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Case Report

Radiology Section

Transverse Mesocolon Volvulus: A Case Report

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ABSTRACT

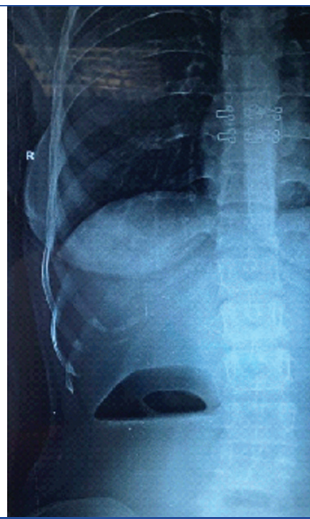
Volvulus is described as the axial twisting or rotation of a part of the colon around its mesentery. It constitutes approximately 5% of all cases of bowel obstruction, making it an extremely rare pathology. We report a case of transverse colon volvulus in a 38-year-old female who presented with a sudden onset of right upper abdominal pain, distension, constipation, and emesis. An erect X-ray of the abdomen revealed two air-fluid levels in the right lumbar region. Preliminary ultrasonography showed the presence of a mesenteric twist in the right hypochondriac region and a dilated fluid-filled ascending colon and caecum. Contrast-enhanced Computed Tomography (CT) imaging demonstrated the presence of a twisted transverse mesocolon with a vascular pedicle in its centre, consisting of branches of the superior mesenteric artery and dilated, tortuous collaterals arising from inferior mesenteric vessels. These findings were later confirmed with histopathological correlation.

Keywords: Ascending colon, Caecum, Intestinal obstruction, Mesenteric artery

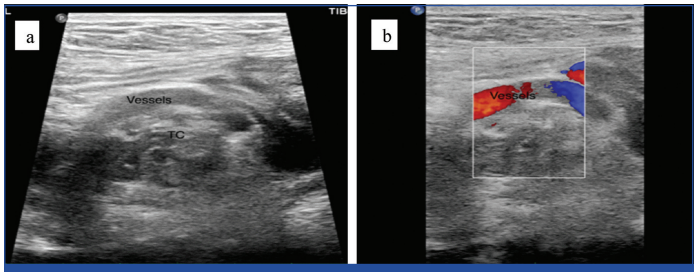
CASE REPORT

A 38-year-old female presented to the emergency department with a sudden onset of right upper abdominal pain, distension, constipation, and associated emesis lasting for one day. The patient had a history of intermittent similar pain and constipation for the past six months. A history of previous abdominal surgery was noted; however, the details remained unknown. There was no significant history of substance abuse or psychiatric illness. She was not receiving any treatment at that time. Her vital signs were within normal limits. On abdominal examination, diffuse peri-umbilical tenderness and hyperperistaltic bowel sounds were observed. Laboratory tests revealed that all parameters were within normal limits.

An erect X-ray of the abdomen revealed two air-fluid levels in the right lumbar region [Table/Fig-1]. Ultrasound examination of the abdominal cavity showed the presence of a mesenteric twist in the right hypochondriac region and a dilated fluid-filled ascending colon and caecum [Table/Fig-2]. Sluggish bowel peristalsis was noted, and free fluid was evident in the abdomen and pelvis. Contrast-enhanced computed tomography demonstrated the presence of a twisted transverse mesocolon ("whirl sign"), with a vascular pedicle in its centre consisting of branches of the superior mesenteric artery, as well as dilated and tortuous collaterals arising from the inferior mesenteric vessels [Table/Fig-3]. Associated proximal dilation of the ascending colon and caecum was noted, along with generalised mesenteric venous congestion and lymphadenopathy. No features of bowel gangrene or perforation were present.



[Table/Fig-1]: Erect X-ray abdomen shows two peripheral air fluid levels in the right lumbar region.



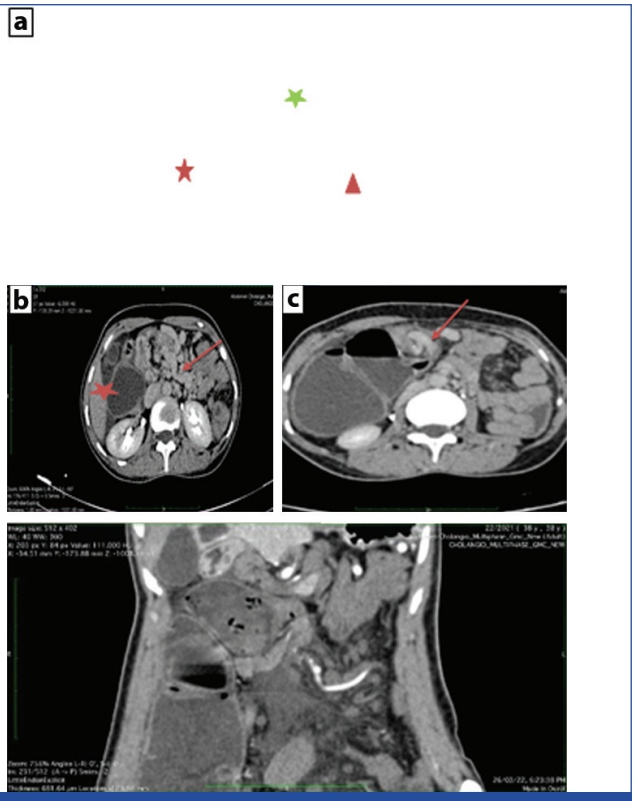
[Table/Fig-2]: a) Mesenteric twist seen in the right hypochondriac region; b) The engorged mesenteric vessels along the twisted mesentery show colour flow on the doppler study.

