Acute Appendicitis in Situs Inversus: A Case Report

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Situs inversus viscerus is a rare condition[1]. We report on a 30 year old male who presented with a 2 day history of right lower quadrant pain. On examination, there was marked tenderness in the right lower quadrant. The diagnosis of situs inversus was confirmed during surgery. A left-sided appendix was removed through an extended right McBurney incision. Failure to recognize dextrocardia on the chest roentgenogram and not identifying liver dullness on the left led to an incomplete preoperative diagnosis in this case.

Keywords: situs inversus viscerus, acute appendicitis, dextrocardia.

Introduction

Transposition of the viscera is an unusual anomaly. The incidence of complete situs inversus documented by autopsy and chest surveys varies from 0.002 to 0.1 percent[2]. A single autosomal recessive gene is responsible for situs inversus[3].

Awareness of such an anomaly may prove important, especially in patients requiring surgical intervention. A simple chest roentgenogram can uncover the diagnosis[2,4]. When a chest x-ray reveals dextrocardia, situs inversus must be considered. Complete situs inversus can also be anticipated on physical examination, by the presence of a right sided apex beat or left-sided liver percussion dullness[5].

Case Report

A 30- year old previously healthy male, presented to our emergency room(ER) complaining of a 2 day history of right lower quadrant abdominal pain. Physical examination revealed right lower quadrant tenderness but no rebounding pain, psoas sign, obturator sign, or Rovsing's sign. Routine laboratory studies, including CBC and biochemistry, were within normal limits except for a leukocytosis(WBC: 22,710) with 0% bands and 87% neutrophils. A chest roentgenogram was performed in the ER but no one noted an abnormality.

The initial impression was acute appendicitis and the patient was taken to the operating room where a right McBurney's incision was made. When attempting to approach the appendix in the normal manner following the teniae coli, the appendix could not be found. After reviewing the chest roentgenogram, dextrocardia, a right-sided gastric air bubble and left-sided liver shadow on the left. The original incision was extended medially into the rectus sheath and a left-sided suppurative appendix was located. The appendix was removed easily in a retrograde fashion. The pathology report concurred with the diagnosis of acute suppurative appendicitis. The patient was discharged on the 5th post op. day after an uneventful convalescence.

Discussion

Situs inversus is an unusual anomaly. A sur-

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geon may see such a patient only once or twice in his lifetime[2]. Accurate preoperative knowledge may avoid embarrassing errors in these individuals. The aim of this report is to remind the physician of the importance of the general physical examination and the careful review of all studies ordered on a patient before making any final decisions. The correct preoperative diagnosis of left-sided appendicitis in a patient with situs inversus may have been considered if dextrocardia had been noted during the preoperative evaluation[4-6].

In the early stage of acute appendicitis in normal individuals, the pain is usually first perceived as epigastric distress which later localizes to the right lower abdomen. Some authors believe that the right-sided pain is a referred phenomenon, while others believe it is the result of direct visceral perception. As the disease progresses and the parietal peritoneum becomes involved, direct somatic perception may occur[5,7].

Our patient, complained of right lower quadrant pain, but the diseased organ was on the left side. This was presumably due to referred pain or visceral pain. In situs inversus, although the viscera are transposed, the component parts of the nervous system are not reversed[2,4-6,8-9]. Therefore, it is reasonable to assume that innervation will remain the same regardless of the position of the viscera[10]. In the early stages of the disease pain may be projected falsely to the right side, but as the disease progresses somatic localization should occur on the left, directly over the inflammed organ[2]. An early and accurate pre-operative diagnosis is often difficult in patients with unrecognized situs inversus, because the ectopic position of the appendix frequently leads to atypical symptoms[5-6].

In 1949, Blegen reviewed the literature on appendicitis in situs inversus. An error in diagnosis occurred in approximately 45% of these cases, with an incorrect surgical incision made in 31%[2]. When the existence of complete situs inversus was known, a diagnosis of acute left-sided appendicitis was made preoperatively. Surgical approach was made through a left lower quadrant, oblique, muscle-splitting incision(left McBurney incision). When complete situs inversus was diagnosed intraoperatively, a secondary left McBurney incision was made if the appendix could not be found through the initial incision[8,10,11]. Some authors favor extending the incision medially into the rectus sheath[8]. The use of a second midline incision is recommended if the cecum is not located on the right. This incision allows for adequate exposure[4-6]. In our patient, the left-sided engorged appendix was easily approached via the extended right McBurney incision, obviating the need for a second incision .

