Left sided Acute Appendicitis in a Patient with Situs Inversus Totalis: A Case Report

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ISSN: 3059-9733
DOI: 10.3126/jobh.v1i3.79155

ABSTRACT

Situs inversus totalis (SIT) is a rare inherent disease in which the thoracic and abdominal organs are transposed. Acute appendicitis is one of the most common causes of emergency room visit requiring surgical treatment and mostly present with right lower quadrant abdominal pain. Symptoms of appendicitis in situs inversus may appear in left lower quadrant making the diagnosis difficult, however it can be based on physical examination findings and imaging modalities including USG, CT scan, chest X-ray and diagnostic laparoscopy. After establishing the diagnosis of acute appendicitis in a patient with SIT, surgical options are either laparoscopic or conventional appendectomy.

Keywords: left sided appendicitis; situs inversus; situs totalis.

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INTRODUCTION

Acute appendicitis is probably the most common intraabdominal condition requiring emergency surgery accounting for 4-8% of all surgeries.[1] The diagnosis is based on clinical symptoms, basic radiologic findings and surgeon experience.[2] Appendicitis causing pain in the left lower quadrant is extremely rare and can occur with with two types of congenital anomalies: situs inversus totalis (SIT) and midgut malrotation (MM).[3] The incidence of SIT reported in the literature varies from 0.001% to 0.01% in the general population, whereas the incidence of acute appendicitis associated with SIT is reported to be between 0.016% and 0.024%.[2] Therefore, in patients with left lower-quadrant pain, we do not include acute appendicitis in the typical differential diagnosis. However, in patients with SIT, left lower-quadrant pain can be a symptom of appendicitis, and misdiagnosis or perforation of the appendix may occur. We report an unusual case of left-sided appendicitis with SIT.

CASE REPORT

A 9 years male child presented to emergency department (Kanti Children's Hospital, Kathmandu, Nepal) with abdominal pain and fever for 3 days. Abdominal pain was mostly over the left lower quadrant; fever with maximum recorded temperature was 101°F. He also had non-bilious vomiting with loss of appetite. No other significant past or medical history.

Patient was ill looking and agitated. His axillary temperature was 99°F, respiratory rate was 20/min, pulse rate 104 bpm and blood pressure was 100/60 mmHg. Abdominal examination revealed tenderness over left lower quadrant and supra-pubic region with guarding over left lower quadrant. Rebound tenderness was also present over left lower quadrant. Normal bowel sounds were heard on auscultation. No costovertebral or testicular tenderness was noted. The remainder of the physical examination was unremarkable.

Patient was then evaluated for acute abdomen and kept nil per oral, Parenteral antibiotics, analgesics and fluids were started. His blood workup showed high CRP titer and high leukocyte count (17000/mm^3 with neutrophilia 90%), normal urinalysis, normal liver and kidney function tests.

Ultrasonography of abdomen and pelvis showed features of acute appendicitis located in left lower quadrant with liver lying in left side and spleen located in right side _suggesting Situs inversus which later confirmed by chest X-ray. Chest X-ray showed apex of cardiac silhouette pointing towards right side suggestive of dextrocardia as shown in Figure 1.

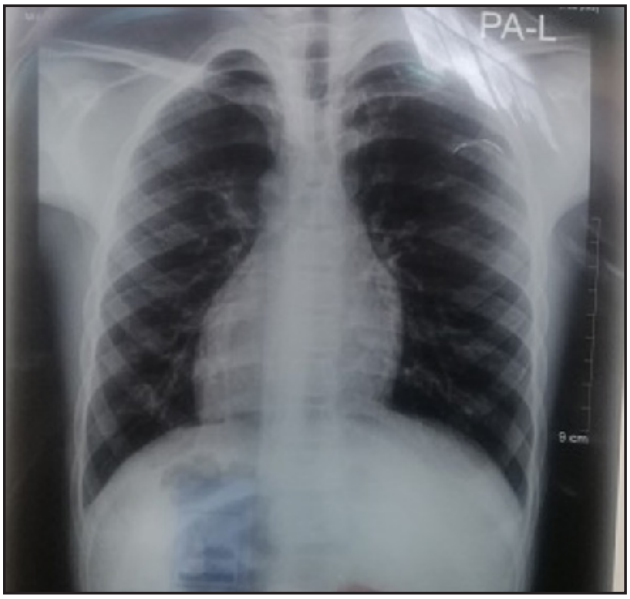

Figure 1. Chest X-ray showing apex of cardiac sihouette towards right side (Dextrocardia) with fundic gas shadow in right hypochondriac region.

