Unusual Cause of Abdominal Pain: The Chilaiditi Syndrome

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Received: 11-September-2019, Manuscript No. AMHSR-19-2369; Editor assigned: 17-September-2019, PreQC No. AMHSR-19-2369(PQ); Reviewed: 01-October-2019, QC No. AMHSR-19-2369; Revised: 03-August-2022, QI No. AMHSR-19-2369; Manuscript No. AMHSR-19-2369(R); Published: 31-August-2022, DOI: 10.54608. annalsmedical.2022.12.6.39.

Abstract

Chilaiditi syndrome is the association of a radiological and clinical semiology of the interposition of a bowel (usually the transverse colon) between the liver and the diaphragm. We report a case of a 59 year-old woman with medical history of recurrent vena thrombosis and ovarian mass, who presented with epigastric crampy pain, nausea, vomiting and diarrhea. On examination there was tenderness in the right upper quadrant. Chest X-ray showed the presence of air below the right side of the diaphragm. Abdominal computed tomography confirmed the hepatodiaphragmatic interposition of the colon consistent with Chilaiditi syndrome. In the absence of loco regional complication, treatment was conservative. Chilaiditi syndrome is a rare condition which can be due to anatomical variation or to a predisposing condition such as intra-abdominal mass. This misdiagnosed entity can be confused with surgical emergencies.

Keywords: Chilaiditi syndrome; Epigastric crampy; X-Ray; Intra-abdominal mass

Introduction

Chilaiditi syndrome is a rare condition characterized by a hepatodiaphragmatic interposition of the colon. This anatomical variation was considered as incidental rare radiographic finding generally asymptomatic, known as the Chilaiditi's sign. Exceptionally this condition may cause symptoms ranging from intermittent, mild abdominal pain to other gastro-intestinal complaints such as nausea, vomiting, flatulence, constipation or diarrhea, or intestinal pseudo-obstruction defining the Chiladiti's syndrome [1].

In 1910, the radiologist demetrius Chilaiditi explained patients who have an interfere of the bowel in which between the liver and right hemidiaphragm. A Chilaiditi symptom is thus used to explain the accidentall radiologic discovery of a colonic or intestinal hepatodiaphragmatic interfere in an asymptomatic patient. This symptom is commonly misconcieve as pneumoperitoneum. The generality of Chilaiditi symptom in the common population is 0.025%-0.28%, and the symptom is more common in male patients other than female patients. The bowel component most commonly identified interposed between the liver and diaphragm or abdominal wall are the colonic hepatic flexure and transverse colon, even though interfere of the small bowel has also been reported.

Physiologic and compatibility patterns of hepatic and colonic embryogenesis and adult anatomy casually put to stop to the increment of colonic interposition. Factors that persuade patients to the increment of Chilaiditi symptom involves to decreases liver dimensions, elongation of the ligamentous suspension of the liver, and needless of the colon. Congenital diaphragmatic, hepatic, or intestinal anomalies and pathologies related with the development of this symptom which include right hepatic lobe segmental agenesis, relaxation or agenesis of the mesentery suspensory ligaments, chronic constipation, redundant and hypermobile transverse mesentery and transverse colon, and notable weight loss. There is another cause of Chilaiditi sign is severe chronic obstructive pulmonary disease and its subsequent elongation of the diameter of the lower thoracic cage, which shows that the broader space in which colonic interposition can occur. Elevation of the right hemidiaphragm from congenital hernias and eventration of the diaphragm also predispose patients to increase of Chilaiditi sign. Furthermore, the characteristics most frequently associated with Chilaiditi sign-cirrhosis, ascites, and decreased hepatic size-increase the space between the liver and diaphragm; these characteristics occur in up to 5% of patients [2].

Case Study

A 59-years-old woman presented with crampy abdominal pain, diarrhea, nausea and vomiting that had persisted for four days. The patient noted that she was suffering from anorexia and unexplained intermittent abdominal pain during the last two years. In her medical history we noted a recurrent deep vein thrombosis (inferior vena cava and lower limbs). During three years of a follow up, etiological assessment of the thrombosis remained negative except for the discovery of a pelvic mass at the expense of the ovaries with no signs of malignancy [3].

On examination the patient was afebrile, dehydrated but with stable vital signs. Abdomen palpation exhibited tenderness in the right upper quadrant without signs of rebound tenderness, guarding or rigidity. Laboratory findings showed hypokalemia (2.7 mmol/l). The other electrolyte levels were within normal limits. Complete blood count was unremarkable [4]. Chest radiography showed abnormal right sub phrenic free air mimicking pneumoperitoneum (Figure 1).

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How to Cite this Article: Naceur I, et al. Unusual Cause of Abdominal Pain: The Chilaiditi Syndrome. Ann Med Health Sci Res. 2022;12:229-230.



Figure 1. Chest X-ray showing air between liver and diaphragm.

Computed tomography confirmed colon interposition between liver and diaphragm with no evidence of free air or free fluid. The ovarian mass was observed on the pelvic sections with a stable appearance and calcified outlines (Figure 2) [5]. The patient was diagnosed with Chilaiditi syndrome probably due to the increased intra-abdominal pressure by the ovarian mass. Treatment was conservative with fasting, nasogastric tube decompression and pain control [6]. Symptoms improved two days later. The patient refused operation on the ovarian mass and was discharged home after the pain subsided. She remained symptoms free during two years of follow up.



Figure 2. Abdominal computed tomography showing colon interposition between liver and diaphragm.

Discussion

Chilaiditi's sign is a rare radiographic findings first described by Demetrius Chilaiditi in 1910. The diagnosis of Chilaiditi syndrome is made when patients have symptoms related to radiological findings. This entity, often misdiagnosed, is rare in the general population with an estimated prevalence of 0.25% and a predominately older male incidence (male/female ratio= 4/1) [7]. The etiology is unclear. It can be either congenital due to anatomical variation or acquired. Acquired cases can be due to multiple factors: ligamentous laxity, phrenic nerve paralysis causing right diaphragmatic elevation, small liver due to cirrhosis, ascites, increased intra-abdominal pressure [8,9]. Clinical presentation can vary significantly. In most cases, patients are asymptomatic and are incidentally diagnosed.

Symptoms range from less emergent such as anorexia, nausea, vomiting, constipation or diarrhea to medical emergencies such us breathing difficulty and chest pain, abdominal pain,

bowel obstruction and volvulus. The diagnosis is confirmed by radiologic findings on CT scan showing the abnormal position of the colon [10]. Treatment of Chilaiditi syndrome depend on the severity of symptoms and in the presence of complications. In most cases conservative management is the only required treatment with bed rest, pain control and bowel decompression. Surgical intervention can be warranted for complications such us obstruction, volvulus, or perforation.

Conclusion

This case highlights a misdiagnosed entity which can be asymptomatic, intermittent or miming surgical emergencies. Physical examination combined with detailed imaging survey is useful in making the correct diagnosis and avoiding unnecessary operation.

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