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Case Report

A rare coexistence: Cecal cancer and intestinal malrotation in an adult ☆

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ABSTRACT

Intestinal malrotation (IM) is an uncommon congenital disorder that disrupts the normal embryonic rotation around the superior mesenteric artery. It is exceptionally rare in adults, and its association with colon cancer is even less frequent. This article discusses the case of a 60-year-old female diagnosed with colon cancer alongside IM. Imaging studies revealed signs of IM. This case highlights the rarity of colon cancer occurring in a malrotated bowel, emphasizing the importance of early detection to prevent life-threatening complications. This anomaly increases the risk of volvulus, bowel obstruction, and ischemia. Diagnosis often relies on imaging techniques, such as CT or ultrasound, to identify abnormal intestinal orientation.

Introduction

Intestinal malrotation (IM) is a congenital anomaly in which the normal 270-degree counterclockwise rotation around the superior mesenteric artery (SMA) axis during embryonic development is disrupted [1]. Its detection in adults is extremely rare, affecting only about 0.2% of the population, with most symptomatic cases diagnosed shortly after birth [2]. The association between IM in adults and colon cancer is even more uncommon, as only a few cases have been reported in the literature. Surgical resection for effective nodal clearance is challenging in cases of IM due to altered anatomy and vascular changes. We present the case of a 60-year-old female diagnosed with intestinal malrotation, coexisting with a cecal tumor. Given the rarity of colon cancer in a malrotated gut, we believe this case is worth sharing.

Case report

A 60-year-old female patient with no significant medical history presented with rectal bleeding, abdominal pain, and general deterioration. She reported abdominal pain in the left iliac fossa, persisting for approximately 8 months, accompa-

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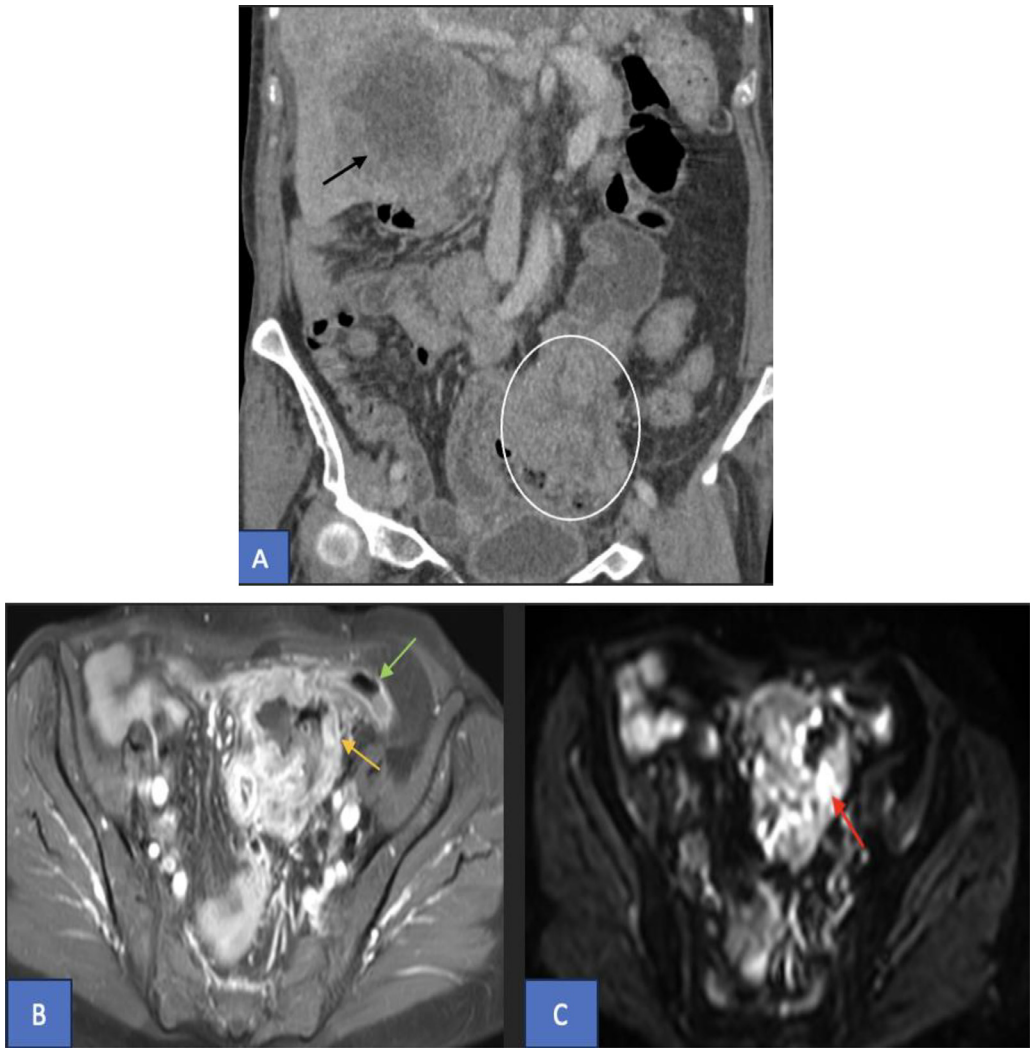

