

Appendicitis in a Malrotated Gut: An Unusual Cause of Left Upper Quadrant Abdominal Pain

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ABSTRACT

In this case report, we present a case of young male with left sided acute appendicitis who presented with left upper quadrant abdominal pain. The purpose of this report is to increase awareness in the emergency physicians and young surgeons of this rare presentation, with high suspicion of index could lead to facilitate early recognition and decrease morbidity and mortality.

Key Words: *Left sided acute appendicitis (LSAA). Midgut malrotation (MM). Left upper quadrant pain.*

INTRODUCTION

Abdominal pain is one of the most common surgical emergencies.^{1,2} Among it, acute appendicitis (AA) remains one of the most common surgical emergencies with over 250,000 cases diagnosed each year.^{1,2} It classically presents with right lower quadrant pain after vague epigastric or periumbilical discomfort. However, left-sided abdominal pain is an atypical presentation and has been reported rarely. The majority of these cases have been described to be associated with congenital midgut malrotation, situs inversus, or an extremely long appendix.³

The pathophysiology of AA is likely related to luminal obstruction of the vermiform appendix. This condition leads to rising intraluminal pressure, ischaemia, and eventual perforation. Perforation increases the mortality rate of AA from 0.0002% to 3% and increases the morbidity from 3% to 47%.^{2,3} This increase in complications associated with delayed diagnosis of appendicitis and perforation necessitates the need for early diagnosis to avoid complications.

Left sided acute appendicitis (LSAA) should, therefore, be considered in the differential diagnosis in young patients presenting with pain localized in the left upper or lower quadrant. Chest X-ray, abdominal USG and CT can provide quite useful information.^{3,4} Diagnostic laparoscopy is the gold standard in cases with diagnostic dilemmas.⁴

We report a case of left-sided acute appendicitis, presented with left upper quadrant pain, in a patient with a midgut malrotation.

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CASE REPORT

A 21 years male, with no associated comorbidities, presented in emergency department with the complaint of severe abdominal pain for the last two days. The pain was diffuse at the onset and then become localized to the left upper quadrant. It was associated with anorexia but no vomiting or change in bowel habits. There was no past history of any significant abdominal pain or any chronic illnesses. On examination, the patient was haemodynamically stable and afebrile. The abdomen was soft, with tenderness and rebound tenderness in the left upper quadrant. Laboratory investigations showed mild leukocytosis (WBCs: 11,800/mm³), otherwise all within normal limits.

CT scan of abdomen and pelvis with contrast administration, revealed midgut malrotation associated with an enlarged appendix, wall thickening, and appendicolith at the base (Figure 1). These findings were consistent with malpositioned perforated acute appendicitis.

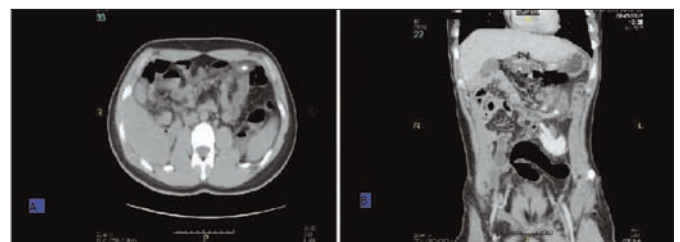


Figure 1: CT scan of the abdomen and pelvis with contrast. (A) Small bowel positioned in the right abdomen and caecum located in the left mid abdomen. (B) An enlarged appendix, with wall thickening, projected leftward from the caecum with appendicolith at the base.

Laparoscopy showed an acutely inflamed suppurative appendix located in the left upper quadrant (Figure 2) and laparoscopic appendectomy was performed successfully. Pathology report revealed suppurative appendicitis with periappendicitis. Postoperative recovery was uneventful and patient was discharged in good clinical condition on second postoperative day. He remained well during follow-up period of 6 months postsurgery.



Figure 2: Laparoscopy showed an acutely inflamed suppurative appendix located in the left upper quadrant.

DISCUSSION

Acute appendicitis is a protean disease and the clinical presentation varies according to the anatomical position of vermiform appendix.³ LSAA can occur at any age, ranging from the age of 8 to 63 years and is 1.5-fold more frequent in men than in women.^{3,4}

Situs inversus (SI) and midgut malrotation (MM) are two uncommon anatomic anomalies which may result in LSAA.⁵ In the reported patient, midgut malrotation resulted in delay in the diagnosis.

MM is the term used to describe a spectrum of congenital positional anomalies of the intestine caused by non-rotation or incomplete rotation of the primitive loop around the axis of the superior mesenteric artery (SMA) during fetal life. Although malrotation has been reported in older children and adults, about 80% of cases are diagnosed in the first month of life.⁶ According to published reports in the literature, the incidence of MM cited varies from 0.03% to 0.5% in live births.^{1,3,6}

LSAA is a diagnostic dilemma, because the appendix is located in an abnormal position. The differential diagnosis of LSAA may not be promptly established in the emergency setting and is often delayed due to lack of uniformity in the clinical signs.⁷ It is important to note that in about 18.4% – 31% of patients with SI and MM, the pain caused by LSAA has been reported in the right lower quadrant,^{1,5,7} which indicates the importance of accurate pre-operative diagnosis in order to avoid incorrect incision. It could be due to the reason that even though the viscera are transposed, the nervous system may not show the corresponding transposition, which may result in confusing symptoms and signs.

The diagnosis of acute appendicitis in patients with SI or MM can be based on physical examination, ultrasonography, CT scan abdomen and pelvis and diagnostic laparoscopy.^{1,2,6} After establishing the diagnosis of SI or MM, the surgical options are the same as

for normal patients.^{1,3,7} Both open and laparoscopic approach is feasible but laparoscopy is the treatment of choice.^{1,6,8} Laparoscopic appendectomy was first carried out in 1998 by Contini *et al.* in a 34-year-old male patient with SI.⁹ Since then, according to literature review, laparoscopic appendectomy has been performed in a total of 20 cases (12 with MM and 8 with SI), of which 2 underwent simultaneous cholecystectomy.^{3,6-10}

In this patient, laparoscopy was very useful both in establishing the differential diagnosis and in performing the definitive surgery. As in patients with normally localized appendix, appendectomy specimens in LSAA should be sent for pathological evaluation.

In short, acute appendicitis is a highly prevalent disease but may have varied presentation. The delay in diagnosis of appendicitis in patients with MM may increase patient morbidity. It is, therefore, important that emergency room physician and radiologist should have high index of suspicion of these unique clinical presentations for early diagnosis and appropriate surgical intervention to lower the associated morbidity.

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