

CASE REPORT

A rare radiological finding in an infant with respiratory distress

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ABSTRACT

We report the case of an infant who presented with respiratory distress at the Emergency Department. A chest radiograph showed interposition of colon loops between the right hemidiaphragm and liver, while abdominal and thoracic ultrasound examinations were normal. The aforementioned radiological finding was considered to be Chilaiditi's sign. This sign usually presents as an incidental radiological finding and may be mistaken for a pneumoperitoneum or a diaphragmatic hernia. Clinicians' familiarity with rare radiological signs is necessary.

KEYWORDS

Chilaiditi's sign; Radiology; Child; Chest radiograph.

INTRODUCTION

Imaging techniques constitute a helpful tool for clinicians, as they can facilitate diagnosis and pertinent management. A chest radiograph should be systematically and symmetrically checked so that potentially important abnormalities are not missed [1]. Our objective is to shed more light

into a rare radiological condition, Chilaiditi's sign, which may confuse clinicians. Chilaiditi's sign was first defined in 1910 by the Greek radiologist Demetrius Chilaiditi in three asymptomatic cases. It usually presents as an incidental radiological finding in the context of investigations for other disorders [2].

CASE REPORT

We describe an 8-month-old male infant who was admitted to the Emergency Department due to respiratory distress since 3 days. Clinical evaluation revealed the respiratory rate of 64/minute (normal values for age: <50/minute), intercostal retractions, crepitant rales, and SpO₂ 88%–89% in room air. The rest of the physical examination showed normal findings. Medical history was unremarkable except for incomplete immunization status. Administration of humidified oxygen and nebulized bronchodilators was initiated. A common laboratory screening test was requested and a chest X-ray was performed which showed interposition of colon loops between the right hemidiaphragm and liver. The interposed colon portion was distended with air (Figure 1). The position of radiolucency did not change when the patient was placed in the left lateral decubitus

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Figure 1 - Postero-anterior chest X-ray demonstrating right subdiaphragmatic air (arrows) with colon loops.

position. Our patient underwent thoracic and abdominal ultrasound which revealed normal findings. The aforementioned radiographic finding is a characteristic of Chilaiditi's sign. The infant's clinical status gradually improved; significant levels of IgA antibodies against *Bordetella pertussis* were identified in serum, while *B. pertussis* DNA was detected by Polymerase Chain Reaction (PCR) in the nasal specimen. Therefore, our patient received clarithromycin orally for 14 days and was finally discharged home.

DISCUSSION

Chilaiditi's sign is defined as the radiographic evidence of colonic interposition between the liver and the diaphragm or abdominal wall. Its frequency ranges between 0.25% and 0.28% and increases with age [2]. Differential diagnoses include pneumoperitoneum, diaphragmatic hernia, volvulus, intussusceptions, and ischemic bowel [3]. Risk factors for this condition include chronic constipation, ascites, phrenic nerve injury, and excessive aerophagia [4]. Respiratory distress has also been reported as a predisposing factor, as it happened in our case [5,6]. Physical examination and medical history significantly contribute to diagnosis, as computed tomography is not always available in a primary care setting [3].

In some circumstances, Chilaiditi's sign is accompanied by symptoms, ranging from mild abdominal pain to acute bowel obstruction. This condition is known as Chilaiditi's syndrome and requires appropriate management. More specifically, Chilaiditi syndrome is initially managed conservatively with rest, fluid therapy, or laxatives administration. Surgical intervention is usually indicated in patients who do not respond to the aforementioned measures or when severe complications occur (e.g., volvulus, perforation) [7–11]. There is also recent literature evidence that Chilaiditi's syndrome may be intermittent in nature with resolutions and recurrences and, therefore, some authors suggest regular and long-term follow-up of patients who were conservatively managed [12].

CONCLUSION

In conclusion, in a radiograph, there are areas that can be easily misinterpreted. Our case reminds of a rare radiographic entity and underscores the need for clinicians' familiarity with normal and abnormal radiographic findings so that unnecessary investigations and interventions are avoided.

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