In our patient, the visceral transposition was not recognized on the chest roentgen film preoperatively because of failure to note the positional marking on the film. The chest radiograph revealed dextrocardia(Fig. 1) and the abdominal radiograph revealed a left-sided liver shadow(Fig. 2).

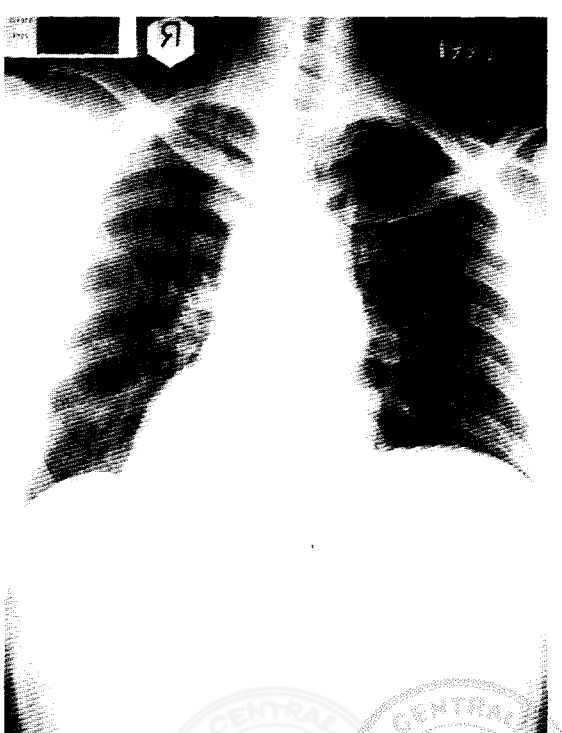

Fig. 1 Chest rotengenogram shows dextrocardia

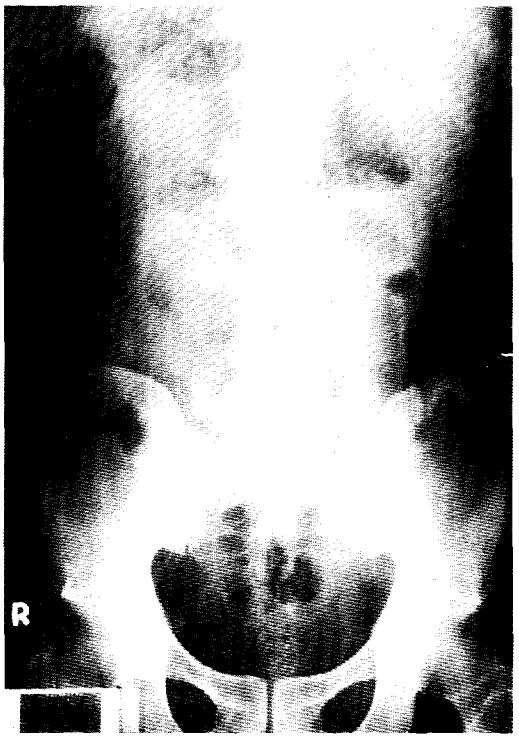

Fig. 2 Shadow of the liver noted in plain adbomen left side

Although the condition can be recognized by physical examination alone, it is usually overlooked unless roentgenogram studies are made[2]. The correct pre-operative diagnosis of left-sided appendicitis in situs inversus should be straightforward if dextrocardia or transposition of the visceral organs are noted[6].

While complete situs inversus is rare, if unrecognized common conditions such as acute appendicitis can present atypically leading to misdiagnosis or a suboptimal surgical approach. This unnecessary increase in morbidity can be avoided by a careful physical exam focussing on location of the apex beat and liver percussion dullness. If suspected a simple chest roentgenogram will confirm or refute the clinical impression.

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急性闌尾炎於內臟逆位：病例報告

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內臟逆位甚爲罕見。依據不同的統計方法，其發生率約爲十萬分之二至千分之一。本文描述一位三十歲男性，主訴右下腹部疼痛已二日。腹部觸診發現右下腹明顯壓痛。此病患於手術中才被診斷爲內臟逆位。右側McBurney切口擴大後，而將左側盲腸順利切除。術前診斷的誤判，主要肇因於胸部X光並未發現右偏心臟，與粗略的理學檢查。

關鍵詞：內臟逆位，急性闌尾炎，右偏心臟

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