Non-invasive treatment of sigmoid volvulus in a child.
The role of the endoscopist

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Non-invasive treatment of sigmoid volvulus in a child. The role of the endoscopist

Sigmoid volvulus (SV) is a rare cause of intestinal obstruction in children. Its varied presentation and rapid progression engender a high risk of morbidity and mortality. We report two cases of SV in teenage boys. Patient 1 is 16 years old and patient 2 is 17. Both presented to our institution with recent-onset abdominal pain, constipation, and nausea and vomiting, and both had previous episodes of SV. Patient 1 had been surgically treated with manual derotation, and patient 2, who had redundant colon, had two past episodes of endoscopically-treated SV. Both patients were in poor condition and had distended but treatable abdomens, with no peritoneal signs. After computed tomography (CT) confirmation of the clinical impression of no ischemia or perforation, we decided to attempt detorsion of the SV and decompression of proximal dilated colon by flexible endoscopy, and planned for elective surgery shortly after the endoscopic procedure. Because sigmoid volvulus is so rare in children, operative and technical details of endoscopic management are gleaned from the larger adult experience. In patients without signs of complication, initial endoscopic reduction is the gold standard, and elective sigmoid resection with primary anastomosis is often required to prevent recurrence.

KEY WORDS: Case report, Children, Endoscopy, Endoscopic treatment, Sigmoid volvulus, Volvulus,

Introduction

Sigmoid volvulus (SV) is a rare cause of intestinal obstruction in children. Its varied presentation and rapid clinical progression are associated with a high rate of morbidity and mortality [1]. Our aim is to present 2 cases of uncomplicated volvulus in paediatric patients in which endoscopic management was the first-line treatment. In our patients, as in the international literature, delayed sigmoidectomy is often required to prevent recurrence.

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Case Presentation

We report two cases of SV in young male patients. Patient 1 is 16 years old and patient 2 is 17. They presented to our institution with recent-onset abdominal pain, constipation, and nausea and vomiting. Patient 1 had a history of previous SV, surgically treated with manual derotation, and patient 2 had a redundant colon with a history of two previous episodes of endoscopically-treated SV. Both patients were in poor clinical condition, with distended but treatable abdomens and no peritoneal signs. Both patients were alert and had no neurologic, respiratory, or cardiovascular abnormality. The blood chemistry was normal except for elevated lactate dehydrogenase (LDH) levels (LDH=409 U/L, patient 1, and 615 U/L, patient 2; normal range=120 to 300 U/L). Abdominopelvic ultrasound was not diagnostic because of the massive distention of the colon. Abdominal x-ray showed a characteristic inverted U-shaped distended sigmoid loop, extending from the pelvis to the left upper quadrant, suggestive of sigmoid volvulus (Fig. 1). There was no sign of pneumoperitoneum.

