



Case report

Dilated sigmoid colon with Chilaiditi's sign mimicking diaphragmatic hernia: A case report

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ABSTRACT

Introduction: Chilaiditi's sign is a rare radiological presentation characterized by colonic interposition between the diaphragm and liver which is usually confused with conditions such as diaphragmatic hernia, pneumoperitoneum and subdiaphragmatic abscess.

Case presentation: We report a case of 55 year old male presenting with abdominal pain since a year which was associated with abdominal fullness, loss of appetite and constipation. Further investigations showed us as a case of diaphragmatic hernia but intra operatively it was found to be Dilated sigmoid colon with Chilaiditi's sign.

Clinical discussion: It is a rare incidental finding with major preponderance in male. The intestinal, hepatic and diaphragmatic causes predispose its pathology. Conservative management is the first line of treatment but the complicated abdominal pathologies are managed by various surgical intervention.

Conclusion: Dilated sigmoid colon along with Chilaiditi's sign can sometime mimic as Diaphragmatic hernia which can make enormous difference in our pre and post-operative diagnosis. Chilaiditi's syndrome is a rare entity so early diagnosis is of utmost benefit.

1. Introduction

Dilated sigmoid colon can be seen in adult patients presenting with a variety of medical and surgical condition like neoplasm, diverticulitis, inflammatory bowel disease, volvulus, intussusception, hernia. It can lead to colonic ischemia or perforation and an accurate diagnosis is required to initiate appropriate therapy and prevent complications [1].

Chilaiditi's sign is a rare radiological condition characterized by colonic interposition between the diaphragm and the liver [2]. The diagnosis is usually confused with other conditions such as diaphragmatic hernia, pneumoperitoneum and subdiaphragmatic abscess [3]. It has a reported prevalence of 0.025–0.28 % on abdominal and chest radiographs [2,4]. Here we are presenting a case of 55 year old man whose preoperative investigations showed diaphragmatic hernia but intraoperatively it was found to be dilated sigmoid colon over bilateral hemidiaphragm, following SCARE 2020 guideline [5].

2. Case presentation

A 55 year old male patient presented to the outpatient department of

Janaki Medical College Teaching Hospital with chief complain of abdominal pain since a year. The pain was in epigastric region, insidious in onset, occurring multiple times after a definite period of days persisting for 2–3 days, dull aching in nature, non-radiating, aggravating on movements, had no relieving factor and is severe enough to make the patient bedridden. The patient had associated abdominal fullness, loss of appetite and constipation during the episode of pain. There was no associated vomiting, loose stool, blood in stool or black tarry stool. With these problems he previously visited multiple hospitals and was prescribed antibiotics, proton pump inhibitors and hyoscine butyl bromide but his abdomen pain was not subsided.

On examination his general condition was fine with no signs of pallor, icterus, lymphadenopathy, cyanosis, clubbing, edema and dehydration. The patient's body temperature was 98 °F, pulse rate 68 beats per minute, respiratory rate 18 beats/min, blood pressure 130/70 mmHg and oxygen saturation of 98 % measured with pulse oximeter. On systemic examination, abdomen was soft, nontender, no any palpable lump and bowel sound was heard. Respiratory and cardiovascular examination was normal. On neurological examination, everything was intact except for vestibulocochlear nerve.

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Fig. 1. USG abdomen showing Left Diaphragmatic hernia as there is evidence of a defect in the left diaphragm with evidence of bowel loops crossing through it.

Chest X-ray revealed dilated bowel loops beneath both hemidiaphragm. On right side there is interposition of bowel loops between diaphragm and liver. It is likely of Chilaiditi's sign.

Laboratory workup showed decreased hemoglobin: 11.1 g% (patient baseline 12), white blood cell count: 7000/cubic mm, platelets: 23,4000/cubic mm, serum creatinine: 0.9 mg/dl, sodium: 133.7 mEq/l and potassium: 4.02 mEq/l.

Ultrasonography (USG) of abdomen showed Left Diaphragmatic hernia as there is evidence of a defect in the left diaphragm with evidence of bowel loops crossing through it (Fig. 1).

