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Case Report

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An often-forgotten diagnosis: Midgut malrotation and volvulus in an adult

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Abstract

Intestinal malrotation is a rare congenital abnormality that typically presents in the neonatal period or within the first year of life. However, it is exceedingly rare for this condition to persist without symptoms or go undiagnosed until adulthood. Case Report: A 70-year-old man sought medical assistance due to severe abdominal pain, nausea, vomiting, and bloating. Despite experiencing intermittent abdominal pain for 15 years, he had never undergone any abdominal procedure. Upon examination, no tenderness or distension was observed, but an abdominal radiograph indicated a distended small bowel. Subsequent contrast-enhanced abdominal computed tomography (CT) scan confirmed midgut malrotation with volvulus, showing a whirlpool sign. The patient received symptomatic treatment and was discharged for an elective Ladd's procedure. Conclusion: Intestinal malrotation is often missed in adults with non-specific abdominal symptoms, leading to delayed diagnosis. This emphasizes the importance of considering it in the differential diagnosis of suspected small bowel obstruction.

Keywords: Midgut malrotation, midgut volvulus, intestinal malrotation, adult

1. Introduction

Intestinal malrotation is a rare congenital abnormality resulting from the failure of the usual 270° counterclockwise midgut rotation around the superior mesenteric vessels during embryonic development (1). This condition generally involves bilious vomiting during the neonatal period or infancy, but it can also be asymptomatic and become apparent later in childhood or adulthood (2). This condition is rare, affecting approximately 1 in every 6000 newborns and only 0.2% of adults (3, 4). Despite its rarity, the condition is often overlooked in adults due to its nonspecific clinical presentation, which mimics more common gastrointestinal disorders such as irritable bowel syndrome or peptic ulcer disease (5, 6). This diagnostic ambiguity frequently delays identification until complications such as volvulus or bowel ischemia occur (7). We report a case of a seventy-year-old patient presenting with intermittent abdominal symptoms, diagnosed with midgut malrotation with volvulus, and successfully managed with conservative treatment before undergoing an elective Ladd's procedure.

2. Case Report

A 70-year-old male patient sought medical attention due to abdominal pain accompanied by nausea, vomiting, and bloating, persisting for two days. He reported a 15-year history of intermittent abdominal discomfort, which he attributed to dietary indiscretions or stress. The patient had not undergone any previous abdominal procedure, and his medical history is only remarkable for hypothyroidism. The initial vital signs recorded were as follows: temperature 36.3°C, respiratory rate 16 breaths/min, blood pressure 110/80 mmHg, and pulse 89 beats/min. Upon initial evaluation, the patient was oriented, and his abdomen was soft, with no tenderness or distension or peritoneal signs. Laboratory findings, including complete blood count, electrolytes, and renal/liver function tests, were within normal limits. An abdominal radiograph showed signs of a distended small bowel loops (Fig. 1), prompting further imaging. Subsequently, a contrast-enhanced abdominal CT scan confirmed the diagnosis of midgut malrotation with volvulus. No obstruction was present, but imaging revealed a 360-degree clockwise rotation of the small bowel around the superior mesenteric artery (SMA) and vein (SMV) at the root of the mesentery (whirlpool sign) (Fig. 2). Also diffuse intestinal wall edema was noted in the intestinal loops (Fig. 3). Given the absence of hemodynamic instability, bowel ischemia, or perforation, the patient was managed conservatively with bowel rest, nasogastric decompression, and intravenous hydration along with symptomatic treatment. Immediate surgical intervention was deferred in favor of close clinical monitoring. During the follow-up, there was no deterioration in the clinical condition and laboratory values. The patient was discharged on the third day with a good state of health. He attended for a follow-up appointment and for planning elective Ladd's procedure seven days later when he was found to be asymptomatic.

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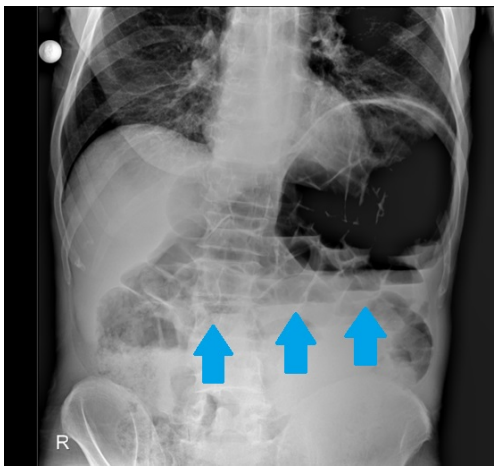

Fig. 1. An abdominal radiograph shows signs of a distended small bowel (the blue arrows)

