

## Chilaiditi's Syndrome

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### Abstract

Chilaiditi's syndrome is a rare condition characterised by the interposition of the colon between the liver and the right hemidiaphragm. We present a case of 20-year-old male who reported with breathlessness and epigastric pain, and he was diagnosed radiologically to have Chilaiditi's syndrome. *Indian J Chest Dis Allied Sci* 2014;56:117-119]

**Key words:** Chilaiditi's syndrome, Liver, Diaphragm.

### Introduction

Chilaiditi's syndrome is a rare condition and most often an asymptomatic anomaly that is typically an incidental finding.<sup>1</sup> Cantini first described Chilaiditi's sign on clinical examination in 1865. Demetrius Chilaiditi published a study reporting three cases diagnosed radiologically in 1910.<sup>2</sup> It is seen in 0.1% to 0.25% of cases on chest radiograph with a male to female ratio of 4:1.<sup>3</sup>

### Case Report

A 20-year-old male presented with a two-year history of breathlessness of grade II according to modified Medical Research Council (mMRC), that was, progressive in nature and was not associated with orthopnoea and paroxysmal nocturnal dyspnoea. There was no history of dust allergies and seasonal variations. He had received nasal drops and oral and inhaled bronchodilators but with only partial relief. He also complained of epigastric pain that was not radiating and that symptoms were aggravated after intake of even small quantities of food. There was no history of cough, chest pain, wheeze, or altered bowel habits. On reviewing his past history, he had the first episode of similar complaints at the age of three months (as told by his father) and he was treated with anti-tuberculosis drugs for one year. No developmental delay and any significant family history.

The physical examination of the respiratory system showed decreased breath sounds in the right mammary area, infra-axillary and infra-scapular areas. Liver dullness was obliterated. A plain radiograph of the chest (postero-anterior view: Figure 1) showed a large cystic lesion suggesting an infected cyst or a bulla. Computed tomography of the chest (Figures 2 and 3)



**Figure 1.** Plain radiograph of chest (postero-anterior view) showing a large, well-defined, round to oval air-filled cavitory lesion in the right lower zone.

showed a right-sided eventration of the diaphragm. Ultrasound of the abdomen and barium-meal study (Figure 4) confirmed the right diaphragmatic eventration with the hepatic flexure and part of transverse colon. Other routine investigations were within normal limits. Based on these findings, a diagnosis of Chilaiditi's syndrome was established. We referred the patient to the Department of

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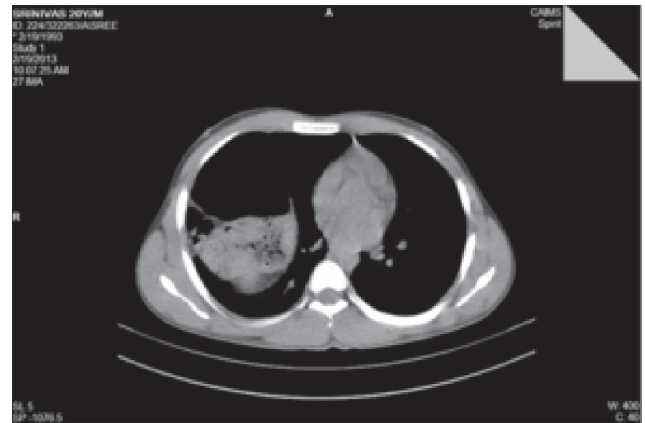
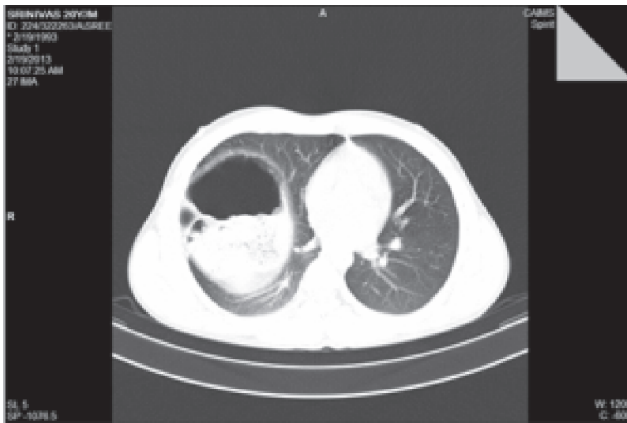


Figure 2. Computed tomography of chest (plain). Lung and mediastinal window showing air-filled hepatic flexure and part of transverse colon.

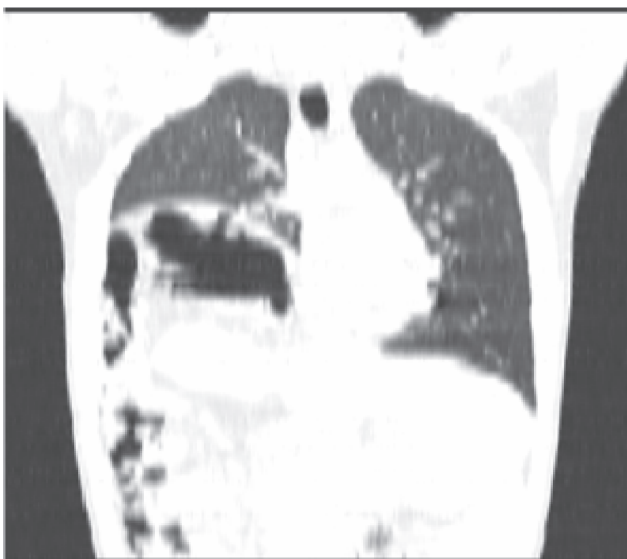


Figure 3. Coronal reconstructed CT chest showing elevated right dome of the diaphragm with interposition of the hepatic flexure and part of transverse colon between the right dome of diaphragm and liver.