Elective laparotomy was done, abdominal contents were visualized

and findings showed 25 cm (approx.) of dilated sigmoid colon extending from rectosigmoid junction to proximal sigmoid colon and that dilated sigmoid colon was present in bilateral hemidiaphragm. There was laxity in left posterolateral diaphragm. Diaphragmatic hernia which was our preoperative diagnosis was not present. It was dilated sigmoid colon which used to move in the abdominal cavity and lying between hemidiaphragm and liver in the right and mimicking diaphragmatic hernia in the left. Resection of 25 cm sigmoid colon with anastomosis between proximal sigmoid colon and rectum was done (Fig. 2).

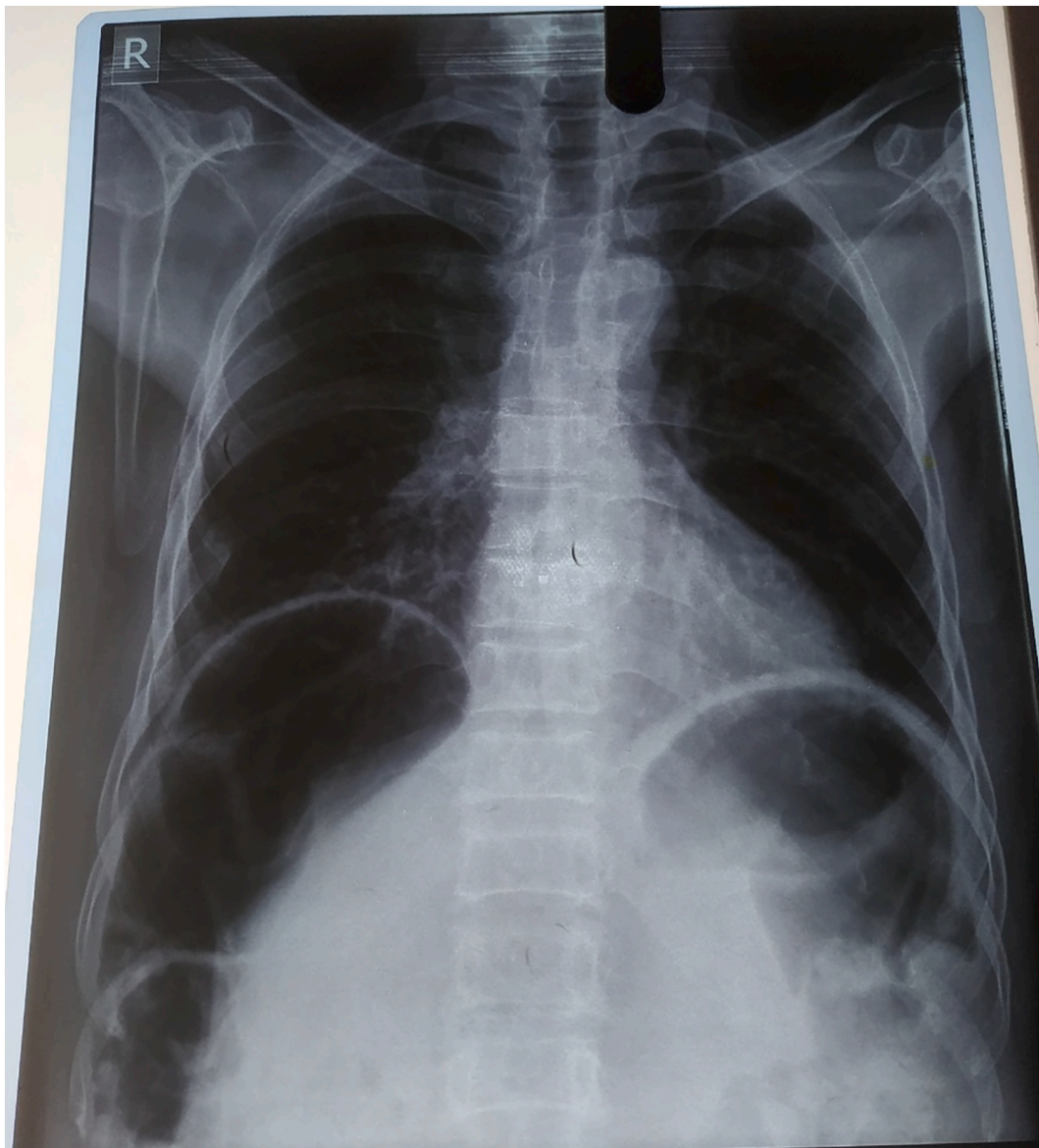


Fig. 2. Chest X-ray showing dilated bowel loops beneath both hemidiaphragm. On right side there is interposition of bowel loops between diaphragm and liver.