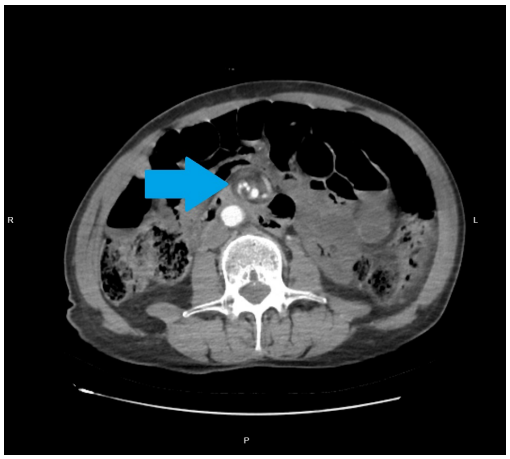

Fig. 2. An axial CT image shows the typical whirlpool sign (the blue arrow) and a distended small bowel

Fig. 3. An axial CT image showing widespread edema in the intestinal loops (the red arrows)

3. Discussion

Adult patients with intestinal malrotation often present with a protracted history of recurrent, nonspecific abdominal pain. This persistent discomfort leads to frequent medical consultations; however, the elusive nature of the symptoms often results in the absence of a definitive diagnosis. In the early stages, patients with malrotation may not show any symptoms. However, some patients may experience long-term abdominal discomfort or, less often, sudden abdominal pain. Due to these non-specific gastrointestinal symptoms, the diagnosis of the condition is usually delayed. Also, patients may be subjected to inappropriate diagnostic conclusions and unnecessary medical interventions. These symptoms may be caused by peritoneal fibrous bands called Ladd's bands, which can cause acute or chronic intestinal obstruction or volvulus (9). Neville J et al. observed that symptoms of midgut volvulus in adults can manifest differently but often involve recurring abdominal pain and intermittent vomiting, mirroring the experiences of our patient (6). The gold standard for diagnosing malrotation is either an upper gastrointestinal series or a CT scan with oral and intravenous contrast. For adults, a CT scan is preferred. Both scans can help detect malrotation by demonstrating the unusual position of the caecum to the left and the out-of-the-ordinary relationship between SMA and SMV (In malrotation, SMA is located to the left of SMV). Midgut volvulus can be detected in an upper gastrointestinal series by the corkscrew sign of the proximal small bowel, or in a contrast CT scan by the whirlpool sign (the mesentery and SMV have a rotating appearance around SMA). Other features that may be seen include obstruction of the duodenum and congestion of the mesenteric vasculature (2, 7). Midgut malrotation can be managed either symptomatically or surgically, depending on clinical presentation (5, 8). Ladd's procedure, which involves division of Ladd's bands, widening of the mesentery, and appendectomy, remains the definitive treatment to prevent recurrent volvulus (9). Immediate surgery is mandatory in cases of acute volvulus with ischemia, obstruction, or hemodynamic instability (4). In stable patients without complications, as seen in this case, bowel rest and decompression may suffice to stabilize the patient before elective surgery (7). This approach minimizes surgical risks in elderly or comorbid patients while addressing acute symptoms. The decision to delay surgery in our patient aligns with evidence supporting elective Ladd's procedure in non-emergent cases (4). However, clinicians must weigh the risks of recurrent volvulus against surgical morbidity, particularly in older adults. Our patient did not require immediate surgical intervention and was successfully managed with symptomatic treatment, followed by an elective Ladd's procedure. Our patient presented with intermittent symptoms, including nausea, vomiting, and abdominal pain, which are typically associated with small bowel obstruction. Unfortunately, he delayed seeking medical attention as he believed the symptoms were not severe enough. Consequently, his diagnosis was delayed.

Our case was particularly intriguing and noteworthy because no signs of ischemia were observed despite the 360-degree rotation of the mesenteric root, especially in an elderly patient. Intestinal malrotation is a comparatively infrequent cause of bowel obstruction in adult patients. As a result, it is usually not considered as a possible diagnosis when patients show non-specific abdominal symptoms until complications like volvulus or bowel ischemia occur. This underscores the critical importance of maintaining a high index of suspicion.

Diagnosing malrotation in adults can be challenging, but including it in the differential diagnosis of small bowel obstruction can make it attainable.

Conflict of interest

The authors declared no conflict of interest.

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Authors' contributions

Concept: Ö.J, Z.K.E., Design: Ö.J., Data Collection or Processing: Ö.J., B.Ş., Analysis or Interpretation: Ö.J., Z.K.E., Literature Search: B.Ş., Z.K.E., Writing: Ö.J., B.Ş., Z.K.E.

Ethical Statement

Ethics committee approval is not required for this study.

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