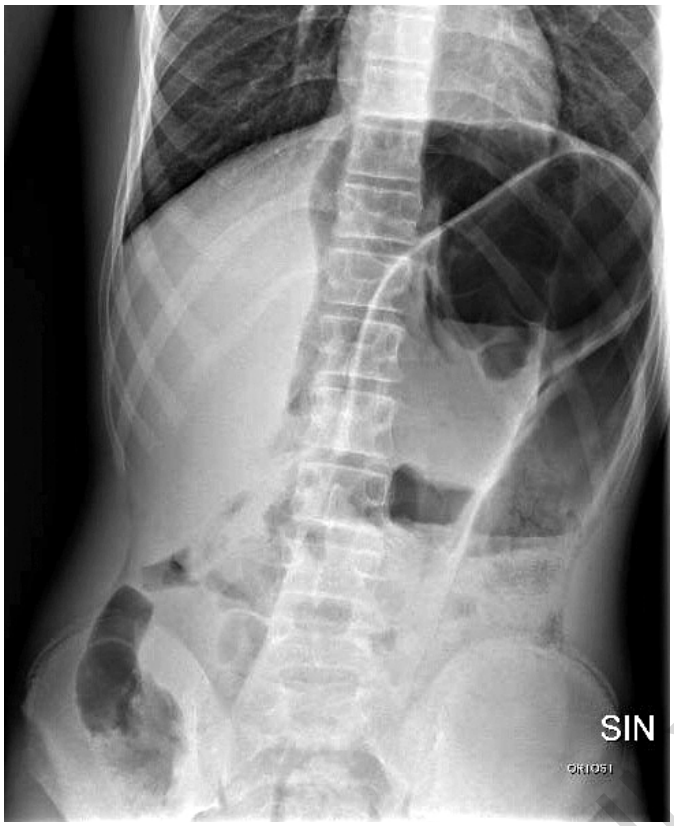

Fig. 1

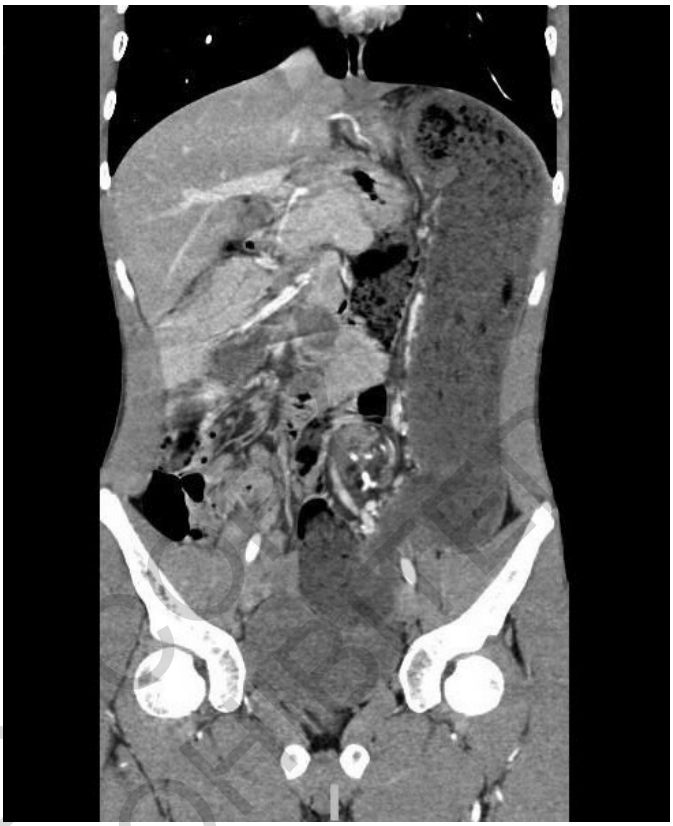

Fig. 1

Seeking even greater anatomical definition, we decided to perform abdominal CT in patient 1. It showed the markedly distended descending and sigmoid colon with rotation of the mesentery (whirl sign), marked reduction of bowel calibre (beak sign), and no signs of bowel ischemia or intestinal perforation (Fig. 2). Patient 2 had abdominal CT before transfer to our institution showing torsion of the sigmoid colon with no sign of perforation. Additionally, before endoscopy, we attempted a therapeutic contrast enema in patient 2. It did not result in detorsion, but it was diagnostic, showing a luminal narrowing at the sigmoid colon with poor contrast passage proximally indicating nearly complete obstruction of the sigmoid colon and confirming SV.

Endoscopic detorsion and decompression of the proximal dilated colon using flexible endoscopy was attempted after confirmation of uncomplicated SV, initial resuscitation with intravenous fluids, and antibiotics administration.

At endoscopy, we found marked reduction of the intestinal calibre in both patients, 15 cm from the external anal sphincter in patient 1 and 30 cm from the external anal sphincter in patient 2, as a sub-torsion area but transitable with the instrument. Mucosa and vascular reticulum had no signs of ischemia (Fig. 3). After detorsion, intraoperative contrast enema showed a regular progression of the soluble contrast toward the rectum. We placed rectal tubes at the end of both procedures to stabilize the patients and prevent an early recurrence. At this point the physical exam showed a fully deflated and non-distended abdomen. Patient 1 underwent a lower gastrointestinal (GI) study before elective sigmoid resection showing dilated redundant sigmoid with no more sign of narrowing. At sigmoid resection a few days later, we found an elongated, redundant, and dilated sigmoid colon, but there was no sign of ischemia, and primary anastomosis was performed. Histological findings excluded Hirschsprung disease. The patient was discharged home in good condition on postoperative day

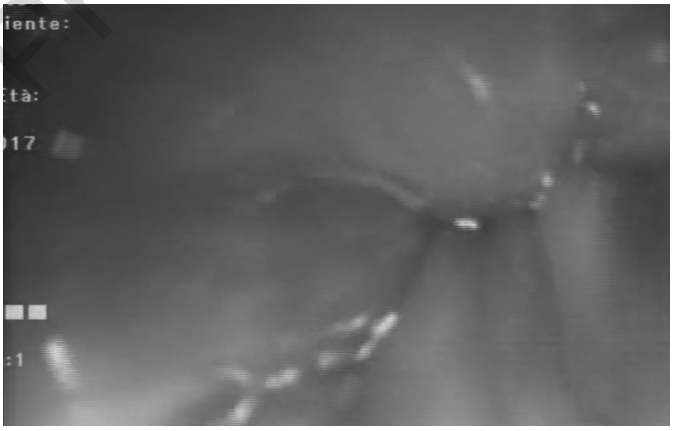

Fig. 2

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8. Patient 2 was discharged in good condition after endoscopic reduction of the volvulus, and at the time of this writing he was free of recurrence and awaiting elective repair.

