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Case study

A case of sigmoid volvulus presenting as abdominal distension

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ABSTRACT
Sigmoid volvulus is an important surgical emergency which requires rapid detorsion of the affected bowel. Prompt diagnosis is crucial. It should be one of the differentials to be considered in patients presenting with abdominal distension and signs of intestinal obstruction. This case presentation serves to highlight one such example; the clinical presentation, radiological findings and management are discussed.

Keywords: Abdominal distension, sigmoid colon, volvulus

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INTRODUCTION

The complaint of abdominal distension or bloatedness is very commonly seen in the acute medical setting. The causes can range from gaseous distension, lactose intolerance, constipation, intestinal obstruction and even malignancy. When considering differential diagnoses, knowing the patients age as well as any underlying medical problems, may be helpful.

CASE SCENARIO

LBBK, a 38 year old male, with no known past medical history or hospitalization, presented to the Emergency Department with a three day history of colicky abdominal pain, abdominal distension, nausea and no passage of stools. Upon direct questioning he also stated he had no passage of flatus for the last two days. There was no associated trauma, fever, diarrhoea, vomiting or any previous abdominal surgery. He had seen his family doctor the previous day where a diagnosis of constipation was made and he was prescribed laxatives.

On examination the patient was in a slightly dehydrated state, with normal vital signs (blood pressure: 141/76, heart rate: 80, normal body temperature). His respiratory rate was slightly high at 22 per minute. Oxygen saturation on room air was 99%. His heart sounds were dual and normal and the lungs were clear with equal air entry.

His abdomen was generally distended, tympanic to percussion with no shifting dullness sign. The bowel sounds were markedly reduced. No discrete masses were palpable and digital rectal examination revealed an empty rectum.

His chest and abdominal x-rays (Figs. 1 and 2) strongly suggested a sigmoid volvulus due to the presence of a distended bowel loop arising from the pelvis which projected over the epigastrium, the "coffee bean sign", scarcity of gas in the distal sigmoid and rectum. The blood tests which included full blood count, urea and electrolytes, serum amylase and liver function tests were all normal. In the Emergency Department, a rectal (flatus) tube was inserted but decompression was not achieved. In the colorectal surgery inpatient ward, a further attempt at decompression was unsuccessful and detorsion was not achieved.

LBBK was then advised to undergo sigmoidoscopy which was performed under sedation using a flexible sigmoidoscope. A sigmoid volvulus was detected at 35 cm from the anal verge and the area of twist was erythematous with a small amount of slough. Decompression was achieved and a rectal tube was also inserted. The proximal bowel was markedly dilated but the bowel mucosa was found to be normal.

The patient did well post-procedure and was started on feeds and then diet, after a period of 8 hours. The abdominal distension resolved, stools were passed and he was subsequently discharged after two days of hospitalization. At 4 weeks follow-up, he remained well.

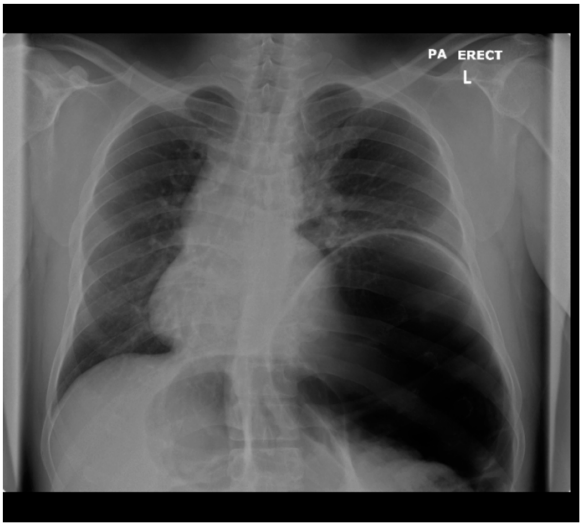

Figure 1. Chest x-ray showing a gas filled dilated bowel loop compressing the left dome of the diaphragm. The size and pressure may have caused the cardiac shadow and the mediastinum to be shifted to the right. There is adjacent atelectasis in the left lower zone of the lungs.