The patient was taken up for emergency laparotomy, which revealed a twisted middle segment of the transverse mesocolon with grossly dilated ascending colon and caecum [Table/Fig-4]. Multiple mesenteric venous collaterals were noted, but no gangrenous bowel loops were detected. Right hemicolectomy and ileocolic resection with anastomosis were performed. The postoperative period was uneventful, and the patient did not report for follow-up.

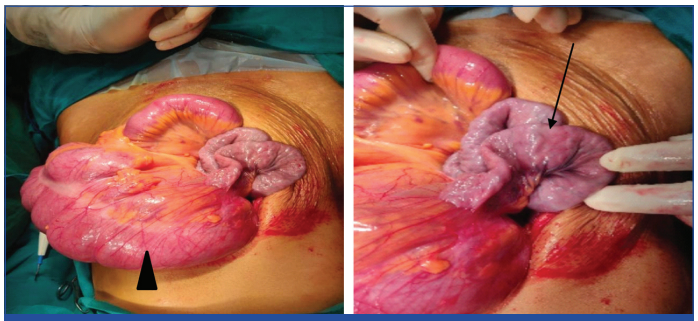
DISCUSSION

Transverse colon volvulus was first described by Finnish surgeon Kallio KB in 1932 [1]. It constitutes approximately 5% of all cases of bowel obstruction, making it an extremely rare pathology [2]. Normally, the transverse colon is fixed by the hepatic flexure and splenic flexure at either end and has a short mesentery; therefore, it is less prone to volvulus. The incidence rate is two times higher in females than in males [3]. Two occurrence peaks are observed: the first is usually seen in the second or third decade of life, and the second occurs in the seventh decade [3].

Predisposing factors include congenital issues, such as imperfect fixation of the posterior abdominal wall with errors of gut rotation; mechanical causes, including previous surgery that may lead to concrescence or bowel translocation, adhesions, and distal obstruction; and physiological factors, such as chronic constipation, pregnancy, and colitis [4,5]. Chronic constipation is likely associated with the occurrence of volvulus due to excessive elongation of the transverse



[Table/Fig-3]: Contrast Enhanced Computed Tomography (CECT) of the abdomen: a) Coronal reformatted image shows dilated ascending colon (red asterisk) and hepatic flexure with abrupt transition in the proximal transverse colon (green asterisk). Prominent inferior mesenteric artery branch is noted (red arrowhead); b) Axial image shows dilated ascending colon (red asterisk). Prominent and tortuous mesenteric vessels also noted in the abdomen (red arrow); c) Axial image shows twisted transverse mesocolon (red arrow) demonstrating "whirl sign". Vascular pedicle seen in its centre, consisting of prominent contrast opacified mesenteric vessels. Bowel loops show normal contrast enhancement of their wall.



[Table/Fig-4]: Middle third of the transverse mesocolon twisted around itself (black arrow) with grossly dilated ascending colon and caecum found intraoperatively (black arrowhead).

colon. Yaseen ZH et al., described the co-existence of Clostridium difficile infections with volvulus, postulating mucositis as a factor in its pathogenesis [6]. An association with Chilaiditi syndrome has been reported several times in the literature [7].

Based on clinical presentation and morphological transformations, transverse colon volvulus is classified into two forms: acute fulminating and sub-acute progressive. The acute fulminating form is characterised by a sudden onset of severe abdominal pain, vomiting, and an increased leukocyte count, with a high risk of gangrene or perforation. In contrast, the sub-acute progressive form presents milder symptoms or a past history of similar symptoms, with a normal or mildly elevated leukocyte count [7]. As discussed in our case, it is likely to be classified as the sub-acute progressive form.

Pre-operative diagnosis of transverse colon volvulus is rarely achieved, as there are no definitive radiographic features. A plain abdominal X-ray may be performed as a preliminary investigation. According to some authors, demonstration of a distended bowel with two air-fluid levels in the epigastrium or a handle-shaped 'U' in the right upper quadrant may raise suspicion of transverse colon volvulus; however, these findings are not consistent [8]. A barium enema is another investigation that can be performed in suspected cases of volvulus, showing a bird-beak appearance. However, barium studies cannot be conducted in cases of obstruction due to the increased risk of bowel perforation [5]. A Computed Tomography (CT) scan provides the highest sensitivity for diagnosis. It will delineate a "twist" or "twirling sign" in the mesocolon and vascular pedicle, as well as show marked dilatation of the proximal colon and collapse of the distal colon [4]. Twisting of the mesentery causes retention of venous outflow and impaired arterial flow.

Surgery is the treatment of choice for the majority of cases. Based on intraoperative findings, surgical options can vary from simple de-rotation with colopexy to resection of the bowel with or without anastomosis [9]. Resection of the redundant transverse colon has the least possibility of recurrence. Transverse colon volvulus can lead to life-threatening complications such as closed loop obstruction, perforation, or gangrene. The mortality rate is 33%, which is higher than that recorded for sigmoid or cecal volvulus [5].

CONCLUSION(S)

Transverse colon volvulus is a rare cause of bowel obstruction in daily practice. Its diagnosis is challenging. Prompt recognition and emergency intervention are key to achieving a successful outcome.

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