Chilaiditi sign, an incidental finding in a 3-year-old: A Case Report

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Abstract

Background

Chilaiditi sign is an uncommon radiological finding wherein there is presence of bowel between the diaphragm and liver. The patients are usually asymptomatic therefore, the diagnosis is usually incidental. The suggested radiological feature includes presence of gas between liver and diaphragm, which may be often misinterpreted as pneumoperitoneum.

Case Presentation

We present a case of a young child with the presence of Chilaiditi sign, diagnosed incidentally on performing a plain radiograph.

Conclusions

Clinicians should be familiar with possible causes of pneumoperitoneum, especially in a young child to decrease the burden of performing unnecessary investigation.

Keywords: *Case report, Chilaiditi sign, Incidental findings, X-Ray.*

Introduction

Chilaiditi sign is a rare condition with an interposition of the colon between the liver and diaphragm or abdominal wall.[1] In most cases, hepatic flexure of the colon is involved, however, there are few reports of the interposition of loops of the small bowel.[2] The incidence of the Chilaiditi sign has been reported to be between 0.16% and 0.28% .[2] The condition has been more frequently reported in males than females with male: female ratio of 4:1.[2] Here we report a case of a 3-year-old female with dengue fever with an incidental finding of Chilaiditi sign.

Case report

A 3-year-old female was presented to Dhulikhel Hospital Pediatrics Out-Patient Department with complaints of acute onset fever, cough and noisy breathing for a duration of four days. The cough was acute on onset, dry in nature and associated with post-tussive vomiting. Additionally, there is a history of four episodes of vomiting containing food particles with loss of appetite for 2 days. The patient had no other findings pertinent to gastrointestinal abnormality.

On examination, the abdomen was soft, tender and nondistended. Routine blood investigations were sent,

and the serology test for Dengue NS1 antigen was done, which turned out to be positive. In view of the presenting symptoms, respiratory tract infection was also suspected, thus a normal chest radiograph was sent. On the plain chest radiography (Figure 1), there was presence of gas (as suggested by radiolucent shadow) between the lower border of right hemidiaphragm and superior surface of the liver. Thus, a diagnosis of 'Chilaiditi sign' was made; however the patient was asymptomatic, thus no further investigations were done.

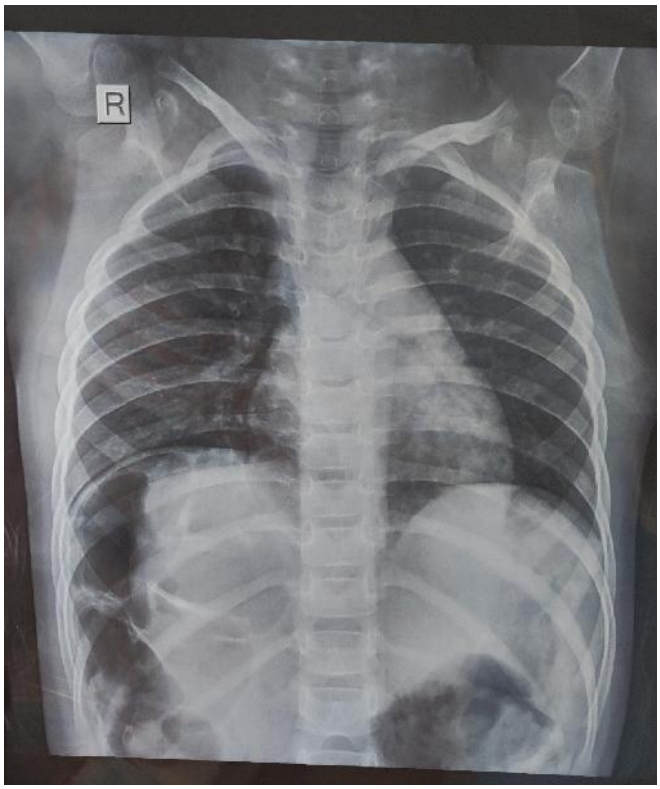

Figure 1. Radiolucent shadow (gas) between the right hemidiaphragm and upper surface of liver indicative of 'Chilaiditi sign.'