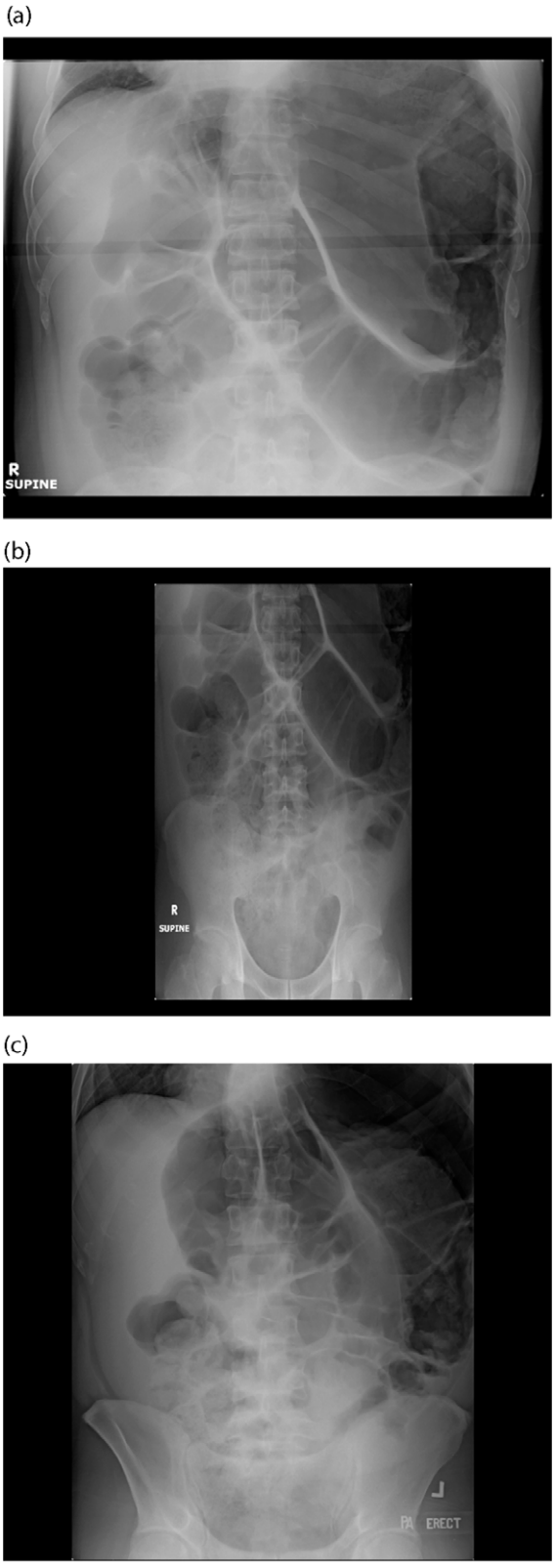

Figure 2. (a–c): Distended bowel loops are seen arising from the pelvis and projecting over the epigastrium and left side of the abdomen. Features are consistent with intestinal obstruction, likely secondary to volvulus of the sigmoid colon. There is no abdominal luscency to suggest pneumoperitoneum.

DISCUSSION

In general, sigmoid volvulus accounts for between 5–7% of all intestinal obstruction cases. The mortality rate however can be as high as 20–25%, depending on the delay at presentation, before treatment is sought [10].

This case illustrates a dramatic presentation of sigmoid volvulus in a young man with no prior symptoms or admission for abdominal complaints. The definition of a volvulus is a complete twisting of an intestinal loop upon its mesentery, usually along its longitudinal axis. When this occurs, there is danger that the blood supply can be compromised in the involved intestinal segment. Over time, if the pressure within the loop continues to increase, gangrene and perforation can take place. Volvulus is more often seen in males than in females (2-3:1). Women are thought to have a lower incidence due to their wider pelvis [2,4]. There are various potential sites where a volvulus can form. These include: sigmoid volvulus (about 80% of cases), caecal volvulus (15%), transverse colon volvulus (3%) and splenic flexure volvulus (2%) [1–4].

