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Chilaiditi Syndrome: A Comprehensive Review.

Sawsan A. Omer[1]* , Wad-Medani[2]

[1] Department of Internal, Medicine, Faculty of Medicine, University of Gezira, Sudan.
[2] Teaching Hospital, Wad-Medani, Sudan.
***Corresponding Author:** Sawsan A. Omer, Department of Internal, Medicine, Faculty of Medicine, University of Gezira, Sudan

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Abstract
Chilaiditi syndrome is a rare condition characterized by the interposition of the colon (or occasionally the small intestine) between the liver and the diaphragm, which may result in gastrointestinal and respiratory symptoms. Named after the Greek radiologist Demetrius Chilaiditi, who first described this phenomenon in 1910, it is distinct from Chilaiditi's sign, which refers to the incidental radiographic finding without associated symptoms.
Key words: cholera; bacterium; vibrio cholerae

Introduction

Chilaiditi syndrome is a rare condition characterized by the interposition of the colon (or occasionally the small intestine) between the liver and the diaphragm, which may result in gastrointestinal and respiratory symptoms. Named after the Greek radiologist Demetrius Chilaiditi, who first described this phenomenon in 1910, it is distinct from Chilaiditi's sign, which refers to the incidental radiographic finding without associated symptoms. This review aims to outline the aetiology, clinical presentation, diagnosis, and management of Chilaiditi syndrome, as well as its differentiation from other similar conditions.

Aetiology and Pathophysiology

The pathogenesis of Chilaiditi syndrome is multifactorial. It is thought to result from a combination of anatomical, developmental, and acquired **factors, such as:**

- Congenital or acquired anatomical abnormalities: Redundancy of the colon, abnormality of the suspensory ligaments (hepatic, falciform, or coronary ligaments), and diaphragmatic anomalies may predispose to colonic interposition.
- Liver abnormalities: A small liver or cirrhotic changes leading to an enlarged liver lobe may contribute to the altered anatomical positioning of the bowel.
- Abdominal surgeries or trauma: Post-surgical adhesions or diaphragmatic weakening may cause the intestines to migrate into the sub-diaphragmatic space.
- Clinical Presentation
- While Chilaiditi's sign is often asymptomatic and discovered incidentally, Chilaiditi syndrome presents with a variety of symptoms that can include:
- Gastrointestinal symptoms: Abdominal pain (often in the right upper quadrant), bloating, nausea, vomiting, and altered bowel habits (constipation or diarrhea).
- Respiratory symptoms: Shortness of breath and chest discomfort due to the displacement of the diaphragm.
- Other symptoms: Rarely, cardiac symptoms such as palpitations or discomfort may arise due to the compression of surrounding structures.

These symptoms are nonspecific, and the condition can be mistaken for other acute abdominal conditions, such as sub-diaphragmatic abscess, bowel obstruction, or even pneumoperitoneum due to the air visible on imaging.

Diagnosis

Diagnosis is primarily based on imaging, with chest and abdominal X-rays revealing the interposition of the bowel loops between the liver and diaphragm, often showing gas within the colon or small intestine in the sub-diaphragmatic space.

- ❖ Radiography: On an upright chest or abdominal X-ray, Chilaiditi's sign presents as a radiolucent area between the liver and diaphragm, resembling free air under the

diaphragm. The presence of haustral folds confirms the involvement of the colon rather than air due to pneumoperitoneum.

- ❖ Computed Tomography (CT): CT scans are more definitive and can help exclude other pathologies like abscesses, tumours, or perforated viscera. It provides better visualization of the bowel, liver, and surrounding structures.
- ❖ Ultrasound: May be used to rule out other causes of abdominal pain and confirm the presence of the interposed colon.
- ❖ Differential Diagnosis

The key differential diagnoses for Chilaiditi syndrome include:

- Pneumoperitoneum: Both conditions may present with subdiaphragmatic air, but the presence of colonic haustral markings on imaging helps differentiate Chilaiditi syndrome.
- Bowel obstruction: In cases with significant gastrointestinal symptoms, obstruction should be ruled out using imaging, particularly in elderly patients.
- Subdiaphragmatic abscess: Can present with fever and abdominal pain similar to Chilaiditi syndrome but often shows a mass or fluid collection on CT.
- Right diaphragmatic hernia: This may mimic Chilaiditi syndrome on X-ray but can be distinguished through CT imaging.
- Management

