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Case Report

Chilaiditi's syndrome in a patient under long-term antidepressants- A case report

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ABSTRACT

Introduction: Chilaiditi's sign is a rare radiological sign characterized by interposition of the colon between diaphragm and liver. It is called Chilaiditi's syndrome if the patient presents with associated symptoms. Its diagnosis is incidental and can be confused with other acute conditions.
Case presentation: This is a case of 85-year-old gentleman who presented with complaints of epigastric pain and vomiting. The patient had a history of long-term antidepressant medications. X-ray of chest and abdomen revealed presence of bowel loops under the diaphragm. CT scan helped confirm the diagnosis of Chilaiditi's sign.
Discussion: Chilaiditi's sign has a low prevalence on chest and abdominal X-rays. Common associated symptoms include abdominal pain, nausea, vomiting and constipation. It can be misdiagnosed as bowel perforation and can lead to unnecessary surgical interventions. Symptomatic patients are managed conservatively.
Conclusion: Chilaiditi's syndrome is a rare radiological entity and should be diagnosed carefully to avoid unwanted surgical procedures.

1. Introduction

First described by Greek radiologist Demetrious Chilaiditi in a case series of 3 patients in 1910, Chilaiditi's sign is a rare radiological condition characterized by colonic interposition between the diaphragm and the liver [1]. It has a reported prevalence of 0.025–0.28% on abdominal and chest radiographs [2,3]. The diagnosis is usually incidental on radiographic images (3) and can be confused with other conditions such as pneumoperitoneum and subdiaphragmatic abscess [4]. Patients can also present with symptoms and the condition is then referred to as Chilaiditi's syndrome [1,5]. It has a significant male preponderance but can affect a wide range of age groups [3,6] (see Figs. 1 and 2)

We report the case of incidental finding of Chilaiditi's sign on chest and abdominal radiograph in an 85-years-old male. This case has been reported in line with SCARE 2020 criteria [7].

2. Case presentation

An 85-years-old hypertensive male presented to emergency department of our institution with chief complaints of epigastric pain for 15 days and vomiting for 3 days. Abdominal pain was sudden in onset, continuous and radiating to the back. He had multiple episodes of non-projectile and non-bilious vomiting. He had history of on-and-off mild abdominal pain for the past few years. He was also a psychiatric patient who was being treated for depression with Clobazam and Sertraline for the last 10 years. The patient had previously undergone cholecystectomy and appendectomy.

At the time of presentation, the patient was conscious, alert, well oriented to time place and person and not in respiratory distress. He was vitally stable except for hypertension (170/90 mm of Hg). On per abdominal examination, the abdomen was non-distended, soft and non-tender. Bowel sounds were heard. Rebound tenderness and guarding were absent.

He was admitted to general surgery ward with the provisional diagnosis of acute biliary pancreatitis. His laboratory examination revealed amylase 127 U/L (Normal: <80U/L) and lipase 95 U/L (Normal: <60U/L). He had an elevated level of Urea (8.8 mmol/L; Normal: 1.6–7.0 mmol/L) and Creatinine (145uMol/L; Normal: 60-115uMol/L). His hemoglobin was 10.7 gm% (Normal: 12–18 gm%)

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Fig. 1. Chest X-ray showing bowel loops under the right hemidiaphragm (Chilaiditi's sign).

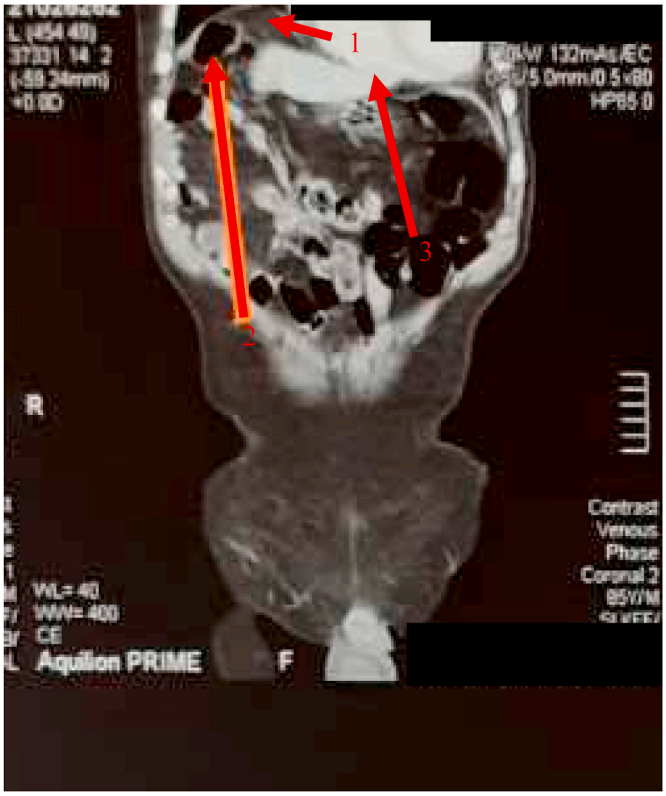

Fig. 2. CECT scan of abdomen showing bowel loops under the right hemidiaphragm (Chilaiditi's sign).
1. Right hemidiaphragm elevated above liver by intestine.
2. Bowel distended by air.
3. Superior margin of liver depressed below right hemidiaphragm.