Discussion

SV is a rare cause of bowel obstruction in children and it is potentially life-threatening if missed. SV is common in the 4th decade and in males and is rare in children As reported by Colinet et al. , and in our experience, the severity of symptoms is determined by the degree of torsion, strangulation, and closed loop obstruction [1]. Thus, presentation may vary from chronic and recurrent episodes of abdominal distension, pain, and subocclusion with nausea and vomiting to acute abdominal pain [1]. Due to its tricky presentation, diagnosis may be challenging, and is usually based on both clinical features and radiologic findings. Abdominal x-ray is often non-diagnostic in the paediatric patient, but characteristic x-ray findings include a dilated sigmoid colon with an inverted U loop and multiple air fluid levels.

Barium enema studies can both diagnose and treat uncomplicated SV, with a success rate of 68 to 79%, but with an early recurrence rate (11 to 35%) and a risk of perforation in cases of ischemia [2]. Contrast enema is advisable before endoscopy to confirm the diagnosis and to rule out other causes of obstruction such as intussusception [3].

The best management of acute SV is controversial. Colinet et al. had a success rate of 100% in a series of 12 cases of paediatric SV treated with endoscopic detorsion, supporting, as in our cases, non-surgical reduction as the first-line treatment in uncomplicated paediatric SV, which allows for stabilization of the patient and provides time for optimization of the patient's clinical status before elective repair [1,4].

Endoscopic decompression of SV is considered safe, and we did not encounter complications during SV detorsions using flexible endoscopy. Endoscopy has also the advantage of visualization of the mucosa. However, because SV is known for its high rate of early recurrence, curative sigmoid resection with primary anastomosis is strongly recommended [1,4,5].

Both of our patients had endoscopy under general anaesthesia, and we used fluoroscopy to guide us in advancing the flexible endoscope over the loop and to obtain contrast studies documenting the complete reduction of the occlusion.

Endoscopic detorsion of SV should be performed in the operating room because if detorsion is not possible or if there are signs of mucosal ischemia urgent surgery with colon resection is indicated. Finally, there is evidence that the placement of a rectal tube for 24 to 48 h after endoscopic detorsion of the SV can help to stabilize the patient and prevent an early recurrence [1,4]. In our cases, at follow-up, patient 1 was free of abdominal pain and reported regular bowel function and patient 2 was recurrence-free and awaiting definitive repair.

In conclusion, SV is highly uncommon in children, and operative and technical details of endoscopic management have been mined from the larger adult experience. In patients with no sign of complication, initial endoscopic reduction is the gold standard. Elective sigmoid resection with primary anastomosis is often required to prevent recurrence [1-6].

Riassunto

Il Volvolo del Sigma (VS) è una rara causa di occlusione intestinale nel paziente pediatrico. La sua modalità di presentazione e la rapida progressione del quadro clinico comportano un elevato rischio di morbidità e mortalità. Riportiamo due casi di volvolo del sigma in pazienti adolescenti. Il paziente 1 ha 16 anni mentre il paziente 2 ha 17 anni. Entrambi sono giunti alla nostra osservazione con un quadro di dolore addominale acuto, nausea, vomito e occlusione intestinale. Entrambi i pazienti avevano già presentato episodi di VS in precedenza. Il paziente 1 è stato sottoposto in precedenza ad intervento chirurgico per derotazione manuale, mentre il paziente 2 presenta un sigma ridondante e ha presentato 2 episodi di volvolo trattati endoscopicamente. Entrambi i pazienti si presentavano in condizioni generali scadenti con un addome disteso ma trattabile senza segni di reazione peritoneale. E' stata eseguita una Tomografia Computerizzata a conferma del sospetto diagnostico e al fine di escludere segni di ischemia e perforazione. Abbiamo quindi tentato un approccio non chirurgico in assenza di segni ischemia e perforazione mediante l'utilizzo di endoscopio flessibile e abbiamo programmato l'intervento chirurgico in regime di elezione a breve distanza dall'evento. Il VS in età pediatrica è raro e i dettagli tecnici e operativi del trattamento endoscopico sono ereditati dall'esperienza nel paziente adulto. In assenza di segni di complicanze, l'approccio endoscopico al paziente pediatrico con VS è ritenuto il gold standard, e la resezione endoscopica con anastomosi primaria è spesso richiesta per evitare la ricorrenza di recidive.

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