Fig. 1 – Coronal contrast-enhanced CT (A), with axial T1-weighted postcontrast MRI (B), and diffusion-weighted imaging (DWI) sequence (C) showing an irregular, circumferential thickening of the colonic wall on CT (white circle), accompanied by diffusion hyperintensity (red arrow) and gadolinium enhancement (yellow arrow). This thickening is localized at the pelvic cecal base near the sigmoid colon, with metastatic spread to the liver (black arrow). The thickening extends to the appendix, which appears infiltrated and swollen (green arrow).

nied by anorexia for the same duration and a weight loss of 7 kilograms over 12 months. Physical examination revealed a distended abdomen, and digital rectal examination confirmed rectal bleeding. A colonoscopy identified an extrinsic tumor compression located 20 cm from the anal margin. Histopathological analysis confirmed a moderately differentiated adenocarcinoma of the cecal base. Analytical tests showed anemia, with a hemoglobin level of 8 g/dL. A contrast-enhanced CT scan of the chest, abdomen, and pelvis revealed a mass originating from the colonic lumen and extending into the pelvic region. Metastatic lesions were detected in the liver (Fig. 1). Both CT and MRI findings were consistent with IM. Imaging showed an inverted arrangement of the mesenteric vessels, with the mesenteric artery on the right and the vein on the left (Fig. 2). The small bowel loops were predominantly located on the right side, while colonic segments were in the left quadrants (Fig. 3). Given her metastatic stage, the patient was started on chemotherapy with the FOLFOX regimen (a combination of folinic acid, fluorouracil, and oxaliplatin) .

Discussion

Intestinal malrotation (IM) is a rare congenital condition commonly observed in infants and children, with an adult prevalence of 0.2% to 0.5% [2]. The coexistence of IM and colon cancer is more frequently reported in Japan, particularly among male patients, with a higher prevalence of malignancies in the cecum [3].

Several case reports document the coexistence of IM with various gastrointestinal (GI) cancers, including gastric, gallbladder, pancreatic, and colonic malignancies [4]. These associations are more common in Japan than in other regions [5].