Provisional diagnosis of left sided acute appendicitis with SIT was made. Patient was shifted to surgical ward and prepared for emergency appendectomy. As laparoscopic facility was not available in our center, appendectomy was performed by midline approach with lower midline incision.

The operative findings showed perforated appendix near base in the left iliac fossa region with thick, purulent collection in abdominal cavity, mostly in left lower quadrant and pelvis. Liver was palpable over left upper quadrant and spleen was palpable right side of the abdominal cavity.

Patient was kept in high dependency ward and then transferred to surgical ward. Oral feeding was started from second post-operative day.

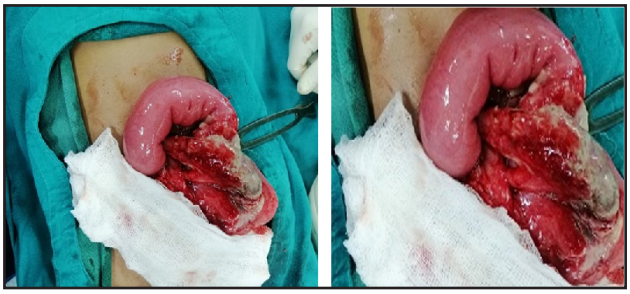

Figure 2. Appendix is seen in left iliac fossa with perforation at the base of the appendix.

Early ambulation was started. Alternate day dressing was done. Parenteral antibiotics were continued for total of seven days. Patient was then discharged on seventh post-operative day with uneventful post-operative stay. Follow-up visits for him was unremarkable and went smoothly. The patient was informed of his condition for future medical consultation or surgical intervention. The diagnosis of gangrenous appendicitis was confirmed on the specimen histopathological report.

DISCUSSION

SIT is an autosomal recessive congenital positional anomaly in which both the thoracic and abdominal organs are transposed, and the incidence in the general population is only 0.001 to 0.01%.[2] Acute appendicitis is one of the most common causes of acute abdominal pain and requires an emergency surgical operation.[4] The diagnosis is based on well-established clinical symptoms, basic radiologic findings and surgeon experience.[2] Approximately one third of patients with acute appendicitis have pain localized outside of the right lower quadrant because of the various positions of the appendix vermiform is, i.e. retrocecal, pelvic, subcecal, preileal and postileal, while subhepatic, meso-celiac, mid-inguinal and left-sided are seen more rarely.[5]

Left lower-quadrant pain can be caused by diseases like; acute sigmoid diverticulitis, intestinal obstruction, incarcerated hernia, enteritis, and atypical right-sided appendicitis and left-sided appendicitis, renal colic, cystitis, epididymitis, prostatitis, testicular torsion, pelvic inflammatory disease, and mesenteric ischemia.[1]

Appendicitis causing pain in the left lower quadrant is extremely rare and can develop in association with two types of congenital anomalies: SIT and mid-gut malrotation.[3] In these patients with SIT acute appendicitis can be misdiagnosed or perforation of the appendix may occur because of late diagnosis.

The situs anomalies are rare congenital defects and may go unrecognized until incidentally detected during imaging for unrelated conditions or during emergency surgery. The diagnosis of left lower quadrant pain is based on well-established clinical symptoms, physical examination and physician's experience .The diagnosis can be based on chest X-ray, ultrasonography, and CT images[6]. The value of CT in the diagnosis of acute appendicitis has been well-documented, with a reported accuracy of 90%-98%.[7,8]

After establishing the diagnosis of SIT, the surgical options are the same as for normal patients. Laparoscopy may be very useful both in establishing the differential diagnosis and in performing the definitive surgery. Laparoscopic approach is useful and safe procedure both for diagnosis and treatment of these unclear clinical pictures. Laparoscopic appendectomy in SIT is technically more challenging because of the mirror nature of the anatomy.[6]

CONCLUSIONS

The incidence of situs anomalies are very rare in general population and are incidentally diagnosed. A strong suspicion of appendicitis with relevant investigations for the confirmation of the diagnosis by imaging modalities like ultrasonography or abdominal CT, followed by emergency operation can reduce the likelihood of misdiagnosis and complications including perforation and abscess.

Conflict of interest: None

Funding: None

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Citation: Lacoul R, Shrestha P. Left sided Acute Appendicitis in a Patient with Situs Inversus Totalis: A Case Report. JoBH, Nepal. 2025; 1(2): 239-242.