



Eventration of diaphragm with Chilaiditi sign – A rare occurrence

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ABSTRACT

Chilaiditi sign, a rare radiographic finding of hepatodiaphragmatic interposition of hollow viscera, colon or bowel, was first described by Demetrius Chilaiditi. Diaphragmatic eventration occurs when there is a partial or entire elevation of the diaphragm due to thinned musculature of the diaphragm itself. We present a case report of a 47 year old male patient who presented to emergency department with breathlessness, fever & chest pain. This case carries a clinical significance as it could have let to a wide range of complications like bowel volvulus, obstruction & perforation.

Introduction

Demetrius Chilaiditi, a Greek radiologist first described in 1910, a radiographic finding of hepatodiaphragmatic interposition of hollow viscera, colon (or) bowel, referred as Chilaiditi's sign [1]. Found incidentally in 0.025–0.28% of chest and abdominal plain films and 1.1–2.4% of chest and abdominal CT scans. More common in elderly people with incidence of 1% with male dominance of 4:1. Chilaiditi syndrome is the presence of symptoms caused by this abnormal position of bowel and can be self-resolving or chronic. Chilaiditi sign is rare, but rarer still is the simultaneous occurrence of chilaiditi sign and eventration of diaphragm. Diaphragmatic eventration occurs due to musculature defect replacing normal muscle structure with a membranous sheath that results in either partial or total elevation. I report this case of 47-year-old male patient who presented at our emergency with breathlessness, fever and left sided chest pain. (see Figs. 1 and 2)

Case report

A 47-year-old male patient presented with complaints of breathlessness, left sided chest pain and fever. There is no past history of any hospitalization, trauma any previous surgery or any other co morbidities. On examination, there were diminished breath sounds in right infrascapular and infraaxillary areas. Patient maintained saturation in room air and all routine blood investigations were normal.

Fluoroscopy showed decreased movement of right hemidiaphragm

Patient was managed with antibiotics and nebulization, CTVS

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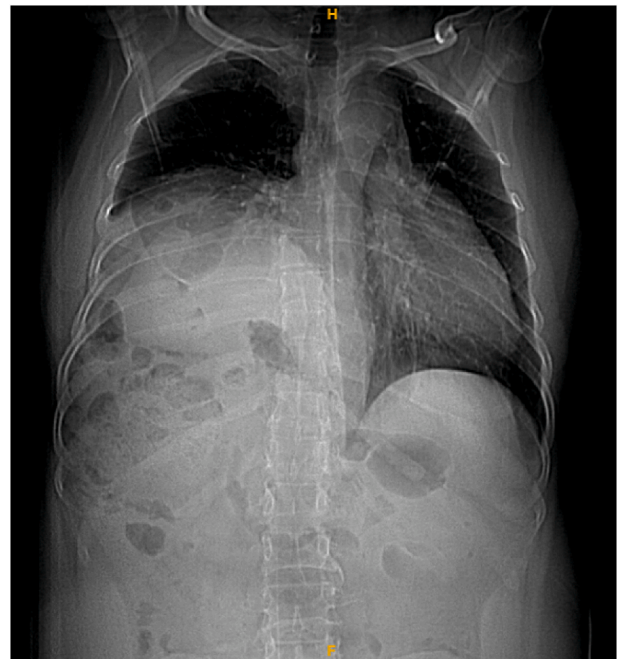


Fig. 1. X ray chest showed a homogenous opacity in right lower zone of lung, an ultrasound abdomen was done to rule out sub pulmonic effusion but it showed the upper border of liver at 4th intercostal space suggesting eventration of diaphragm.

