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General Medicine

CHILAIDITI SYNDROME VS PNEUMOPERITONEUM: THE DIAGNOSTIC DILEMMA

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ABSTRACT **BACKGROUND:** Chilaiditi sign is an uncommon illness characterized by radiological evidence of colonic interposition between the liver and the diaphragm or abdominal wall. This is often confused with the pneumoperitoneum; hence it is important to differentiate the two entities as former is managed conservatively whereas latter requires surgical intervention. This case reports aims to highlight the dilemma faced by the physicians in the emergency room between the two entities.

KEYWORDS : Chilaiditi sign, Pneumoperitoneum, colon, Liver.

INTRODUCTION

Presence of air under diaphragm is always considered as a surgical emergency unless proven otherwise with Chilaiditi sign being an exception to it. It is an uncommon illness characterized by radiological evidence of colonic interposition between the liver and the diaphragm or abdominal wall, which leads to clinical symptoms.[1] The incidence is estimated to be between 0.025 and 0.28 percent.[1,3,4] It is most frequent in men and appears at the age of 60.[5,6] Because of its limited prevalence, nothing is known about the aetiology. It is assumed to be congenital or acquired, with the former encompassing a congenital absence of the falciform or suspensory ligaments and the latter including conditions such as cirrhosis, right diaphragm paralysis, and obesity.[1] While it has distinct radiographic findings, the disease's rarity, combined with differences in clinical presentation, frequently leads to misdiagnosis or delayed diagnosis.

Case Report:

An 85-year male patient presented to emergency department with complain cough, breathlessness, pain abdomen and constipation for 4 days. There was no history of hypertension, diabetes mellitus, and tuberculosis. He was cigarette smoker for last 50yrs, used to smoking 1 packet/day for last 10 years. No similar past history was given by the patient. On examination abdomen was distended with presence of diffuse tenderness. Patient was advised for a chest x ray to narrow down the possible causes of dyspnoea along with other routine blood investigation. Blood parameters for liver function test, lipid profile, renal profile and thyroid profile were found to be within normal limits. There was presence of severe anaemia in the patient. On further investigation of blood smear, microcytic hypochromic anaemia with few normocytes, target cells with anisocytosis, detected malaria parasite positive and elevated ESR. Stool occult blood was seen positive in the patient. On Chest X-ray we encountered presence of air under right hemidiaphragm and patient of was further advised non-contrast and contrast CT whole abdomen, patient was detected to have enlarged liver, with normal gall bladder, spleen, kidney, urinary bladder. There was however presence of the long segment concentric thickening of sigmoid colon with CT showing the colon anterior to liver. Hence a diagnosis of Chilaiditi Sign was confirmed

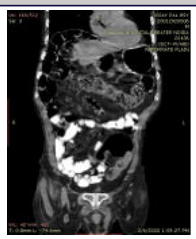

Figure 1: Axial and coronal images of the abdomen demonstrating the colon anterior to the liver.

Discussion:

Chilaiditi sign is characterised by the interposition of the bowel loop in between the liver and right hemi-diaphragm or anterior abdominal wall leading to appearance of free air under right hemi diaphragm or pneumoperitoneum .[1] It is important to distinguish these two entities as Chilaiditi sign is a normal variant and pneumoperitoneum is a surgical emergency. History and Physical examination play an important role in distinguishing the two entities. Often asymptomatic patients are more likely to be of Chilaiditi sign whereas patient of pneumoperitoneum tend to present with the symptoms of pain abdomen, diffuse tenderness, abdominal distension with deteriorating vital signs.

On radiological evaluation to establish a diagnosis of Chilaiditi syndrome the following criteria must be completed in order to diagnose Chilaiditi sign, firstly the interposition must be significant enough to cause elevation of the right hemi diaphragm, secondly displacement of the upper border of the liver should be significant enough i.e. it should lie lower than the left hemidiaphragm and thirdly the interposition of colonic segment identified by the presence of haustration should be distended by air and present between the liver and right hemi diaphragm.[1,7] These three criteria met is known as the Chilaiditi sign. If a radiograph or ultrasound cannot distinguish whether the subdiaphragmatic air is free or intraluminal, a computed tomography scan is indicated to provide an accurate diagnosis, assuming the patient is clinically stable.[8]

Though exact aitiology of Chilaiditi sign is not known but it has been associated with various conditions like intestinal blockage, volvulus, intussusception, ischemic bowel, or inflammatory disorders (e.g., appendicitis or diverticulitis). However, as previously stated, similar intestinal problems might arise in the intervening colon in rare cases. Chilaiditi's condition is frequently misdiagnosed as a diaphragmatic hernia at first.[1,9,10]

Chilaiditi sign which is an incidental radiological finding does not require any medical and surgical intervention ass majority of the patients are asymptomatic. Whenever a patient with symptoms intestinal obstruction is encountered first step is to rule out the more serious condition of pneumoperitoneum. A bowel perforation misdiagnosis, on the other hand, may result in unneeded surgical intervention. It is critical to recognize Chilaiditi sign as it can avoid exposure to unnecessary surgical procedures which are needed in the cases of pneumoperitoneum and avoid difficulties encountered in such patients during a percutaneous transhepatic surgery or liver biopsy, especially in cirrhotic patients who are predisposed to developing Chilaiditi sign. Gastroenterologist may also encounter difficulties in such patients as intervening piece of bowel can also makes the procedure difficult. Theres also an increased risk of entrapment of the air in an, interposed, acutely angulated bowel which could further lead to perforation. Carbon dioxide as an insufflating agent for colonoscopy is an appropriate way to reduce this danger.[1,11]

CONCLUSION:

Awareness of Chilaiditi's sign, is critical for all healthcare practitioners as it prevent unwarranted surgical procedure due to misdiagnosis. Whenever a clinician encounters a case gas under right hemidiaphragm a careful history taking and clinical examination should be performed to rule out other causes of surgical emergency before making a diagnosis of Chilaiditi sign.

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