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CASE REPORT
Pediatric Surgery

Chilaiditi syndrome: A case presentation and the clinical importance of correctly interpreting radiological findings

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ABSTRACT

Chilaiditi syndrome is a rare clinical condition characterized by the interposition of the colon between the liver and diaphragm. Radiologically, it can cause diagnostic confusion as it presents an image similar to pneumoperitoneum. In this study, the detection and conservative management of the Chilaiditi sign in a pediatric case evaluated for suspected free air are presented. The aim is to highlight how the correct interpretation of radiological findings can affect clinical decisions in the diagnostic process of this rare but significant condition.

Keywords: Abdominal X-ray; Chilaiditi syndrome; pseudopneumoperitoneum.

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Chilaiditi sendromu: Bir olgu sunumu ve radyolojik bulguların doğru yorumlanmasının klinik önemi

ÖZET

Chilaiditi sendromu, kolonun karaciğer ile diyafram arasına interpozisyonu ile karakterize nadir bir klinik durumdur. Radyolojik olarak pnömoperitoneum ile benzer görüntü verdiği için tanısal karışıklıklara yol açabilir. Bu çalışmada, serbest hava şüphesiyle değerlendirilen pediatrik bir olguda Chilaiditi belirtisinin saptanması ve konservatif yönetimi sunulmuştur. Amaç, bu nadir ancak önemli durumun tanı sürecindeki yeri ile radyolojik bulguların doğru yorumlanmasının klinik kararları nasıl etkileyebileceğini vurgulamaktır.

Anahtar Kelimeler: Chilaiditi sendromu; karın grafisi; psödopnömoperitoneum.

INTRODUCTION

Chilaiditi syndrome is a rare condition that occurs as a result of the colon temporarily settling between the liver and diaphragm and becomes clinically significant when symptomatic. It was first described in three adult cases by the Greek radiologist Demetrius Chilaiditi in 1910 and has been referred to in the literature as the "Chilaiditi sign" (1). This anatomical positional change, especially in an upright direct abdominal X-ray, creates an air image under the right hemidiaphragm and can easily be mistaken for pneumoperitoneum. This finding is called the Chilaiditi sign; when accompanied by symptoms, it is referred to as Chilaiditi syndrome (2). Although it is quite rare in childhood, recognizing this condition is of great importance in preventing misdiagnoses in emergency departments. In cases reported in the literature, unnecessary laparotomy and invasive procedures were performed due to misdiagnosis (3). In this article, the correct management of the Chilaiditi sign incidentally detected in a two-year-old girl through radiological and clinical evaluation is presented.

CASE REPORT

A two-year-old girl presented to another hospital with intermittent cough and abdominal pain persisting for a week. She was referred to our hospital with a preliminary diagnosis of pneumoperitoneum after an upright abdominal X-ray showed air under the right hemidiaphragm. On physical examination, no signs of acute abdomen such as fever, abdominal distension, rebound, or defense were observed. Laboratory findings were within normal limits. In the upright direct abdominal X-ray taken again at our hospital, a segment of the colon filled with gas and showing haustral folds between the liver and diaphragm was observed (Fig. 1). This image was evaluated as consistent with the Chilaiditi sign. Due to the stability of the patient's clinical condition and the absence of pathological findings on physical examination, a non-surgical conservative treatment was planned. An enema was administered, and a fiber-rich diet was recommended. The patient's symptoms improved during the three-day follow-up, and she was discharged.

Written informed consent was obtained from the patient's legal representative for the publication of all clinical information and radiological images presented in this case report.

DISCUSSION

The Chilaiditi sign is characterized by the interposition of a segment of the colon between the liver and diaphragm, which can be identified radiologically. This condition usually proceeds asymptomatically and is detected incidentally. However, when symptoms accompany the condition, clinical findings such as abdominal pain, nausea, loss of appetite, and constipation may occur, and this condition is referred to as Chilaiditi syndrome (2, 4). On an upright abdominal X-ray, the appearance of gas under the right hemidiaphragm can often be mistaken for pneumoperitoneum. However, in the case of the Chilaiditi sign, careful evaluation can reveal haustral folds, indicating that the air is not intraperitoneal but rather within the intestines. In pneumoperitoneum, air is generally dispersed around the liver, whereas in Chilaiditi syndrome, the gas image appears more organized and limited in area (5, 6). When making this distinction, clinical evaluation is of critical importance. The stability of the patient's vital signs and the absence of acute abdomen signs such as rebound and defense should be considered in favor of the Chilaiditi sign. However, making a misdiagnosis based solely on radiography can lead to unnecessary surgical interventions (3, 7).

In pediatric cases, Chilaiditi syndrome is quite rare. In most cases, underlying causes include anatomical and functional factors such as constipation, excessive mobility of the colon, absence of hepatomegaly, or a high-lying diaphragm (8). In our case, there was also a significant history of constipation, and improvement was achieved with only supportive treatment. For diagnosis, abdominal CT imaging provides definitive results; however, due to the radiation risk in pediatric patients, CT should only be used when necessary. Instead, a direct X-ray evaluated by an experienced clinician is generally sufficient for diagnosis (6, 9).

