

Chilaiditi Syndrome - A Case Report of Pseudopneumoperitoneum

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ABSTRACT

Pneumoperitoneum presents a crucial diagnostic indicator, dictating the immediacy of patient management within an emergency department. Chilaiditi's sign denotes an uncommon radiological discovery characterized by the transposition of the large intestines between the diaphragm and the liver. Should symptoms arise in the patient, this condition is referred to as Chilaiditi syndrome.

We report a unique instance involving a 77-year-old female who visited our emergency department with complaints of chest and abdominal pain. Upon radiological evaluation through chest radiograph and computed tomography scan, she was diagnosed with Chilaiditi syndrome. Instead of opting for invasive and potentially unnecessary diagnostic and therapeutic procedures, she was managed conservatively. This approach was chosen to mitigate the risk of heightened morbidity associated with unwarranted interventions.

This case report delves into Chilaiditi syndrome, aiming to enhance the understanding of healthcare practitioners regarding this condition. Emphasizing the significance of thorough physical examinations in assessing patients presenting with apparent signs of air under the diaphragm is a key focus of this review.

Keywords: Pneumoperitoneum, Chilaiditi, Pseudopneumoperitoneum.

INTRODUCTION

Chilaiditi syndrome is an infrequent condition characterized by radiographic evidence revealing colonic interposition amidst the liver and the diaphragm or abdominal wall, often accompanied by clinical symptoms. [1] Typically, the hepatic flexure of the colon is the primary site of interposition; however, in rare instances, the small bowel may also be involved. [2] Its incidence is estimated to range from 0.025% to 0.28%, with a predilection for males and a median onset age of 60. [3-4] Given its rarity, the etiology remains poorly understood. It is suggested to be either congenital or acquired, with congenital factors possibly including the absence of falciform or suspensory ligaments, while acquired factors may involve conditions such as cirrhosis, right diaphragmatic paralysis, and obesity. [1] Despite its distinctive radiographic features, the rarity of this disease, coupled with variations in clinical presentation, frequently leads to misdiagnosis or delayed diagnosis. In this case, we present a 77 year old female with complaints of chest pains, abdominal pains and vomiting.

CASE PRESENTATION

On arrival, the patient had a blood pressure of 143/77 mmHg, pulse rate of 106 beats per minute, temperature of 36°C, respiratory rate of 18 breaths per minute, saturation of 99%, and a random blood sugar level of 166 mg/dL. The patient reported chest pain that

started the previous night, which was localized mostly to the central chest. The chest pain was non-exertional and non-radiating. The patient reported associated colicky upper abdominal pain with nausea and vomiting.

Physical examination revealed a patient who appeared stated age in no cardiopulmonary or painful distress. The patient was afebrile, acyanotic, and anicteric. The mucous membranes were pink and moist. There was symmetric rise and fall of the chest with bilateral air entry. The cardiovascular exam revealed S1S2 sounds and no murmurs. The patient's abdomen was mildly distended, the right hypochondrium revealed mild tenderness with tympanic percussion tones.

Laboratory investigations were non-contributory.

A chest radiograph was obtained. It indicated the presence of a distended bowel tract filled with air within the right subphrenic space (Figure 1). Computed tomography indicated the absence of free air, thereby confirming the presence of isolated pseudopneumoperitoneum, attributed to colonic interposition between the liver and diaphragm (Chilaiditi's sign). The patient was admitted to general surgery service and received conservative management and was closely monitored with analgesia, intravenous fluids, and bowel decompression, resulting in a favourable response. She was discharged home in good condition four days later.



Figure 1: Chest radiograph shows air under the right diaphragm.

DISCUSSION

We report a case of a patient presenting with complaints of chest and abdominal pain, whose imaging revealed the presence of air under the diaphragm, prompting consideration for surgical intervention. Pneumoperitoneum, characterized by air

beneath the diaphragm, serves as a critical diagnostic sign in determining the urgency of patient management in the emergency department. Typically, when radiographic findings indicate the presence of air under the diaphragm, surgical consultation and potential emergent surgery are often pursued.

Initially described by radiologist D. Chilaiditi, the radiological finding of air under the diaphragm due to colonic transposition between the right hemidiaphragm and the liver came to be known as Chilaiditi's sign. [5] When symptomatic, this condition is diagnosed as Chilaiditi syndrome. Although rare in the general population, with an estimated prevalence of 0.25%, [2] it predominantly affects older males, with a male-to-female ratio of 4:1. [2-6]

The etiology of Chilaiditi syndrome remains unclear, although pathologic transposition of the colon into the potential space between the liver and the diaphragm is suspected to play a major role. This transposition can be attributed to various factors, including ligamentous laxity, elevation of the right diaphragmatic copula due to phrenic nerve paralysis, liver cirrhosis, and chronic obstructive pulmonary disease, among others. [7]

Symptoms associated with Chilaiditi syndrome can vary widely, ranging from less urgent, such as constipation, anorexia, and vomiting, to more severe medical emergencies, such as chest pain, respiratory distress, abdominal pain, volvulus, and bowel obstruction. Abdominal pain, in particular, is a common symptom, ranging from chronic intermittent discomfort to acute severe pain in the majority of patients. [3]

The diagnosis of Chilaiditi syndrome is typically made radiologically, with imaging revealing the abnormal position of the colon, often resulting in colonic air appearing as air under the diaphragm on plain images. While chest and abdominal plain X-rays are less sensitive for diagnosis, CT scans are more reliable. [8]

Conservative management suffices for most cases, involving bed rest, intravenous fluid support, and bowel decompression to alleviate symptoms. However, in cases presenting with complicated abdominal pathologies such as obstruction, volvulus, or perforation, conservative management alone may be inadequate, necessitating surgical intervention. Surgical options for

complicated Chilaiditi syndrome include resection of the affected portion of the colon (e.g., right hemicolectomy) or fixation of the liver (hepatopexy) to the abdominal wall, aimed at obliterating the potential space and preventing colonic displacement. [9-10]

CONCLUSION

This case underscores the significance of approaching patient care holistically, focusing on the individual rather than merely relying on diagnostic findings. While medical education often emphasizes that air beneath the diaphragm signifies a surgical emergency, this assumption, while generally true, should not overshadow the importance of a comprehensive physical examination. In cases where there are no indications of peritonitis during the examination, further investigations should be pursued to elucidate the underlying pathology.

Physicians need to be cognizant of potential causes of pneumoperitoneum that may not necessitate immediate surgery. By doing so, they can avoid subjecting patients to unnecessary surgical procedures, thereby mitigating the associated risks. This approach prioritizes patient safety and ensures that interventions are tailored to individual clinical presentations, minimizing undue harm.

Declaration by Authors

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