Radiology Case Reports 19 (2024) 4513–4516

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Case Report

Left side appendiceal abscess in a patient with intestinal nonrotation: Case report ☆

Natnael Alemu Bezabih, MD[a,*], *Abdudin Heru Mehammed, MD*[b], *Muluken Yifru Gebresilassie, MD*[b], *Misganaw Yigletie Damtie, MD*[b], *Bezawit Alemu Bezabih, MD*[a]

[a] *Addis Ababa University, College of Health Sciences, Department of Radiology, Addis Ababa, Ethiopia*
[b] *Saint Paul's Hospital Millennium Medical College, Department of Radiology, Addis Ababa, Ethiopia*

ARTICLE INFO

Article history:
Received 24 May 2024
Accepted 11 July 2024

Keywords:
Appendicitis
Appendicial abscess
Intestinal nonrotation

ABSTRACT

Intestinal nonrotation is the most common type of mid-gut anomaly where the small bowel predominantly occupies the right side of the peritoneal cavity, while the colon primarily resides on the left. The occurrence of acute appendicitis in mid-gut anomalies poses a serious diagnostic challenge due to unprecedented clinical and imaging features. Here we present a 20-year-old female who came to the hospital with left lower abdominal pain of 3 weeks duration, referred with a diagnosis of tubo-ovarian abscess. Further evaluation with an abdominopelvic CT scan revealed ileocecal junction in the left lower quadrant with a well-defined appendiceal abscess. The absence of a prior diagnosis of nonrotation, combined with the atypical presentation of pain, complicates the diagnosis of appendicitis. We emphasize the significance of considering left-sided appendicitis as a potential diagnosis for left-sided abdominal pain and recommend early cross-sectional imaging to prevent complications and improve surgical outcomes.

Introduction

Acute appendicitis is the most frequent cause of acute abdomen, with a lifetime risk of 8.6% in males and 6.7% in females [1]. The classic symptoms of acute appendicitis include abdominal pain typically starting around the belly button and then migrating to the right lower quadrant, nausea, loss of appetite, and low-grade fever [2]. However, atypical presentation can create a diagnostic dilemma especially when the appendix is found in an unexpected location. Patients with mid-gut nonrotation and malrotation may exhibit left lower quadrant pain, leading to delayed diagnosis and management.

☆ Competing Interests: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

* Corresponding author.
E-mail address: natnael.alemub@aau.edu.et (N.A. Bezabih).

https://doi.org/10.1016/j.radcr.2024.07.049

Clinical presentation

A 20-year-old female presented to the emergency department with a complaint of left lower abdominal pain that started 3 weeks ago and has progressively increased in intensity. Associated symptoms include a low-grade fever, loss of appetite, and vomiting. The patient denies experiencing abdominal distension or diarrhea. She has no history of chronic illness and had a regular menstrual cycle, with her last normal menstrual period occurring 15 days before presentation. Additionally, she reports no vaginal discharge. Upon physical examination, the patient appeared unwell. Vital signs indicated a fever of 38.1°C, while other parameters were within normal limits. An abdominal assessment revealed a soft abdomen with guarding in the left lower quadrant, along with rebound tenderness. Laboratory investigations revealed an elevated white blood cell count of 12,000 per microliter (μL) with a left shift of 78%. Urine human chorionic gonadotropin (HCG) test returned negative. Based on these findings, the patient was referred to our hospital with a presumptive diagnosis of tubo-ovarian abscess. Subsequent ultrasound imaging was conducted, revealing a left lower quadrant small bowel thickening accompanied by a localized abscess.

Imaging findings

Pre- and postcontrast CT showed intestinal nonrotation with small bowel loops confined to the right side of the abdomen and colon predominantly to the left of the midline (Fig. 1). At the L2 vertebral body level the superior mesenteric artery (SMA) is located to the right of the superior mesenteric vein (Fig. 2). Fig. 3 shows, left lower quadrant well-defined hypodense collection with a thick enhancing wall with adjacent mesenteric fat stranding and a blind-ended bowel lumen having a thick enhancing wall terminating in the mal-positioned cecum likely representing the appendix (Fig. 3).

Discussion

Intestinal malrotation arises as a congenital anomaly, originating from an aberrant rotation of the gut during its return to the abdominal cavity in embryogenesis [3].

During normal embryogenesis, at the sixth week, the bowel herniates into the base of the umbilical cord and rapidly elongates, this process is called “physiological umbilical herniation”. and By 12 weeks of gestation, it returns to the abdominal cavity and fixation in the normal position in the abdomen, after undergoing a complex ~270-degree counter-clockwise rotation [4–6]. Midgut malrotation arises when the process of intestinal rotation and fixation deviates from its typical course. In cases of incomplete rotation, characterized by less than a 180° rotation, and intestinal nonrotation, where rotation falls below 90°, the midgut assumes an abnormal configuration [7]. This anomaly disrupts the normal positioning of the cecum and appendix. In malrotation, these structures will be located in the right upper quadrant, in a subhepatic location. Conversely, nonrotation may lead to the appendix being situated in the left lower quadrant [8,9].

