

Chilaiditi sign: A rare differential diagnosis of gas under diaphragm

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CASE REPORT

A 60-year-old male came to geriatric outpatient department with complaints of breathlessness and right side lower chest pain since 15 days. He denied for fever, nausea/vomiting, abdominal pain and loss of appetite, with normal bowel and bladder habits. He had no significant past surgical or medical history. General physical and respiratory system examination was absolutely normal; abdomen was also soft and did not reveal any sign of peritonitis. All routine blood investigations, pulmonary function test, electro cardiogram (ECG), 2D-echocardiography and ultrasonography of the abdomen showed no abnormality except loop of intestine between the diaphragm and the anterior surface of the liver. His chest skiagram revealed a radiolucent shadow under the right diaphragm with some haustral marking suggestive of interposition of colon between the diaphragm and liver (Figure 1). This radiological finding is called Chilaiditi's sign. The patient was managed conservatively with nasogastric decompression, repeated laxatives and enemas.



Figure 1: Chest skiagram showing radiolucent shadow under the right diaphragm with some haustral marking suggestive of interposition of colon between the diaphragm and liver-Chilaiditi sign.

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DISCUSSION

Intestinal interposition is a medical condition where a segment of the bowel is temporarily or permanently interposed between two organs, for example the liver and the diaphragm, the spleen and the diaphragm, the spleen and the left kidney or the stomach and the pancreas. Among these, the hepatodiaphragmatic interposition is termed Chilaiditi sign and the others are termed non-Chilaiditi sign [1].

Chilaiditi sign is a radiological observation or incidental radiographic finding, associated with right side

segmental interposition of the colon between the liver and the diaphragm [2]. It is an incidental imaging finding with an incidence of 0.3% on plain radiography and 2.4% on chest/abdomen computed tomography mostly in elderly male patients. Most patients are asymptomatic but when it is associated with clinical symptoms such as shortness of breath, pain in abdomen, nausea and distention, then it is termed Chilaiditi syndrome [3].

Its cause still remains unknown, but it is probably multifactorial. Table 1 illustrates various predisposing factors for the development of Chilaiditi's sign.

Diagnosis is usually made by chest X-ray, however, CECT scan of chest help in confirmation of diagnosis in suspicious cases.

Differential diagnosis of Chilaiditi's sign or gas under the right diaphragm is: pneumoperitoneum, sub-phrenic abscesses, diaphragmatic hernias and retroperitoneal masses, especially in cases of acute abdomen.

Management: Most patients respond to medical management, and surgery is reserved for those who do not respond to the usual conservative line of management.

Table 1: Predisposing factors for the development of Chilaiditi's sign

Causes	Examples
Diaphragmatic	Abnormally high diaphragm due to muscular degeneration or phrenic nerve injury
Hepatic	Cirrhosis Right lobe segmental agenesis Ptotic liver Relaxation or laxity of the suspensory ligaments
Intestinal	Abnormal or increased colonic mobility Elongated or redundant colon with long mesentery Absence of peritoneal attachments Malrotation or congenital malpositioning of the bowel Intestinal malignancy (rarely)
Miscellaneous	Ascites High abdominal fat content/obesity Pregnancy Aerophagia Chronic obstructive pulmonary disease

CONCLUSION

This condition is important for chest physicians because few patients with breathlessness may present with this type of X-ray picture and respiratory pathology is not necessarily involved in such cases. All chest physicians should be aware that shortness of breath is not always due to problems in the chest.

Keywords: Chest pain, Chilaiditi's sign, Diaphragm, Gas

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Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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