

Delayed diagnosis of abdominal pain in patient with situs inversus totalis in emergency department

A case report

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Abstract

Rationale: Abdominal pain is one of the most common complaints for patients in emergency department. It's difficult to make an accurate diagnosis by emergency physician in time, especially in patients with situs inversus totalis.

Patient concerns: A patient with acute exacerbation of chronic left upper quadrant abdominal pain.

Diagnoses: cholangiolithiasis with situs inversus totalis.

Interventions: laparoscopic cholecystectomy and laparoscopic exploration of common bile duct.

Outcomes: The patient had an uneventful recovery.

Lessons: High suspicion and adequate evaluation are important for diagnosis in patients with abdominal pain and situs inversus totalis in emergency department, and physical examination, electrocardiography and radiological investigations are necessary.

Abbreviations: SIT = situs inversus totalis, SVI = situs viscerum inversus.

Keywords: abdominal pain, cholelithiasis, situs inversus totalis (SIT), situs viscerum inversus (SVI)

1. Introduction

The diagnosis of abdominal pain is based on well-established clinical symptoms, physical examination, and physician experience. To make a timely diagnosis is difficult for emergency physicians. Understanding the relationship between anatomy variation and clinical presentation shall help them to have early clinical suspicion, implement sensitive imaging modalities, and correctly interpret the radiographic findings. Here, we present a patient who was admitted with left upper quadrant abdominal pain and was diagnosed as situs inversus totalis (SIT) and acute cholecystitis with cholelithiasis.

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The case, acute cholangitis with the atypical presentation of left upper quadrant abdominal pain concerned this rare but important clinical situation. Laparoscopic cholecystectomy and laparoscopic exploration of common bile duct are usually performed in patients with acute cholecystitis and cholelithiasis. However, if the symptomatic cholelithiasis occurs in SIT, the risk of laparoscopic significantly rises.^[1–5] Only careful and adequate evaluation by an experienced surgeon could perform the procedure safely and effectively.

2. Case report

The study was performed in accordance with the Declaration of Helsinki and was approved by the Human Ethical Committee of Affiliated Hospital of Southwest Medical University.

A 51-year-old woman with no medical history was admitted to the emergency department of a local hospital because of acute abdominal pain with fever and rigors. She had a history of recurrent episodes of epigastric and left hypochondrial pain for 27 years. There was no history of any other previous disease or surgery. Her body temperature was 38.5°C, blood pressure was 123/81 mm Hg, respiration rate was 16 beats/min, and heart rate was 89 beats/min. The physical examination revealed nothing significant on general examination showed tenderness in the left upper quadrant of the abdomen without a Murphy's sign. The laboratory tests revealed that white blood cells count (WBC) was 10,300/mm³ and other parameters were normal. No abdomen plain film, chest x-ray, ultrasound, or computer laminography were performed. The patient was treated with antibiotics. Fifteen days later, she was brought to our emergency department with the presentation of gradual aggravation of the left upper abdominal pain. Her body temperature, blood pressure, and

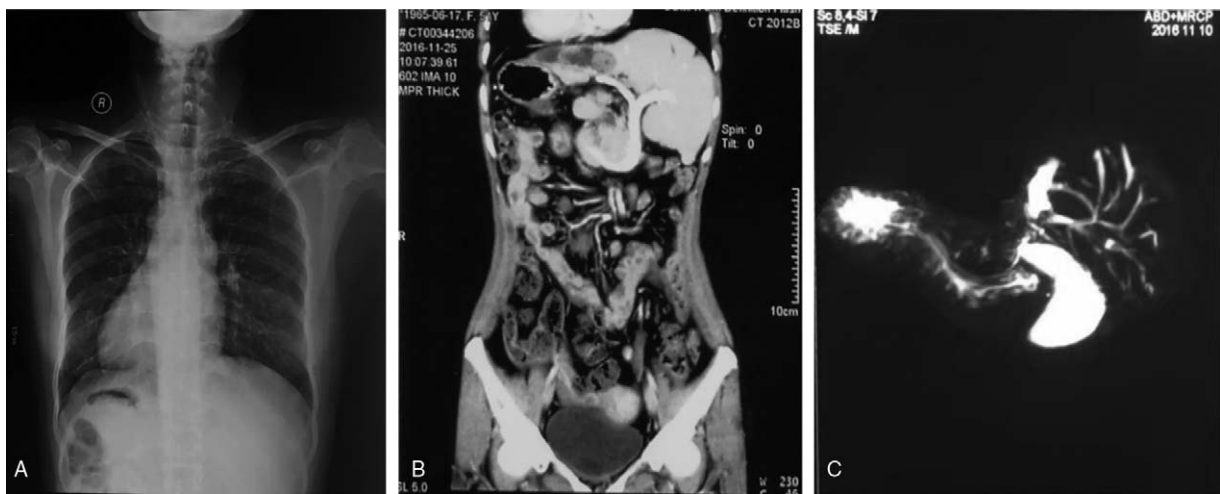


Figure 1. (A). X-ray revealed dextrocardia. (B) CT demonstrated SIT and cholangiolithiasis of the left-sided gallbladder. (C) ABD + MRCP finding: left-sided gallbladder. ABD = abdominal, CT = computed tomography, MRCP = magnetic resonance cholangiopancreatography, SIT = situs inversus totalis.