Volvulus is likely to develop as a consequence of lengthening of the mesocolon secondary to gradual elongation of the sigmoid intestinal loop [2,3]. This sigmoid elongation which leads to a longer and redundant sigmoid colon can be due to prolonged periods of immobilization (e.g. in bed bound patients with constipation), inhibition of colonic motility by certain drugs, or, due to inherited dysmotility problems. In the case of caecal volvulus, it is often found that the caecum has not been well fixed retroperitoneally, which explains the relative mobility and increases the chances of the volvulus forming.

The mechanism described above is also the reason why these cases are seen in long-term, bed bound persons and elderly who are institutionalized in nursing homes and those on long-term psychotropic and sedative drugs. There is also another group of persons who can develop this from regular long-term laxatives and enema usage.

Individuals suffering from Hirsprung's and Chagas disease can develop volvulus because their myenteric plexus are often damaged and non-functional, leading to the development of megacolon. These represent examples of inherited dysmotility problems. In patients with congenitally elongated mesocolon, there is also the potential to develop volvulus due to the increased mobility.

A more detailed explanation of the steps involved in the formation of the twisting in volvulus is shown in Table 1 [1,3,4].

Table 1. Steps in the formation of the twisting in a sigmoid volvulus

Elongation of the sigmoid colon/stretching of the mesocolon
↓
Narrowing of the base of the mesocolon
↓
With daily passage of stools and occurrence of the above two processes, a torque force is set up to the sigmoid which causes the torsion to take effect

A sigmoid volvulus is most often clockwise in its rotation, whilst a caecal volvulus is usually counter-clockwise. The clockwise rotation of the sigmoid volvulus is also one of the observations made pertaining to the emptiness of the left iliac fossa (LIF). Raveenthiran, made this observation and stated that the positive predictive value of "emptiness of the LIF" was 100% [5]. This sign however, was not observed in our patient. The abdominal examination in LBBK showed a generalized distension.

The goal of management includes resuscitation, acute reduction of the volvulus and relief of obstruction and prevention of recurrence. Vomiting, third space fluid loss, hypovolemia and shock (septic shock is also possible in cases complicated by gangrene and perforation), may require resuscitation in patients presenting with volvulus. The diagnosis is usually confirmed by physical examination and radiographic tests. The clinical symptoms include abdominal pain, distension, bloatedness, vomiting and constipation. Examination usually reveals signs consistent with intestinal obstruction. Radiological signs include the "coffee bean sign" with the central cleft of the bean in sigmoid volvulus, air fluid levels in each segment of dilated bowel as well as absence of gas in the rectum. Depending on the segment of the colon involved, the pattern of dilatation may change, e.g. a transverse colon volvulus extends in a caudal direction and forms a U-shape and a cecal volvulus will have the loop of dilated bowel directed towards the upper abdomen [2,6,7].

Passage of a rectal tube may provide relief, and, at times, even correction of the twist. Other techniques used may include flexible sigmoidoscopy (as utilized in LBBK), endoscopic reduction and occasionally, surgical reduction. Contrast enema can also be used as a diagnostic as well as therapeutic radiographic study which can reduce the volvulus. Water soluble enemas can also be utilized in cases at high risk of perforation [4,6–9]. It is also necessary to carry out an assessment of the bowel mucosa. Presence of ischaemic bowel mucosa is an indication for immediate surgical intervention [7–9].

CONCLUSION

Sigmoid volvulus is a surgical emergency which requires prompt diagnosis, resuscitation and management. Urgent detorsion and assessment of the bowel mucosa is essential. Findings of ischaemic colonic mucosa would require immediate operative intervention.

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