The treatment of Chilaiditi syndrome varies depending on symptom severity:

- ❖ Conservative Management: In most cases, Chilaiditi syndrome can be managed conservatively with bed rest, bowel decompression (e.g., with nasogastric tube insertion), and the administration of laxatives or stool softeners to relieve constipation.
- ❖ Surgical Intervention: Surgery is reserved for patients with complications, such as bowel obstruction, volvulus, or ischemia. Surgical options include resection of the redundant colon or fixation (colopexy) to prevent recurrence. In cases of diaphragmatic hernia, surgical repair may be indicated.
- ❖ Symptomatic Management: For patients with chronic or recurrent symptoms, symptomatic treatment with analgesics and antiemetics may be required.

Complications

Chilaiditi syndrome, although benign in most cases, can lead to significant complications if untreated or misdiagnosed. The most serious complications include:

- Bowel obstruction: The interposed bowel may twist and cause volvulus, leading to mechanical obstruction.
- Ischemia or perforation: Rarely, vascular compromise can occur due to bowel strangulation, which may necessitate emergency surgery.
- Prognosis

The prognosis for patients with Chilaiditi syndrome is generally good, particularly for those managed conservatively. Most patients respond well to non-invasive treatments, and surgery is rarely required. However, the recurrence of symptoms can occur in some cases, particularly in those with underlying anatomical abnormalities.

Case Study

Case 1: A 65-year-old male with a history of chronic obstructive pulmonary disease (COPD) presented with right upper quadrant pain and shortness of breath. He was initially suspected of having pneumoperitoneum due to the presence of sub-diaphragmatic gas on chest X-ray. A CT scan revealed interposition of the transverse colon between the liver and diaphragm, confirming the diagnosis of Chilaiditi syndrome. The patient was managed conservatively with bowel rest and laxatives, resulting in symptom resolution within a few days.

Case 2: A 58years old male patient presented to emergency room (ER) with a history of difficulty in breathing with easy fatigability for few days associated with dry cough & right side chest pain and no fever or night sweating. He is known hypertensive and had stroke 9 years ago. A chest X-ray(CXR) was performed, revealing an abnormal elevation of the right hemidiaphragm with underlying gas, suggesting possible bowel interposition with pleural effusion in the right side. He was admitted as a case of community acquired pneumonia. A CT scan of the chest was conducted, showing the transverse colon interposed between the liver and diaphragm, consistent with Chilaiditi syndrome. Patient received oxygen therapy, antibiotics, analgesics, chest physiotherapy and pleurocentensis was done for him. He was discharged in a good condition.

Conclusion

Chilaiditi syndrome, while rare, should be considered in patients presenting with unexplained gastrointestinal or respiratory symptoms, particularly when radiographic findings suggest sub-diaphragmatic air. Awareness of this condition can prevent unnecessary invasive procedures and ensure timely and appropriate management. Conservative treatment is often sufficient, but surgical intervention may be needed in complicated cases. Further research is warranted to better understand the natural history and optimal management strategies for Chilaiditi syndrome.

References

1. Chilaiditi D. Zur Frage der Hepatoptose und Ptose im allgemeinen im Anschluss an drei Fälle von temporärer partieller Leberverlagerung. Fortschritte auf dem Gebiete der Röntgenstrahlen. 1910; 16:173–208.
2. Orangio GR, Fazio VW, Winkelman E, et al. The Chilaiditi syndrome and associated volvulus of the transverse colon. An indication for surgical therapy. Dis Colon Rectum. 1986;29(11):653-656.
3. Lekkas CN, Lentino W. Symptom-producing interposition of the colon. Clinical syndrome in mentally deficient adults. JAMA. 1978;240(8):747-750.
4. Sawsan A. Omer, Sharif Kikomeko Joseph Baluku Nobert Moris Kasibante , Oscar Gumisiriza ,

Mahmoud Y.Alwadi and Pricilla Apolot Obore , Chilaiditi Syndrome: Case report in Pulmonology and Review of the Literature, Annals of Clinical Reviews & Case Report, (2024), Doi: 10.47991/2837-3642/ACRCR-131.