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Case Report

Chilaiditi's sign in complicated acute appendicitis: case report and literature review

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ABSTRACT

Chilaiditi's condition refers to the presence of a loop of small intestine or colon between the diaphragm and the hepatic rim, usually due to alterations in the attachment of the liver to the diaphragm. Chilaiditi syndrome is associated with abdominal pain as the most common clinical manifestation. Pneumoperitoneum should always be ruled out in the context of these patients. We presented the case of a male in his eighth decade of life who presented with data suggestive of drug-modified acute appendicitis, for which computed tomography of the abdomen identified acute appendicitis and Chilaiditi's condition. An open appendectomy was performed without complications and the condition resolved.

Keywords: Chilaiditi, Appendicitis, Pneumoperitoneum, Laparotomy, Surgery, Emergency

INTRODUCTION

Chilaiditi's condition is an anatomical alteration consisting in the interposition of a segment of the colon, usually the right or transverse colon, between the liver and the diaphragm due to alterations of the supporting ligaments. It requires specific imaging features for this syndrome and pneumoperitoneum must always be ruled out.[1]

Chilaiditi's sign refers to the presence of the colon interposed between the diaphragm and the hepatic rim, while Chilaiditi's syndrome refers to the associated clinical manifestations, such as abdominal or chest pain. It is usually diagnosed by CT or X-ray and does not require specific management in most cases.[2]

We reported the case of a 76-year-old male patient who presented with clinical manifestations suggestive of acute appendicitis modified by medication, a CT scan of the abdomen was performed and the findings were acute appendicitis and Chilaiditi's condition. Surgical management by open appendectomy was decided.

CASE REPORT

A 76-year-old male patient with a history of unspecified cardiac arrhythmia and other history denied. He started suffering from 48 hours of evolution with colicky abdominal pain, intensity 6/10 on the analogue numerical scale, generalized, predominantly in the mesogastrium, associated with nausea, vomiting and fever. He referred to previous management with multiple analgesics and antibiotics, without improvement, so he came to our unit for assessment.

On admission, the physical examination revealed a patient with a flat abdomen at the expense of adipose tissue, decreased peristalsis, with generalized pain on palpation, predominantly in the right iliac fossa, hypogastrium and left iliac fossa, with muscular resistance, negative rebound, the rest of the examination was unaltered.

Paraclinical and imaging studies were requested, with a report of leukocytosis at the expense of neutrophilia and general urine examination with data of urinary tract infection. An abdominal CT scan was performed with a report of data suggestive of an acute appendiceal process due to an appendix with a transverse diameter of 8 mm and a wall thickness of 2 mm, in addition to interposition of the transverse colon between the diaphragm and the right hepatic border in relation to the Chilaiditi sign (Figure 1 a and b).

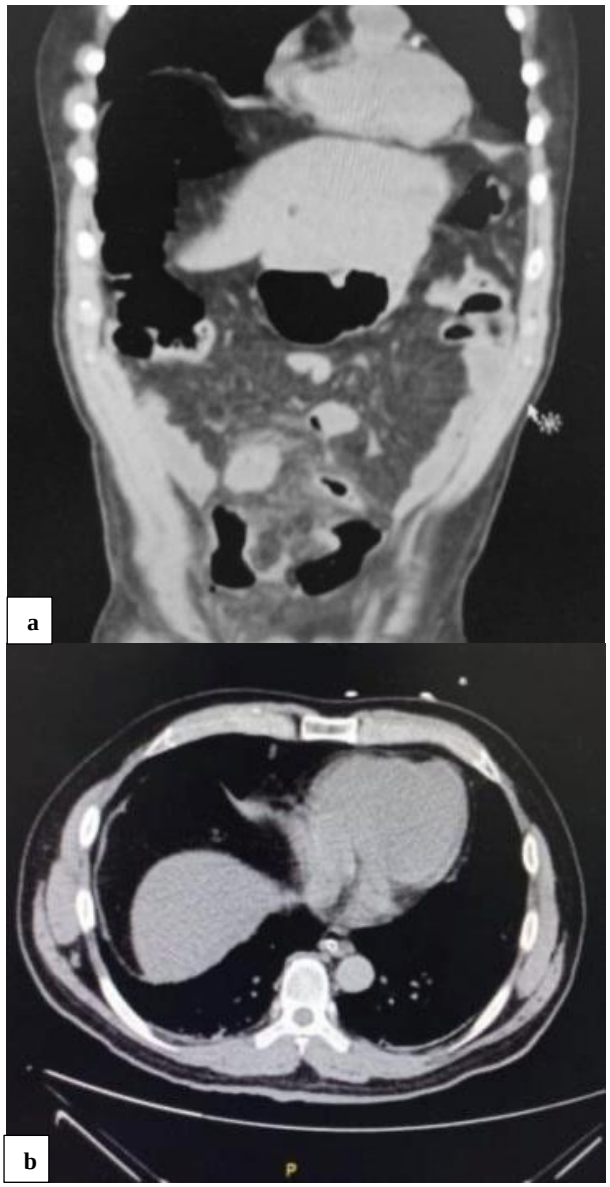

Figure 1 (a and b): Appendix with a transverse diameter of 8 mm and a wall thickness of 2 mm. Interposition of the transverse colon between the diaphragm and the right hepatic border in relation to Chilaiditi's sign.

