

Chilaiditi Syndrome - Air Under Diaphragm Not Always a Surgical Emergency

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Abstract

Chilaiditi Syndrome is a rare syndrome which occurs in 0.025% to 0.28% of the population. In this condition, there is symptomatic disposition of the right colon between the liver and the right hemidiaphragm. The symptoms of the patients can range from acute bowel obstruction to being asymptomatic. Diagnosis of Chilaiditi syndrome is very important as it can lead to life-threatening complications like perforation, volvulus, and bowel obstruction and is best achieved by doing CT-scan. Here, we describe a case of 59-year-old man who presented with abdominal distention and pain in the abdomen. Chilaiditi Syndrome was diagnosed via radiological methods and the patient was sent to the long term acute care facility as he refused to opt for surgery. Thus, it shows that Air under diaphragm is not always a surgical emergency and not recognizing the pathognomonic sign may lead to needless intervention. The clinical manifestations, diagnosis, and management of this syndrome have been analyzed.

Keywords: Chilaiditi syndrome; Radiograph; Diaphragm

symptoms and the interposed bowel is either ascending colon, transverse or hepatic flexure [2,3].

Chilaiditi Syndrome can be caused by any condition that leads to a hyper mobility of the intestines or enlarged right sub diaphragmatic space. Some of the predisposing factors are intestinal, hepatic, diaphragmatic and other variable causes. Anything that leads to increased intra-abdominal pressure such as ascites and pregnancy which make sits easily for the movement of bowel in to the sub diaphragmatic space and past the liver.

Chilaiditi sign is typically an important clinical finding and can be mistaken for free air under diaphragm in plain X-ray and can lead to unnecessary exploratory laparotomies [7-9]. Pseudopneumoperitoneum also called as Chilaiditi sign can be differentiated from true pneumoperitoneum on a close assessment of X-ray under the right diaphragm for colonic haustra. The diagnosis can be confirmed by CT-scan and thus limit unnecessary surgeries [10].

It is important to have knowledge of Chilaiditi Sign or syndrome in a clinical and procedural setting. It can also be caused by procedures like bariatric surgery, colonoscopy and during feeding tube insertion. Colonoscopy can be complicated by Chilaiditi syndrome and can also lead to perforation due to trapping of air in an angulated segment of bowel.

The management of Chilaiditi Syndrome is mostly conservative using stool softeners, enemas, or nasogastric decompression and intravenous hydration. It is preferred to do conservative management but in cases, with perforation, ischemia and intestinal obstruction, it is better to do surgical treatment. After the conservative management of Chilaiditi syndrome, a repeat radiograph is suggested that may show the disappearance of air under the diaphragm. Thus, the follow-up radiograph is helpful in confirming the success of the therapy with the disappearance of the subdiaphragmatic air and also relocation of the distended intestine back to the position underneath the liver.

Case Presentation

A 59-year-old Jamaican male, smoker, alcoholic with a history of diabetes mellitus, hypertension, dilated cardiomyopathy, presented with respiratory distress for which he was intubated. Even though he had no significant surgical

Introduction

Chilaiditi syndrome was first described by Cantini in 1865 after an observation in the clinical examination but it was only in 1910 that Demeritus Chilaiditi published a study reporting three cases; hence the radiological diagnosis was consolidated [1-4]. The Chilaiditi syndrome is a rare syndrome which occurs 0.025% and 0.28% in all age ranges, with a greater frequency in men than women with a ratio of 4:1. The chilaiditi syndrome comprises of signs and symptoms such as nausea, retrosternal pain, abdominal pain, vomiting, respiratory symptoms, abdominal distension, sub-occlusion or intestinal obstruction [5,6].

Chilaiditi syndrome can be divided into two types i.e., anterior and posterior according to the position of the interposed bowel relative to the liver [1]. It is either permanent or temporary interposition of the small bowel or colon in the hepatic- diaphragmatic space that causes

history, his abdomen was becoming increasingly distended and the patient had increased flatus without stools. Although, he was tried on oral feedings but the residuals were quite high. After being on the ventilatory support he develops increased abdominal girth, intermittent abdominal pain, mild right upper quadrant tenderness, flatus and tympanic bowel signs. The patient developed ileus and constipation. On physical examination, his abdomen was mildly distended with high pitched bowel sounds in all quadrants and was tympanic. Lab values were unremarkable except for low potassium of 2.9 mEq/l. Chest X-ray showed air between the lung and liver with marked hypoventilation. A flat plate of the abdomen revealed diffuse ileus with no signs of obstruction. Chilaiditi's syndrome was diagnosed. The patient did not opt for surgery and was sent to a long-term acute care facility.

Discussion

The presentation of PE includes cough, orthopnea, wheezing, pleuritic pain, calf/thigh pain or swelling, or hemoptysis. There may be hypoxemia, widened alveolar-arterial gradient and respiratory alkalosis. On the other hand, a severe RTA often results in renal stones, hypokalemia, or failure to thrive. This woman had dyspnea but no other suggesting symptoms for PE. Thanks to CT angiography, it was eventually demonstrated. Unfortunately, a severe metabolic acidosis developed rendering search for etiology of dyspnea more difficult. Type I RTA was finally diagnosed. It is interesting that deep vein thrombosis in the lower limbs or anti-phospholipid syndrome, common precedent diseases for PE, were not present. Because the dyspnea symptoms alleviated to a lesser extent after treatment for PE, dramatically improved after the correction of acidosis, and almost completely alleviated after menopause when the iron loss suddenly stopped, we think that all three pathological factors, PE, RTA and IDA might have similar contribution to her dyspnea.

Conclusion

In conclusion, whatever the causes, the most significant message conveyed by this case is that in taking care of SLE patients with dyspnea, multiple factors which may seem independent, should be taken into consideration to reach a holistic treatment.

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