3. Discussion

Demetrius Chilaiditi, 1910 first described Chilaiditi sign as interposition of colon between the liver and diaphragm [2,6]. It is rare incidental finding with significant male preponderance with male:female ratio 4:1 [2,7,8]. The major etiology behind Chilaiditi's syndrome is yet unclear but intestinal, hepatic and diaphragmatic etiologies contribute to its pathologies [2,7]. It is caused by laxity of suspensory ligament, colonic hypermotility (redundant colon), cirrhotic liver hemidiaphragm due to muscular degeneration or phrenic nerve injury [9].

The differential diagnosis of Chilaiditi's syndrome includes bowel obstruction, volvulus, intussusception, ischemic obstructive bowel, inflammation (appendicitis or diverticulitis), diaphragmatic hernia, pneumoperitoneum and sub diaphragmatic abscess [2,6]. In our present case, there is dilated sigmoid colon from rectosigmoid junction to proximal colon which causes placement of dilated sigmoid colon beneath both the hemidiaphragm. Initially the case mimicked to diaphragmatic hernia but further investigations and surgical intervention and histopathological examination confirmed to be chronic colitis with dilated sigmoid colon with Chilaiditi's sign (Fig. 3).

The elevation of diaphragm is due to laxity in posterolateral left

hemidiaphragm [8]. Chilaiditi's sign is usually asymptomatic radiologic sign, but non-specific gastrointestinal symptoms include abdominal pain, nausea, vomiting and constipation followed by respiratory distress and less frequently angina like chest pain. Rarely, combination of these multiorgan symptoms was seen [2,7,9]. However, most of patients have some element of abdominal pain that varies from chronic intermittent pain to acute severe pain [9]. In children, abdominal pain and long-standing constipation are major signs that lead to suspicion of Chilaiditi's syndrome which is further confirmed by its characteristic radiological finding [10]. In our case, the patient had abdominal pain in epigastric region associated with abdominal fullness, loss of appetite and constipation during episode of pain.

In this syndrome, the radiological imaging diagnosed the abnormal position of the colon which may result in collection of air under the diaphragm in plain image. Chest and abdominal X-Ray are not sensitive as compared to CT-scan [9]. The first line of treatment for Chilaiditi's Syndrome is conservative management which includes bed rest, IV fluids, nasogastric tube decompression and laxatives which plays a vital role in minimizing the symptoms. Surgical intervention is indicated in patients with complicated abdominal pathologies which includes obstruction, volvulus, perforation, gangrene, etc. Surgical management