Discussion

Normally due to the presence of falciform of the liver or suspensory ligament of the colon, the interposition of the colon or small bowel loop between the liver and diaphragm is prevented.[1] However, anatomical variations such as elongation, absence, malposition, and laxity of the ligaments can allow pathological malposition of the colon and the small bowel loop.[1] The etiology of these variations can be congenital or acquired due to cirrhosis, aerophagia, diaphragmatic paralysis, chronic lung disease, ascites, obesity, and multiple pregnancies.[1] The colonic or small bowel interposition can be intermittent which can present a challenge in both diagnosis and management of the condition[3].

The patient can be asymptomatic or in an acute abdomen due to acute intermittent bowel obstruction also known as Chilaiditi syndrome.[4] Chilaiditi syndrome is characterized by symptoms such as pain abdomen, distention, nausea, vomiting, changes in bowel habits, and more atypical presentations such as substernal pain, cardiac dysrhythmias, dyspnea, and respiratory distress.[5] Chilaiditi syndrome is an exclusion diagnosis, with a 12% incidence on chest radiographs and a 20% incidence on abdomen CT scans in patients with the Chilaiditi sign.[5] The diagnosis of chilaiditi syndrome should begin after ruling out pneumoperitoneum. CT scan is the best imaging modality for its diagnosis and also ruling out diaphragmatic rupture.[4]

Chilaiditi syndrome should be first attempted to be managed conservatively first like bed rest, intravenous fluids, nasogastric decompression, enemas, cathartics, high fiber diet, and stool softeners.[6] If the subsequent follow up shows lack of resolution and ischemia , we should go for surgical management which includes Cecopexy and Colonic resection.Cecopexy is recommended for an uncomplicated cecal volvulus whereas colonic resection is recommended when volvulus involves transverse colon. [1] Colonoscopic Reduction is not done if transverse colon is involved as it has high risk of gangrene. [1]

The complications of chilaiditi syndrome includes volvulus of cecum, splenic flexure or transverse colon, cecal perforation, and subdiaphragmatic appendicitis perforation as it can occur at the the time of of liver biopsy and colonoscopy if has not been diagnosed before the procedure. It has also been linked with pulmonary and gastrointestinal malignancies. [1]

Conclusion

Chilaiditi syndrome is a rare condition that is often asymptomatic but can present with acute gastrointestinal symptoms. Due to its rarity, the disease is often misdiagnosed as pneumoperitoneum and over evaluated. Thus, this report is aimed at familiarizing clinicians with the condition to prevent the burden of over evaluation and over treatment.

Consent

Written informed consent was obtained ensuring patient's anonymity

Declaration of competing interest

There are no conflicts of interest.

Acknowledgement

N/A

References

1. Moaven O, Hodin RA. Chilaiditi syndrome: a rare entity with important differential diagnoses. Gastroenterol Hepatol . 2012 Apr;8(4):276–8.
2. Vessal K, Borhanmanesh F. Hepatodiaphragmatic interposition of the intestine (Chilaiditi's syndrome). Clin Radiol. 1976 Jan;27(1):113–6.
3. Kapania EM, Link C, Eberhardt JM. Chilaiditi Syndrome: A Case Report Highlighting the Intermittent Nature of the Disease. Case Rep Med. 2018 Jun 21;2018:3515370.
4. Kang D, Pan AS, Lopez MA, Buicko JL, Lopez-Viego M. Acute abdominal pain secondary to chilaiditi syndrome. Case Rep Surg. 2013 Jul 1;2013:756590.
5. Bredolo F, Esposito A, Casiraghi E, Cornalba G, Biondetti P. Intestinal interposition: the prevalence and clinical relevance of non-hepatodiaphragmatic conditions (non-Chilaiditi forms) documented by CT and review of the literature. Radiol Med. 2011 Jun;116(4):607–19.
6. Kamiyoshihara M, Ibe T, Takeyoshi I. Chilaiditi's sign mimicking a traumatic diaphragmatic hernia. Ann Thorac Surg. 2009 Mar;87(3):959–61.