Cardiothoracic Surgery for surgical management. A right postero-lateral thoracotomy with diaphragmatic repair and reduction of colon was done. The post-operative period was uneventful and the patient became asymptomatic.

### Discussion

Chilaiditi's syndrome or sign (pronounced as "Ky-La-Ditty") is named after Demetrius Chiladaiti, a Greek radiologist who described the radiographic findings in 1910. It is a radiographic term that is used when the hepatic flexure of the colon is seen interposed between the liver and the right dome of the hemidiaphragm. This sign is also described as interpositio hepatodiaphragmatica, subphrenic displacement of the colon, subphrenic interposition syndrome and pseudo-pneumoperitoneum.

Most frequently observed in males, however, it is a rare condition and reported in 0.1% to 0.25% of chest radiographs. The cause of Chilaiditi's syndrome still remains unknown, though it is likely multi-factorial.

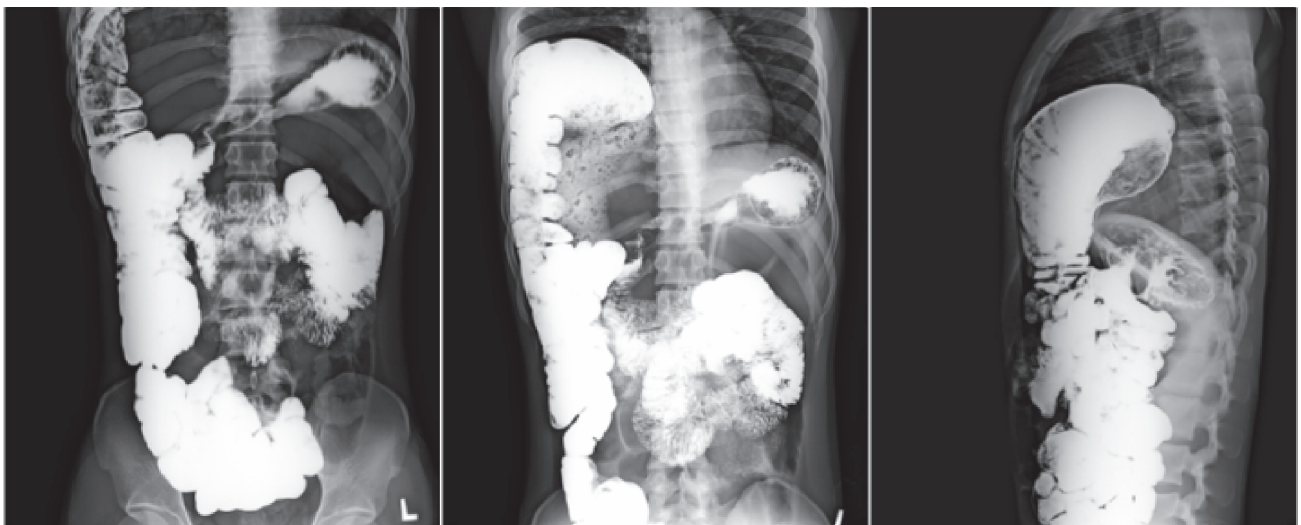


Figure 4. Barium study (antero-posterior and lateral views) showing barium filled hepatic flexure and transverse colon under the elevated right dome of diaphragm.

Several factors may alter the anatomical relationship between the liver, colon and diaphragm. Such predisposing factors may be divided into hepatic (liver ptosis caused by relaxation of ligaments, cirrhosis, hepatic atrophy, ascites), intestinal (megacolon, meteorism, abnormal colonic motility), and diaphragmatic (diaphragmatic thinning, phrenic nerve injury, changes in intra-thoracic pressure as in cases of emphysema).<sup>4,5</sup> Most of the patients are asymptomatic<sup>1</sup> and when observed as an incidental finding on a plain radiograph of the chest is known as Chilaiditi's sign.<sup>1</sup> However, when it presents with symptoms, such as abdominal pain, nausea, vomiting and constipation, it is known as Chilaiditi's syndrome. The differential diagnosis of air under both domes of the diaphragm includes pneumoperitoneum due to rupture of a hollow viscus perforation or rupture, sub-diaphragmatic abscess and diaphragmatic hernia (particularly Morgagni's hernia).

In the present case, as there are no sign of peritonitis and the ultrasound examination of the abdomen showed no evidence of free fluid in the peritoneal cavity, a pneumo-peritoneum due to a hollow viscus

perforation was ruled out. As there was no local pain, intercostal tenderness, fever and leukocytosis, a diagnosis of sub-diaphragmatic abscess was also ruled out. A diaphragmatic hernia was ruled out by CT chest and the barium study.

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