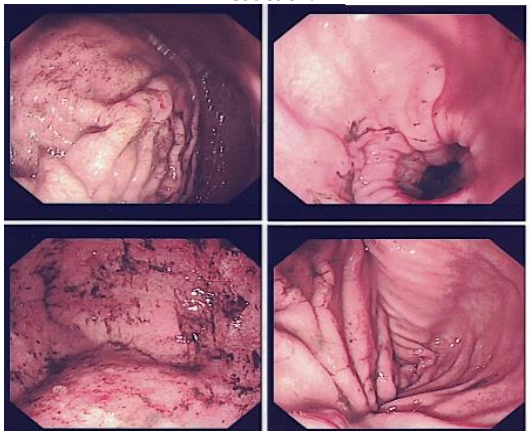

Figure 2: Esophagoduodenoscope view of the gastric lumen showing the point of twist of the gastric volvulus prior to endoscopic reduction.

Figure 3: Colonoscope view showing dusky mucosa of the sigmoid colon and the lower right picture shown is after untwisting of the volvulus

The OGDS, originally intended to facilitate fluoroscopic guided nasogastric tube insertion had led to a surprise finding of a mesenteroaxial gastric volvulus (Fig.2). The volvulus was successfully undone with gentle manipulation of the endoscopy. A nasojejunal tube was then inserted endoscopically under fluoroscopic guidance to ensure the tip of the tube rested beyond the pyloric opening. Colonoscopy was then performed, revealing a sigmoid volvulus at 70cm from the anal verge. The sigmoid volvulus was undone with similar endoscopic manoeuvring. Despite the successful de-torsion and decompression, the dusky hue of the sigmoid colon mucosa persisted (Fig.3). In view of possible bowel ischemia, we had planned to proceeded with exploratory laparotomy, sigmoid colectomy with primary anastomosis and defunctioning ileostomy, however his general condition continued to deteriorate rapidly with worsening metabolic acidosis despite aggressive resuscitation in the intensive care unit. He eventually succumbed 24 hours later despite our best efforts.

Discussion

Berti has described gastric volvulus in 1866 [4-6], while Tanner suggested the first surgical approach in 1968 [7,8]. Classical presentations of gastric volvulus have been dubbed as Borchardt triad; severe epigastric pain, retching and inability or difficulty inserting nasogastric tube [9]. This triad was present in our case. Gastric volvulus can be classified based on anatomy or etiology. Anatomically it can be organoaxial, mesenteroaxial or the combination of both. Etiologically it can be subdivided as primary or secondary. While primary gastric volvulus is usually idiopathic in nature, secondary gastric volvulus is commonly associated with co-existence of a large hiatus hernia, diaphragmatic hernia, congenital ligament laxity and overeating [6]. It has also been reported to occur following bariatric surgery [10]. In one third of the reported cases, gastric volvulus has been known to cause ischemia of the stomach. Diagnosis of gastric ischemia warrants high index of suspicion and delay in diagnosis can be fatal [6]. Endoscopic reduction is often the primary treatment of choice in chronic gastric volvulus. Careful patient selection is crucial to ensure successful endoscopic de-torsion in view of gastric perforation risk [9]. Upon complete de-torsion, insertion of nasojejunal tube beyond the pylorus will allow early commencement of enteral feeding and may even be helpful in preventing a recurrent episode of gastric volvulus. Severe form of acute presentation of a gastric volvulus would require immediate surgical intervention following prompt hydration and correction of electrolyte imbalances. Surgical options that have been reported in the past consist of simple gastropexy, gastropexy with division of the gastrocolic omentum, partial gastrectomy, Nissen's fundoplication, repair of hiatus hernia and repair of diaphragmatic eventration [6].

Sigmoid volvulus is relatively more prevalent than gastric volvulus. It is commonly seen during the 6th to 8th decade of life. The presence of a redundant sigmoid colon is often noted as a precipitating factor [11]. Sigmoid volvulus has also been associated with neuropsychological conditions such as Parkinson's disease and Alzheimer's dementia [4,5]. Sigmoid volvulus should be suspected in patients with bilious vomiting, painful abdominal distension and obstipation. Coffee-bean appearance on plain abdominal radiograph is pathognomonic of sigmoid volvulus [12]. The American Society of Colon and Rectal Surgeons recommends fluid resuscitation and correction of electrolyte imbalances followed by endoscopic colonic de-torsion and decompression as first line treatment for sigmoid volvulus. This is then to be followed by insertion of flatus tube beyond the axis of twist to prevent a repeat episode [11]. Bowel resection and defunctioning stoma should be performed if the affected bowel segment shows any sign of ischemia. The high recurrence risk following the first episode

of sigmoid volvulus has caused many to recommend performing sigmoid colectomy in an elective setting [4,11]. Advances in management of sigmoid volvulus include endoscopic sigmoidopexy which has shown favourable outcome in previously published studies [11].

The simultaneous occurrence of both conditions are extremely rare with only 3 reports published previously. The authors of those reports have suggested that the gaseous distension of the proximal colon due to the sigmoid volvulus could be regarded as a possible causative factor for the sequential development of the gastric volvulus. The gastric volvulus in all 3 previous reports have also been organo-axial in nature similar to that seen in our patient. The authors also suggest that the rich vascular supply of the stomach allows for the correction of the gastric volvulus to be done second following the colonic de-torsion and decompression [1,2,3]. In retrospect, we do agree that we should have performed the colonoscopy first prior to the OGDS as that was the urgent need of the hour and not the nasogastric tube insertion.

Conclusion

Concurrent presentation of gastric and sigmoid volvulus is rare and carries twice the morbidity and mortality risk in the presence of a delayed diagnosis. Constellation of clinical symptoms with radiological and endoscopy could provide much needed help with diagnosis. High index of suspicion should be applied especially when dealing with elderly patients with underlying neuro-degenerative disorders. Patients should be adequately resuscitated and investigated prior to being managed either endoscopically or surgically depending on the manner of presentation. The innate vascularity of all affected organs should be taken into consideration when prioritizing the order of organs to be undergo de-torsion and decompression. Wastage of precious time on a relatively well perfused organ could render the other affected organ susceptible to ischemia, gangrene and perforation.

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