

# Chilaiditi Sign - An Unusual Finding in a Patient with Pulmonary Tuberculosis

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## Abstract

Chilaiditi sign refers to gas in between the right dome of the diaphragm and liver, after excluding the symptoms and signs of intestinal perforation. In our case, the patient was diagnosed with pulmonary tuberculosis. His chest radiography revealed the presence of gas under the right dome of the diaphragm with no abdominal symptoms, revealing a rare entity, i.e., Chilaiditi sign.

**Keywords:** Chilaiditi sign, gas under right dome of diaphragm, pulmonary tuberculosis

## INTRODUCTION

The interposition of the intestine between the right hemidiaphragm and liver is known as the Chilaiditi sign. It is a rare entity first described by a Greek radiologist, Chilaiditi, in 1910.<sup>[1]</sup> The etiology is usually unknown. Pulmonary tuberculosis is a common communicable disease prevalent in India. It is caused by *Mycobacterium tuberculosis*. The common symptoms are cough, sputum, fever, loss of weight, loss of appetite, and in some patients, hemoptysis can also be presenting symptom. Here, we present a case of pulmonary tuberculosis with incidental finding of Chilaiditi sign on chest radiograph.

## CASE REPORT

A 40-year-old male presented in our outpatient department with a complaint of cough, sputum, fever, and hemoptysis for 1 month. He had no previous history of Tuberculosis, diabetes and no recent contact with any tuberculosis patient. Following the above symptoms, he was advised with routine blood investigation, a chest X-ray, and sputum evaluation for acid-fast bacilli and cartridge-based nucleic acid amplification test (CBNAAT). The blood investigation showed thin-layer chromatography of 15,200 cells/mm<sup>3</sup>. The chest X-ray revealed nonhomogeneous opacity in the left upper and middle zone and gas beneath the diaphragm's right dome [Figure 1]. The sputum evaluation for acid-fast bacilli was negative, but CBNAAT-M.

*tuberculosis* DNA was detected and sensitive to rifampicin. Based on the chest X-ray finding, the patient was further inquired about any abdominal symptoms, which were negative. The patient was further advised with contrast-enhanced computed tomographic scan (CT) thorax and abdomen, which showed consolidation and infiltrates in the left upper lobe [Figure 2] along with loops of intestine between the right dome of diaphragm and liver [Figure 3]. Based on the above findings, the patient was diagnosed with a case of Pulmonary Tuberculosis with a positive Chilaiditi sign.

## DISCUSSION

Chilaiditi syndrome is a rare disorder characterized by the interposition of the large intestine (commonly the hepatic flexure of the colon) between the right hemidiaphragm and liver.<sup>[2]</sup> In a small number of cases, the small intestine can also be interposed in this region.<sup>[3]</sup> Its incidence is about 0.025%–0.28%.<sup>[2]</sup> The mean age of presentation is 60 years, with male predominance.<sup>[3]</sup> The presence of radiographic

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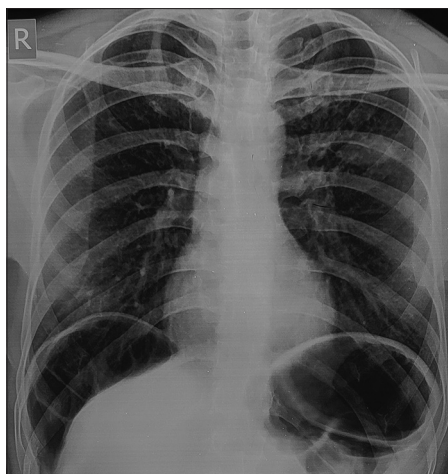
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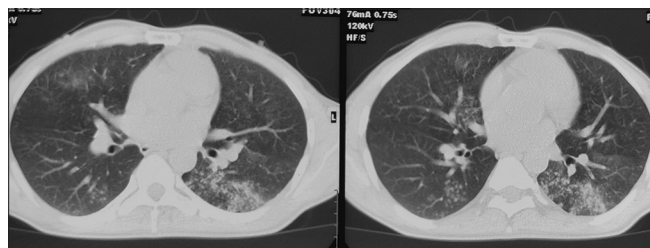


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**Figure 1:** Chest X-ray showing non-homogeneous opacity in the left upper and middle zone and gas beneath the diaphragm's right dome



**Figure 2:** Computed tomographic thorax showing consolidation and infiltrates in the left upper lobe



**Figure 3:** Computed tomographic abdomen showing loops of intestine between the right dome of diaphragm and liver

findings in the absence of symptoms is referred to as Chilaiditi Sign. The presentation may vary from asymptomatic individuals to patients with very severe symptoms. The common symptoms include abdominal pain, bloating, nausea, vomiting, and constipation.<sup>[4]</sup> In severe conditions, the patient can have shortness of breath associated with chest pain, depending upon the extent of the colon involved. Development of volvulus and perforations can complicate the condition.

In our patient, the age of presentation was at 40 years with no abdominal symptoms. Chilaiditi sign was an incidental finding on chest radiography in our patient with Pulmonary Tuberculosis.

The diagnosis of the Chilaiditi sign is based on CT findings showing gas beneath the right diaphragm. The haustra can also be visible on radiographs, which does not change with a change in the patient's position. Other radiographic findings can also be interpreted, including depression of the superior margin of the liver beneath the left hemidiaphragm and elevation of the right hemidiaphragm above the liver by the intestine. In our patient, all the findings were present in the CT study.<sup>[5]</sup>

The treatment of Chilaiditi syndrome is based on the symptoms and clinical findings in the patient. Asymptomatic individuals do not require any intervention. Conservative treatment, including bowel rest, IV fluids, bowel decompression, enemas, and laxatives, can be given in patients with mild symptoms. If conservative treatment fails and/or patients develop severe symptoms, they are treated with surgical interventions, ranging from pexy to colonic resection. It depends upon the location of the interposition and the extent of the bowel involved.

This case reveals a very rare entity, i.e., Chilaiditi sign, as an incidental finding on chest radiograph in a patient with Pulmonary Tuberculosis. As the patient had no abdominal symptoms, no active intervention was advised. The patient was started on anti-tubercular treatment and showed improvement in his symptoms.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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### Conflicts of interest

There are no conflicts of interest.

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