The overall incidence of intestinal malrotation is unknown because some patients will present years later or remain asymptomatic for life but it is estimated to occur in up to 1:500 live births [4,10]. Rotational anomalies are typically diagnosed in newborns and young infants, with up to 75% of symptomatic cases occurring in newborns and up to 90% within the first year of life [7,11]. The clinical manifestations of malrotation in older children and adults are less specific compared to younger patients, making the diagnosis more challenging.

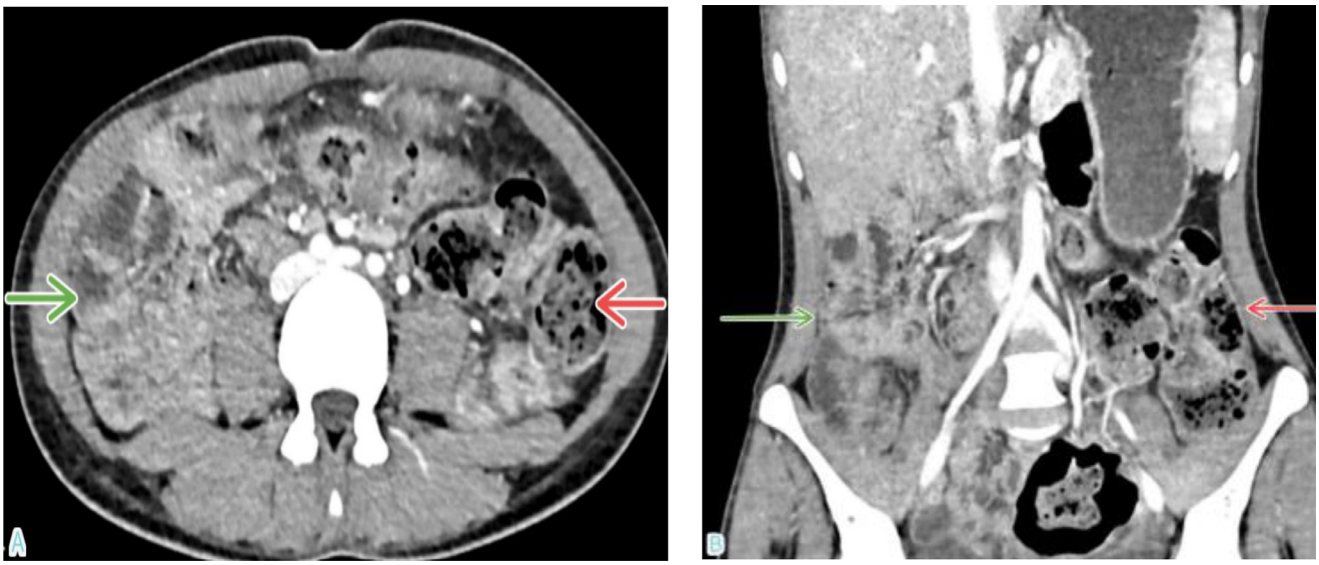

Fig. 1 – (A) Axial, (B) Coronal postcontrast scan reveals the small intestine occupying the right hemiabdomen (green arrows), while multiple large bowel loops are observed on the left (red arrows).

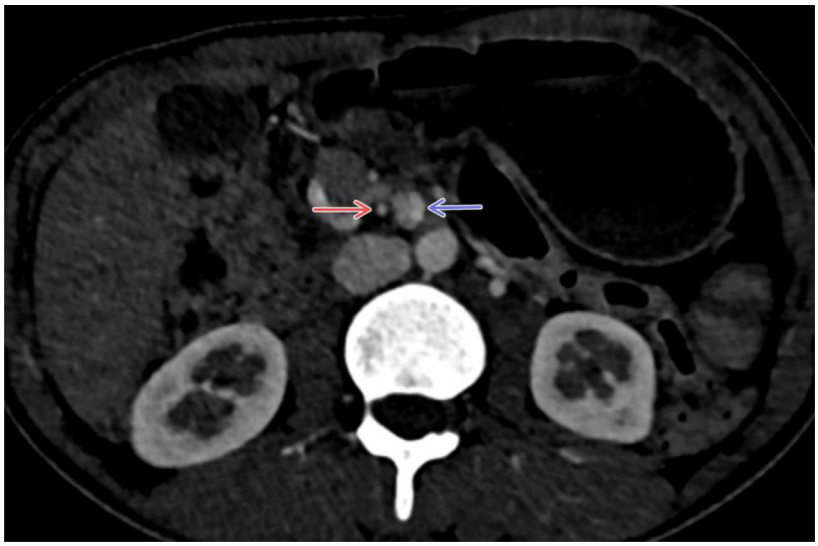

Fig. 2 – Axial postcontrast scan at the level of L2 vertebrae, Inversion of the superior mesenteric artery (SMA) and superior mesenteric vein (SMV) relationship is noted, with the SMA positioned on the right and the SMV on the left. Red arrow- SMA and Blue arrow- SMV.