heart rate were normal. She had tenderness in the left upper abdominal quadrant. The laboratory parameter showed the following: WBC $12,700/\text{mm}^3$ (normal range: 4000–10,000), C-reactive protein 0.46 mg/dL (0–8), total bilirubin $11.3\ \mu\text{mol/L}$ (3.4–20.5), direct bilirubin $3.3\ \mu\text{mol/L}$ (0–6.8), indirect bilirubin $8.0\ \mu\text{mol/L}$ (0–20), alanine transaminase $78\ \mu\text{mol/L}$ (0–40), aspartate aminotransferase $109\ \mu\text{mol/L}$ (0–41), alkaline phosphatase $65\ \mu\text{mol/L}$ (35–125), lactate dehydrogenase $147\ \mu\text{mol/L}$ (91–245), amylase $78\ \mu\text{mol/L}$ (80–180), lipase $56\ \mu\text{mol/L}$ (30–109), troponin $0.04\ \mu\text{g/L}$ (0–0.15), myohemoglobin $13\ \mu\text{g/L}$ (12–76), and creatine kinase $12\ \mu\text{mol/L}$ (0–18). The clinical features at admission revealed the following abnormal findings: apex beat and cardiac dullness were found in the right chest, stomach tympany was audible in the right of the epigastrium, and liver dullness on the left. The abdomen was soft with no palpable mass with tenderness in the left hypochondrium. Chest x-ray demonstrated dextrocardia (Fig. 1A), abdominal computerized tomographic (CT) scanning (Fig. 1B) and magnetic resonance cholangiopancreatography (Fig. 1C) demonstrated intrahepatic and extrahepatic bile duct stones with SIT and cholangiolithiasis of the left-sided gallbladder. A delayed diagnosis of acute left-sided cholecystitis and cholangiolithiasis with intrahepatic bile duct extension was established.

The patient was treated with antibiotics and laparoscopic cholecystectomy and laparoscopic exploration of common bile duct successfully. The patient was allowed to leave on the seventh postoperative day and had an uneventful recovery.

3. Discussion

Acute abdominal pain is one of the most common symptoms in emergency departments, and among them acute cholelithiasis is one of the major surgical abdominal diseases.^[1] From typical history and physical examination, the emergency physicians can find surgical disorder from other more common nonsurgical conditions and give the institute treatment protocols in time. The diagnosis of cholelithiasis is usually based on clinical symptoms, physical examination, laboratory or imaging examination.^[1] Patients with unresolved clinical symptoms or local peritonitis, inadvertent physical examination, and inadequate observation may be due to delayed diagnosis or easily be misdiagnosed as

peptic ulcer, gastric perforation, and acute myocardial infarction when the abdominal pain is on the left upper quadrant, especially associated with abnormal anatomy such as visceral situs inversus and SIT.^[6]

Situs viscerum inversus (SVI) is one of the abnormality with an incidence of 1:5000 to 1:20,000.^[7] Situs inversus usually remains unknown, unless it is associated with other abnormalities, in which the viscera is totally or partially transposed to the opposite side of the body. In total situs inversus, all viscera are completely on the opposite transposition, dexiocardia, appendix on the left hypogastrium, right-sided spleen, and left-sides liver.^[8] It is difficult for emergency physicians to make a timely diagnosis because the etiologies of left upper abdominal pain are multiple and diverse especially in patients with SIT.^[1,2,8–10] There is only 1 case of SIT that has been found in the emergency medicine literature before this.^[11] Finding the typical presentation is the key to avoid delay or mistake diagnosis in patients with situs inversus.

Pain in either hypochondrium or epigastrium usually presents in symptomatic cholelithiasis with situs inversus.^[1] The pain locates on the right side of the abdomen in 10% of patients and presents with epigastric pain in 30% of patients.^[12] If unknown, the signs and symptoms of patients may be vague and the correct diagnosis is delayed. In this case of situs inversus, she had a abdominal pain history for 27 years but did not get diagnosed. The patient has had symptoms for 15 days when she presented to our emergency department. Careful physical examination revealed her heart beat in the right hemithorax, gastric tympany in the right epigastrium, and hepatic dullness in the left upper abdominal. The diagnosis of SIT and cholelithiasis with biliary colic was confirmed. For the patients with left upper abdominal pain, cholelithiasis associated with SIT should be considered besides acute myocardial infarction, peptic ulcer,^[4] ulcer perforation,^[5] acute cholecystitis,^[6] cholelithiasis,^[7] acute pancreatitis,^[6] and left-sided gallbladder without SVI.^[13] However, the emergency physician on duty are prone to ignore situs inversus without careful physical examination and any imaging studies such as ultrasonography, x-ray, and abdominal CT scan. With high suspicion and adequate observation, doctors may find the abnormal features.

In conclusion, in the emergency service, early high suspicion and adequate evaluation are important for diagnosis in patients

with uncertain clinical features, and that the physical examination along with electrocardiography and radiological investigations play a significant role in preoperative diagnosis and determination of proper treatment.

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