and platelets 121000/cubic mm (Normal: 150000–400000/cubic mm). All the other laboratory investigations were within normal limits.

Endoscopy showed widely open and axially displaced stomach through the diaphragmatic esophageal hiatus i.e., features suggestive of hiatal hernia.

Plain radiographs of the chest and abdomen taken in erect position revealed a radiolucent shadow and a few semilunar radiopaque linings under the right dome of the diaphragm, which were characteristic of bowel loops. CECT showing the bowel between the right lobe of liver and right hemi-diaphragm confirmed the diagnosis of Chilaiditi's sign.

The patient received treatment for resolving acute mild pancreatitis with acute kidney injury and was counseled about his condition. He is following up in the clinic with no further complications.

3. Discussion

Chilaiditi's sign is usually a rare radiological phenomenon of hemi-diaphragmatic interposition of bowel whose diagnosis is made upon incidental discovery. Although its prevalence on CT scans is in region of 1.18–2.4%, it decreases to just 0.025–0.28% on chest and abdominal radiographs [3]. Whenever Chilaiditi's sign is accompanied by clinical symptoms, it is then referred to as Chilaiditi's syndrome. The more common symptoms include gastrointestinal symptoms such as abdominal pain, nausea, vomiting, and constipation whereas less frequently, cardiorespiratory symptoms such as dyspnea, respiratory distress and angina-like chest pain can also occur [2]. Although the etiology is still unclear, it is suggested that any condition resulting in an enlarged right subdiaphragmatic space or hypermobile intestine can lead to its development. Some speculated causes include diaphragmatic conditions like phrenic injury or muscle degeneration resulting in high diaphragm, hepatic causes like lax suspensory ligaments or reduced liver volume, as well as intestinal causes like abnormal or increased motility, malrotation or deficient peritoneal attachments [8]. Interestingly, our patient had a history of long-term antidepressant medication, which is documented to have some association with Chilaiditi's sign along with other risk factors such as intellectual disability and schizophrenia [9,10]. Chilaiditi's sign is also associated with several conditions like chronic obstructive pulmonary disease, scleroderma, congenital hypothyroidism, paralytic ileus, pneumatosis cystoides intestinalis, melanosis coli and mental retardation [8].

To diagnose Chilaiditi's sign from radiographic images, following criteria must be met in erect position: the right hemidiaphragm must be adequately elevated above the liver by the intestine, the bowel must be distended by air to illustrate pseudo-pneumoperitoneum, and the superior margin of the liver must be depressed below the level of the left hemidiaphragm [2]. The radiological finding of air under the diaphragm can be misdiagnosed with bowel perforation and thus patients are under high risk of unwanted surgical procedures. Thus, in symptomatic patients, an immediate meticulous abdominal examination is needed to rule out acute abdomen requiring surgical intervention [11].

Unless in cases of surgical emergencies, treatment is done conservatively by bed rest, nasogastric decompression, stool softeners and intravenous hydration [3]. Conditions that require immediate surgical management include colonic volvulus, subphrenic appendicitis, internal herniation, and cecal perforation [6]. If symptoms remain persistent, various procedures such as colon resection, hepatopexy, colopexy, right hemicolectomy, sigmoidectomy, subtotal colectomy, and even minimally invasive procedures like laparoscopic colopexy are considered [6,12,13]. There is lack of existing literature regarding management of similar cases in Nepal, although one article does report successful management by bowel retrieval and decompression [14].

4. Conclusion

Chilaiditi's sign is a rare radiological sign characterized by interposition of the colon between diaphragm and liver. It is called Chilaiditi's

syndrome if the patient presents with associated symptoms like abdominal pain, nausea, vomiting and constipation. It can be misdiagnosed as bowel perforation and can lead to unnecessary surgical interventions. Symptomatic patients are managed conservatively.

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Ethical approval

Case reports are exempt from ethical approval in our institution.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Research registration

N/A.

Declaration of competing interest

There are no conflicts of interest.

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