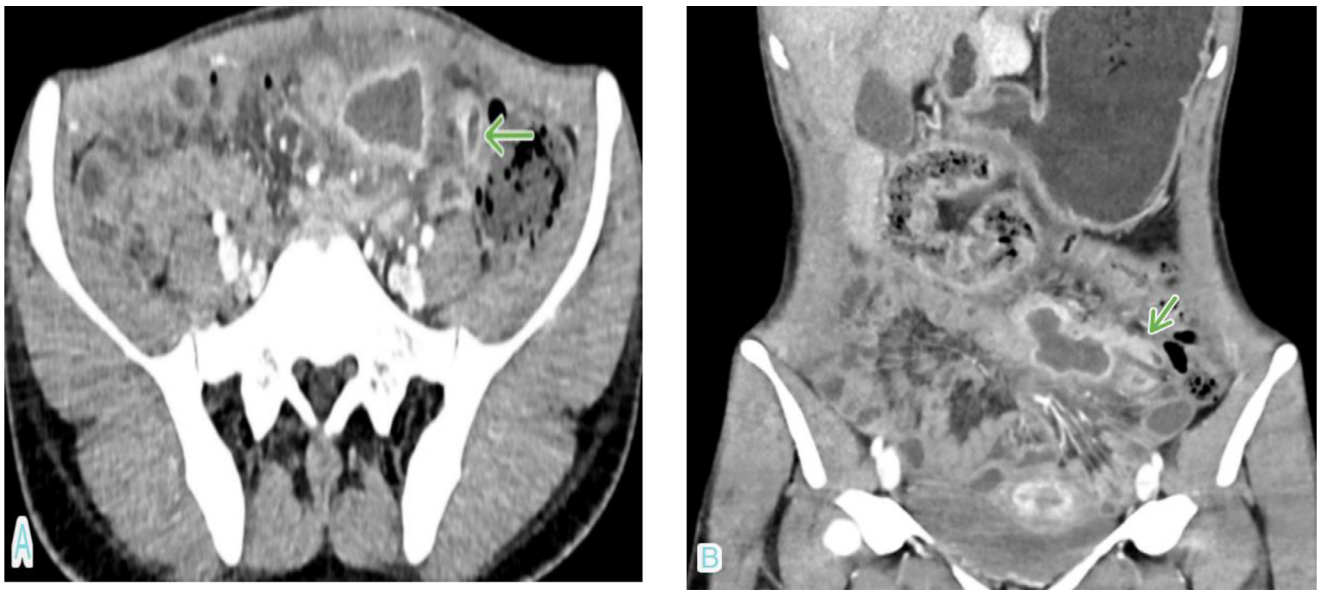

Fig. 3 – (A) Axial, (B) Coronal postcontrast axial scan at the level of sacral promontory, well-defined hypodense collection with thick enhancing wall and surrounding mesenteric fat stranding. The appendiceal tip is seen (green arrows) to the left of the collection with a dilated lumen measuring 9.8 mm with a thick enhancing wall.

Among adults, the most common symptom is a history of unexplained, chronic intermittent abdominal pain, which accounts for approximately 22% of cases [12].

Even though, patients with acute appendicitis present with a classic history of anorexia and periumbilical pain followed by nausea, right lower quadrant pain, and vomiting. Atypical appendicitis presentations can occur due to anatomical anomalies, in extremes of age, pregnancy, and coexisting conditions such as GI malignancies [13].

Therefore, maintaining a high index of suspicion as well as early cross-sectional imaging is important to prevent complications and improve outcomes. In our patient's case, due to the presentation of an atypical course, the diagnosis was delayed, ultimately resulting in an appendiceal abscess which warranted laparotomy and abscess drainage. It is thought to be the most frequent complication of acute appendicitis and often occurs in the 5 to 10 days following a perforated appendix [14].

Although the incidence of appendicitis in a malrotation gut is not well documented. it was first described by King in 1955 [15]. Since then, it has been described by many authors [16–22]. Therefore, we suggest that clinicians should keep the possibility of left-sided acute appendicitis for an acute abdomen presenting with left lower abdominal pain.

Management

An elongated left McBurney point incision was made and drainage of the left lower quadrant abscess collection was done. The appendix tip is identified adjacent to the collection and appendectomy was done. Copious irrigation was made with normal saline. The patient was put on intravenous antibiotics for 5 days after the surgery. No features of ileus were noted and the surgical wound is clean with no signs of infection. The patient was discharged after 6 days of hospital stay.

Conclusion

Early clinical suspicion and imaging are crucial for atypical presentation of appendicitis occurring in malrotation. Timely recognition can prevent complications such as appendicular abscesses and peritonitis leading to better outcomes for patients.

Patient consent

Written informed consent was obtained from the patient's parents for anonymized patient information to be published in this article.

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