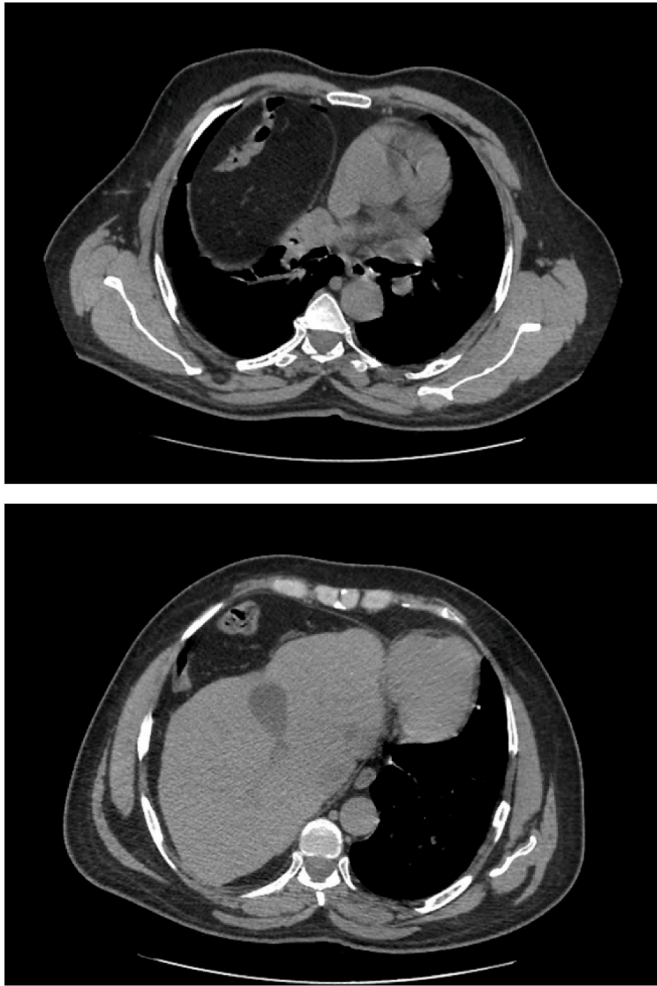


Fig. 2. CT thorax confirmed the eventration by showing elevation and thinning of diaphragm along with presence of transverse colon and mesocolon between right hemidiaphragm and dome of liver.

opinion was taken and they advised thoracoscopic diaphragmatic plication. Pt was discharged and advised to follow-up in CTVS for further management.

Discussion

Chilaiditi sign is an asymptomatic finding on an X ray or a CT scan. The diagnosis of this disease is challenging on plain chest X-ray since it

cannot determine whether subdiaphragmatic air is free (pneumoperitoneum) or intraluminal. Some authors suggest lateral views to visualize haustrations of the colon better. Also, left lateral decubitus views can be helpful. Unlike pneumoperitoneum, free air will remain in the subphrenic space in case of Chilaiditi's syndrome. However, Computed tomography scan remains the imaging modality of choice for accurate diagnosis. Chilaiditi syndrome refers to the symptoms like abdominal distension, pain, breathlessness or anorexia [2]. Predisposing factors may be liver ptosis, ascites, megacolon, abnormal colic mobility, diaphragmatic thinning and phrenic nerve injury.

Three types of HDI (hepatodiaphragmatic interposition) have been identified based on the anatomical relation to liver to the adjacent organs [3].

- In **First** type, the colon protrudes into the right anterior subphrenic space.
- In **Second** type colon protrudes into right posterior subphrenic space.
- In **Third** type stomach and colon protrude into right extra peritoneal space.

Radiologically my patient had first type of HDI. Simultaneous occurrence of hepatodiaphragmatic colon interposition and diaphragmatic eventration is very rare. It is difficult to conclude if it is an incidental coincidence or if one condition led to another. Eventration of diaphragm is usually asymptomatic, but can lead to progressive dyspnea and recurrent respiratory infections, for such cases surgical fixation becomes necessary [4]. They are clinically significant, as they can result in a wide range of complications, including bowel volvulus, obstruction & perforation [5].

Declaration of competing interest

None.

References

- [1] I.B. Ismail, H. Zenaidi, S. Rebi, A. Yahmadi, A. Zoghalmi, Chilaiditi's sign: a rare differential diagnosis of pneumoperitoneum, *Clin Case Rep* 8 (12) (2020) 3102–3104.
- [2] I. Lobo, Chilaiditi's sign: lesser known cause for elevated diaphragm, *J. Assoc. Phys. India* 64 (6) (2016 Jun) 68.
- [3] K. Vessal, F. Borhanmanesh, Hepatodiaphragmatic interposition of the intestine (Chilaiditi's syndrome), *Clin. Radiol.* 27 (1) (1976 Jan 1) 113–116.
- [4] J. de Andrade Cordeiro, A.K. Almeida, S. de Oliveira Júnior, B. Fernandes, A.C. M. Rego, I. Araújo-Filho, Diaphragmatic eventration: review of current knowledge, diagnostic, and management options, *Int. J. Med. Res. Health Sci.* 5 (3) (2016) 62–65.
- [5] K.A. Mistry, R. Bhoil, N. Kumar, R. Chopra, N. Thapar, Significance of chilaiditi sign and chilaiditi syndrome, *Emerg Nurse J RCN Accid Emerg Nurs Assoc* 25 (3) (2017 Jun 15) 26–31.