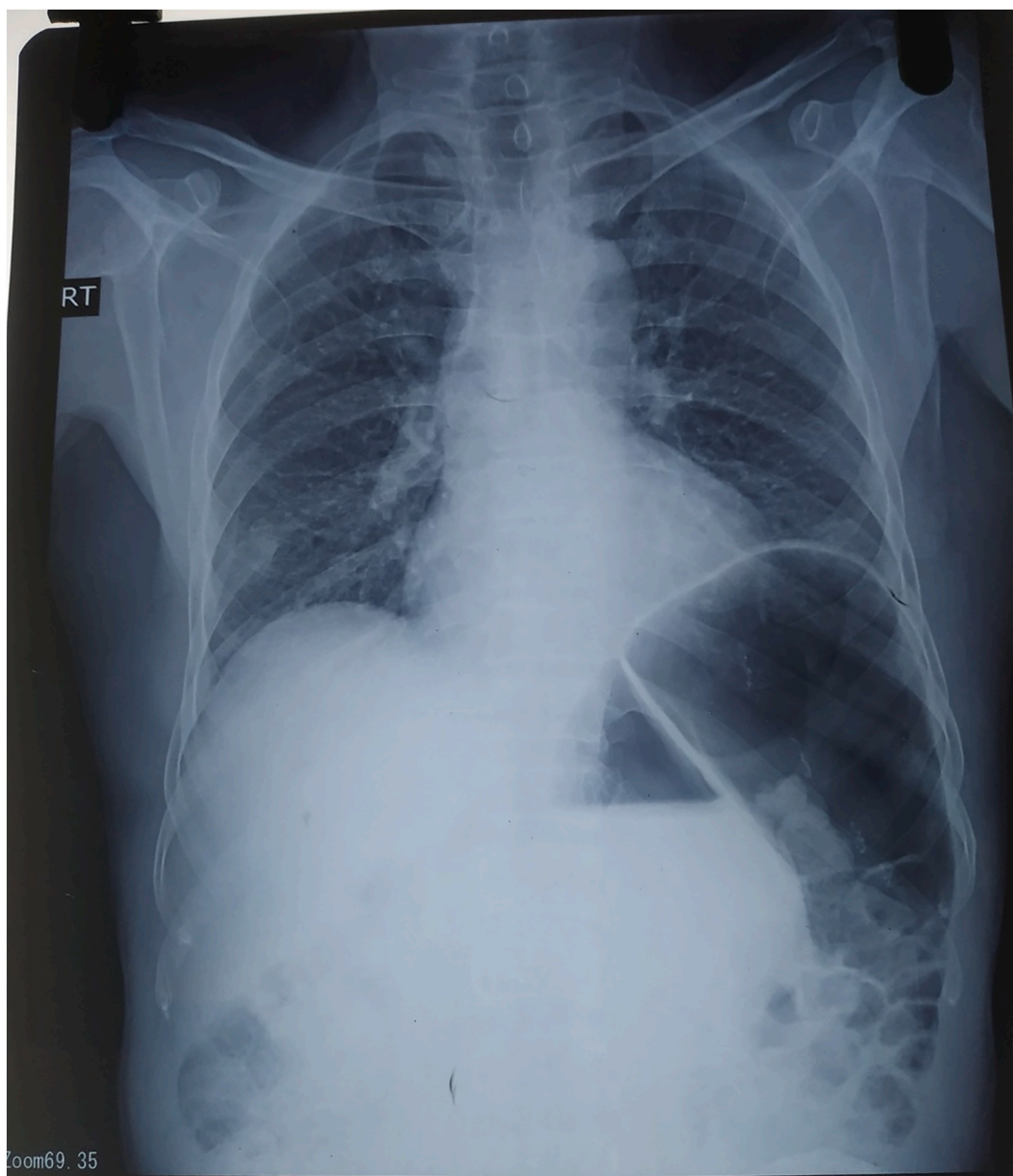


Fig. 3. Chest X-ray showing diaphragmatic hernia.

varies from simple colonoscopy reduction, colopexy, colonic resection, hepatopexy, etc. [2,7–9]. In the above case of dilated sigmoid colon, resection of 25 cm sigmoid colon with anastomosis between proximal colon and rectum was done. The histopathological examination of resected colon showed intestinal wall with infiltrative chronic inflammatory cells, the features suggestive of chronic colitis.

4. Conclusion

Chilaiditi's sign/syndrome is a rare entity so early diagnosis is of utmost benefit to prevent from dilemma and misdiagnosis that results to unnecessary surgical intervention and late diagnosis can result into complications such as perforation, ischemia and gangrene [9]. Dilated sigmoid colon along with Chilaiditi's sign can sometime mimic as Diaphragmatic hernia which can make enormous difference in our pre and post-operative diagnosis affecting the proper management, treatment and surgical intervention of the patient.

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Ethical approval

Not required.

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.

Author contribution

Concept and writing paper: Suveksha Shaurya Shah.
Writing paper, References, editing: Dhiraj Chaurasia.

Writing paper and editing: Dinjul Katuwal.

SSS and DC drafted the manuscript. DK was the treating physician, senior author and supervisor and revised the manuscript.

Registration of research studies

N/a.

Guarantor

Suveksha Shaurya Shah accepts full responsibility for the work and/or the conduct of the study, had access to the data, and controls the decision to publish.

Declaration of competing interest

None.

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