Open appendectomy was performed with findings of a 7×1 cm cecal appendix, with oedema, hyperemia, perforated in the middle third with abundant fibrinopurulent creations and local abscess, with a complete appendicular base. An appendectomy was performed without complications and the patient was discharged on the third day after the surgical event.

DISCUSSION

Historically, it was in 1910 when Dr. Chilaiditi related the interposition of the intestine between the liver and diaphragm through X-ray, with manifestations such as abdominal pain, nausea, vomiting, constipation and respiratory alterations. It occurs in 0.025-0.28% of chest and abdominal X-ray.[1,2]

Chilaiditi's sign refers to the interposition of the colon between the right diaphragm and the hepatic rim identified by imaging studies. On the other hand, Chilaiditi syndrome occurs in the presence of associated clinical manifestations such as chest pain, abdominal pain and related complications.[2,3]

Chilaiditi's condition should be differentiated from pneumoperitoneum, a condition that has different implications for patient management, as Chilaiditi's sign does not require acute surgical management.[2,4] Most cases present without associated symptoms.[3]

This condition is described as being more common in men and in those over 60 years of age.[5] The etiology may be acquired or congenital and is related to alterations of the falciform ligament, malrotation or paralysis of the diaphragm. Conditions such as liver cirrhosis, decreased liver size, obesity and a history of colonoscopy may predispose to this condition.[3,5]

Clinical manifestations vary from an asymptomatic course and Chilaiditi's sign as an incidental finding to manifestations of intestinal occlusion, cecal or transverse colon volvulus and alterations in respiratory mechanics.[5]

Radiographic imaging studies can demonstrate the existence of a haustra below the diaphragm or simulate pneumoperitoneum. The accuracy of this sign is obtained through computed tomography, which allows the identification of the interposed colon and the exclusion of pathologies that require immediate surgical resolution.[3] It must be differentiated from other pathologies such as diaphragmatic hernia, pneumoperitoneum and hepatic abscesses.[6]

To be able to establish Chilaiditi's sign, imaging must show the right hemidiaphragm elevated by the colon interposed over the liver, distension of the colon with gas simulating pseudo pneumoperitoneum, and depression of the hepatic rim by the overlying colon.[2] Chest and abdominal radiographs are not diagnostically accurate compared to computed tomography imaging for this condition.[6]

Treatment in this case depends on the clinical manifestations of the patient, asymptomatic cases do not

require management, while those patients with abdominal complications such as acute abdomen require timely surgical resolution.[5] Surgical management is suggested in case of obstruction, gangrene, perforation and volvulus related to Chilaiditi's syndrome.[6]

The Chilaiditi sign can be mistaken for pneumoperitoneum due to the presence of subdiaphragmatic air.[7] Plain radiographs simulate pneumoperitoneum but computed tomography confirms this sign.[8,9] This predisposes to the decision of the need for surgical management of these patients, however, with the knowledge of this condition it is necessary to specify the differential diagnoses of each patient and avoid unnecessary surgery.[10]

CONCLUSION

The Chilaiditi sign should always be considered within the differential diagnosis of the causes of pneumoperitoneum to avoid being considered as an indication for urgent surgical management. Both Chilaiditi's sign and syndrome differ in relation to the presence of clinical manifestations, with abdominal pain and respiratory alterations being the main clinical features. Because of their course, they generally do not require surgical management, unless they present with acute abdominal manifestations.

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REFERENCES

1. Gundapaneni S, Bhattacharya D. (2022). A Rare Differential diagnosis of air under the diaphragm on abdominal X-ray-Chilaiditi's syndrome in a child with skin wrinkle syndrome. J Ind Assoc Pediatr Surge. 2022;27(5):635-7.
2. Adu Y, Nesiama EA, Siddiqui A, Prakash S, Obokhare I. Chilaiditi syndrome: a case report, literature review, and proposition of a novel management staging system. Cureus. 2023;15(10):46688.
3. Guirguis MM, Horawski J, Gibbs SL. Chilaiditi sign in a patient with acute coronary syndrome: a case report. Cureus. 2023;15(3):36237.
4. Akram W, Singh L, Shah S, Hussain S, Shah V, Hussain A, et al. A rare presentation of congenital chilaiditi syndrome: symptomatic hepatobowel entrapment. Cureus. 2023;15(1):33714.
5. Mandal S, Singh S, Ray BK, Thakur RK, Shah AK, Kolade V. Air under the diaphragm-perforation or Chilaiditi sign? Proceed Baylor Univers Med Cent. 2021;35(1):108-10.
6. Shah SS, Chaurasia D, Katuwal D. Dilated sigmoid colon with Chilaiditi's sign mimicking diaphragmatic hernia: a case report. Int J Surg Case Rep. 2022;97:107373.
7. Ismail I, Zenaidi H, Rebii S, Yahmadi A, Zoghlami A. Chilaiditi's sign: a rare differential diagnosis of pneumoperitoneum. Clin Case Rep. 2020;8(12):3102-4.
8. Basile EJ, Ahmed A, Rahman E, Rafa O, Frankini EL, Modica A. Chilaiditi syndrome presenting as partial colonic obstruction. Cureus. 2022;14(3):22975.
9. Sofii I, Parminto ZA, Anwar SL. Differentiating Chilaiditi's syndrome with hollow viscus perforation: a case report. Int J Surg Case Rep. 2021;78:314-6.
10. Cortes G, Kulkarni R, Hasan N, Vandervall K, Aloysius MM. An atypical case of Chilaiditi Syndrome. Cureus. 2020;12(10):10815.

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