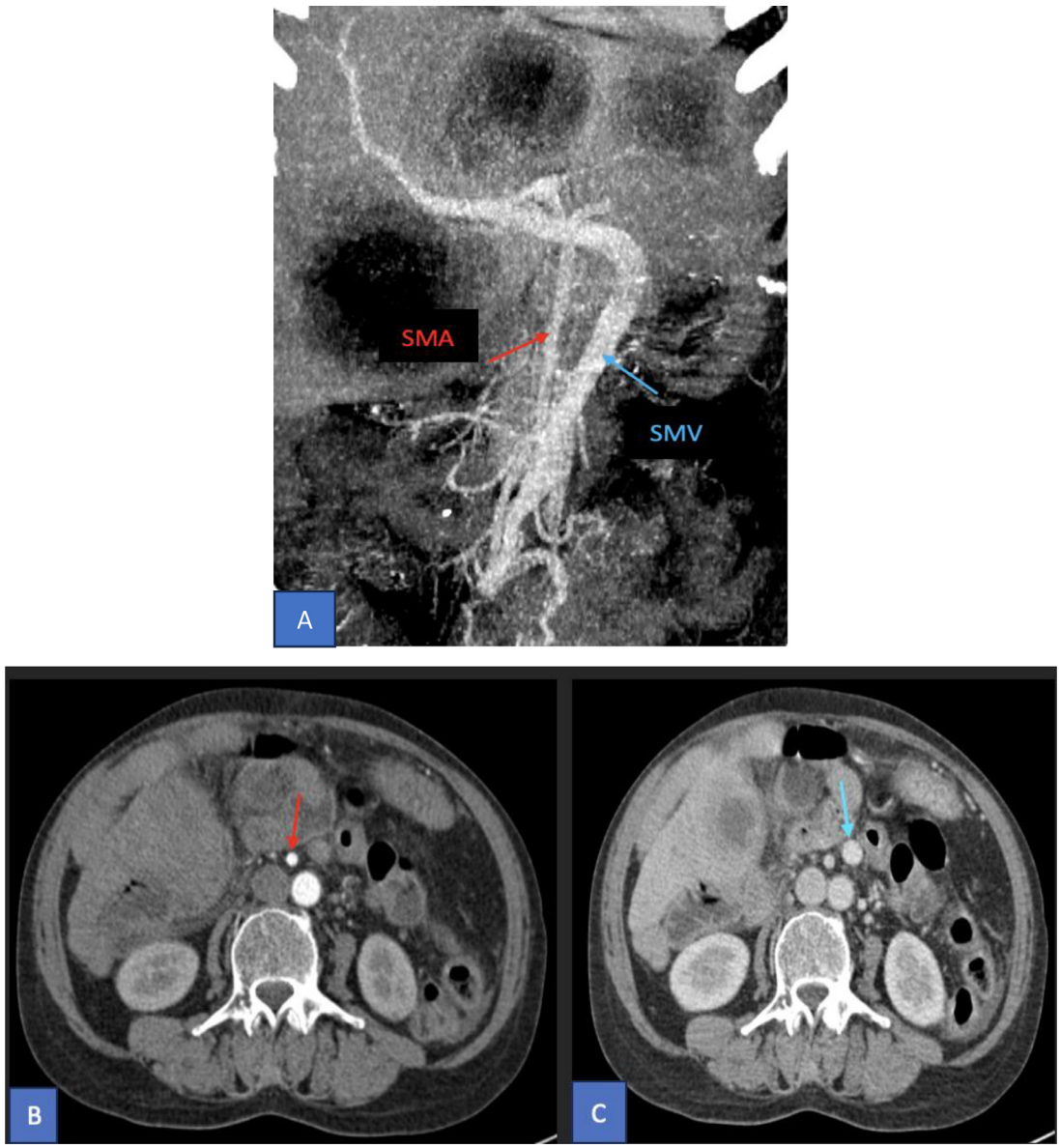

Fig. 2 – Coronal MIP CT (A) showing an inverted orientation of the superior mesenteric artery (SMA) and superior mesenteric vein (SMV). In the axial contrast-enhanced CT, the arterial phase (B) reveals the superior mesenteric artery positioned on the right (red arrow), while the portal phase (C) shows the superior mesenteric vein on the left (blue arrow).

Coecal cancer in the presence of malrotation is exceptionally rare, with only 39 documented cases worldwide [6]. This combination presents significant diagnostic and therapeutic challenges, as overlapping symptoms, such as intermittent abdominal pain, obstruction, and GI bleeding, complicate diagnosis [7]. Radiologists play a crucial role in early detection, as imaging findings greatly impact treatment decisions and surgical planning [8].

Imaging is essential for diagnosing rotational anomalies. Plain X-rays have limited diagnostic value unless volvulus is present. The absence of a cecal gas shadow or right-sided small bowel loops may indicate malrotation. An upper GI series remains a reliable diagnostic tool, demonstrating a vertically oriented duodenum that fails to cross the midline, with over 80% accuracy in confirming IM [9]. Ultrasonography is valuable for diagnosing common mesentery in children, offering high accuracy without radiation exposure. The inversion of the superior mesenteric vessels is key to its diagnosis, and its use remains limited to pediatric cases, with studies showing excellent sensitivity and specificity [10].

CT and MRI are the primary imaging modalities for diagnosing malrotation in adults, helping identify right-sided small bowel loops, a left-sided colon, abnormal superior mesenteric vessel positioning, and the absence of the uncinate process. Nichols and Li first described the abnormal positioning of the superior mesenteric vein (SMV), noting its position to the left of the superior mesenteric artery (SMA) in IM [11].

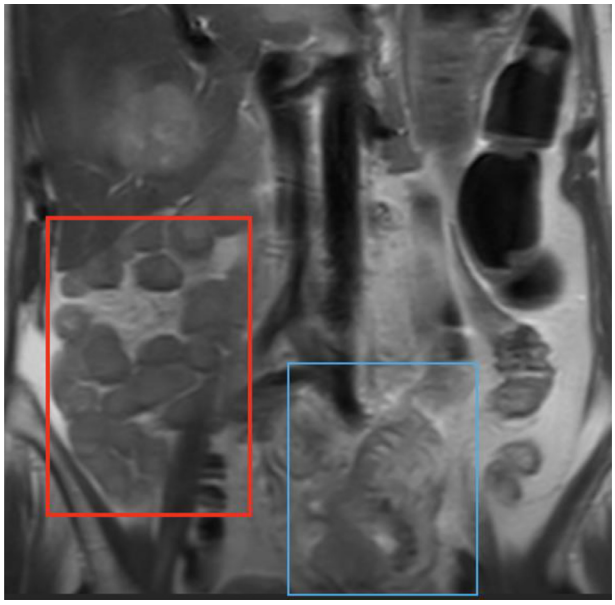

Fig. 3 – Coronal T2 MRI sequence showing an exclusive distribution of the intestines on the right side (red square), with the colon positioned on the left (blue square).

When IM coexists with colon cancer, surgical interventions become more complex due to altered vasculature and abnormal bowel positioning, which affect blood supply and lymphatic drainage. Surgeons may need to perform additional procedures, such as bowel mobilization or revascularization, to ensure adequate perfusion [12]. While open resection is generally preferred, laparoscopic hemicolectomy remains an option, particularly for right-sided colon cancer [13].

For metastatic cecal cancer, chemotherapy is the primary treatment, with standard regimens like FOLFOX (folinic acid, fluorouracil, and oxaliplatin) [14]. In advanced metastatic cases with no immediate surgical need, chemotherapy is preferred over surgery.

Conclusion

Our images highlight the occurrence of colon cancer in a malrotated bowel. Preoperative identification of malrotation helps refine surgical planning. Careful dissection of the superior mesenteric artery (SMA) and superior mesenteric vein (SMV) is essential during surgery to avoid accidental damage. Further research is needed to investigate the potential link between malrotation and malignancy.

Patient consent

Written informed consent was obtained from the patient for the publication of this case report.

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