In some cases reported in the literature, it has been observed that the Chilaiditi sign was mistakenly identified as

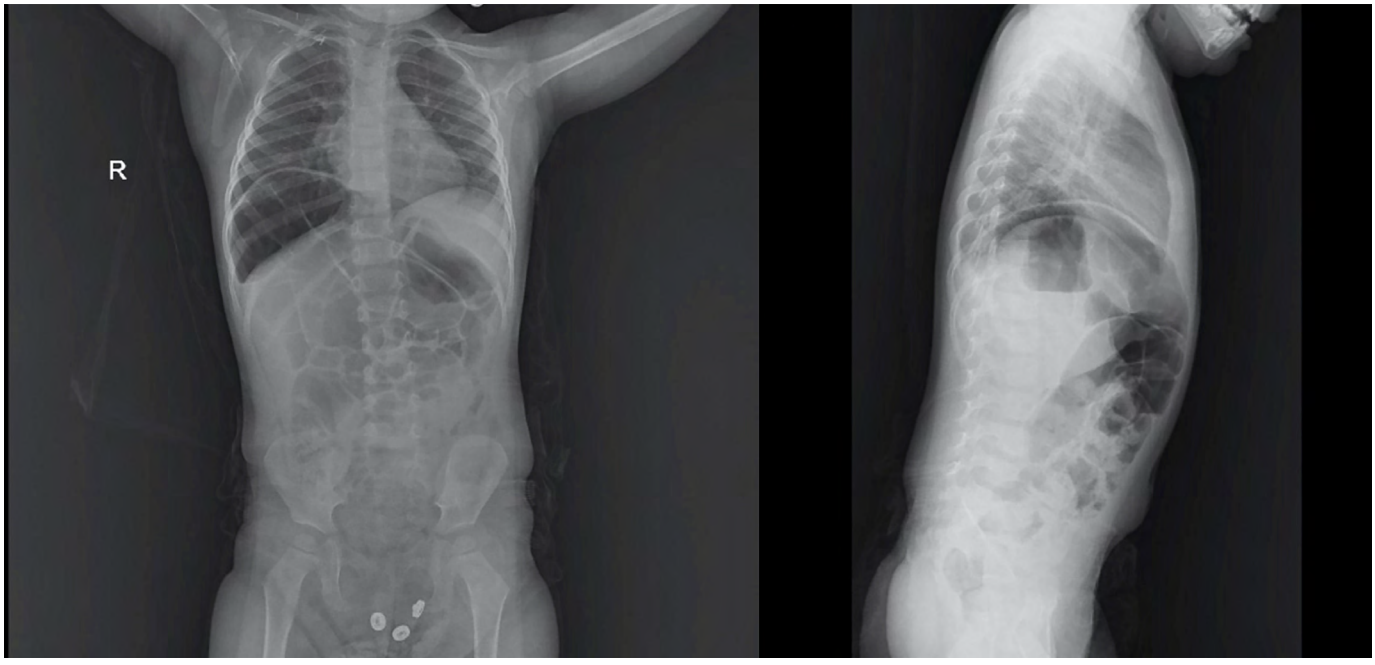

Figure 1. Anteroposterior and lateral chest radiographs showing interposed colonic loops between the diaphragm and liver, consistent with Chilaiditi syndrome. This radiological appearance may mimic pneumoperitoneum and should be carefully differentiated.

pneumoperitoneum, leading to patients undergoing emergency laparotomy, resulting in unnecessary surgery and complications (5, 10). This situation once again highlights the importance of evaluating radiological findings in a clinical context. Especially in pediatric patients presenting with abdominal pain, considering this rare syndrome in the differential diagnosis is important for patient safety and cost-effectiveness. This case demonstrates how effective it is to conduct clinical evaluation and radiological analysis together in the diagnosis and treatment process for suspected free air images encountered in the emergency department. Multidisciplinary collaboration is becoming increasingly important, particularly in pediatric cases.

CONCLUSION

Although Chilaiditi syndrome is rarely seen in the pediatric age group, it should be kept in mind as a differential diagnosis, especially during the evaluation of abdominal pain in emergency departments. Since it radiologically resembles pneumoperitoneum, early diagnosis is of great importance for interpreting findings alongside the clinical picture and avoiding unnecessary surgical procedures. This case highlights the importance of recognizing the Chilaiditi sign in pediatrics and how accurately interpreted radiological data can positively impact patient management.

Ethics Committee Approval: This is a single case report, and therefore ethics committee approval was not required in accordance with institutional policies.

Informed Consent: Written informed consent was obtained from the patient's legal representative for the publication of all clinical information and radiological images presented in this case report.

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Hasta Onamı: Bu vaka raporunda sunulan tüm klinik bilgiler ve radyolojik görüntüler için hastanın yasal temsilcisinden yazılı bilgilendirilmiş onam alınmıştır.

Çıkar Çatışması: Yazarlar çıkar çatışması bildirmemişlerdir.

Mali Destek: Yazarlar bu çalışma için mali destek almadıklarını beyan etmişlerdir.

Yazma Yardımı için Yapay Zeka Kullanımı: Beyan edilmedi.

Yazarlık Katkıları: Fikir – CŞ; Literatür Araştırması – CŞ, NG, CG; Yazım – CŞ, TT; Eleştirel İncelemeler – NG, SLM, CG.

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