Chilaiditi sign: A rare differential diagnosis of gas under diaphragm

Rajendra Prasad Takhar, Motilal Bunkar, Savita Arya, Sheema Maqsood

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, electrocardiogram (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.

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

<table>
<thead>
<tr>
<th>Causes</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diaphragmatic</td>
<td>Abnormally high diaphragm due to muscular degeneration or phrenic nerve injury</td>
</tr>
<tr>
<td>Hepatic</td>
<td>Cirrhosis, Right lobe segmental agenesis, Ptotic liver, Relaxation or laxity of the suspensory ligaments</td>
</tr>
<tr>
<td>Intestinal</td>
<td>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)</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Ascites, High abdominal fat content/obesity, Pregnancy, Aerophagia, Chronic obstructive pulmonary disease</td>
</tr>
</tbody>
</table>

**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

**How to cite this article**


Article ID: 100006Z09RT2015

doi:10.5348/Z09-2015-6-CR-6

**Acknowledgements**

All the staff members who were involved in the care of the patient.

**Author Contributions**

Rajendra Prasad Takhar – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Motilal Bunkar – Substantial contributions to conception and design, Analysis and interpretation of data, Drafting the article, Final approval of the version to be published

Savita Arya – Acquisition of data, Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Sheema Maqsood – Conception and design, Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

**Guarantor**

The corresponding author is the guarantor of submission.

**Conflict of Interest**

Authors declare no conflict of interest.

**Copyright**

© 2015 Rajendra Prasad Takhar et al. This article is distributed under the terms of Creative Commons Attribution License which permits unrestricted use, distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.
REFERENCES

