When gastroenterology meets radiology: air under right diaphragm

CLINICAL PRESENTATION

A middle-aged patient with cystic fibrosis presented to the clinic with progressively worsening constipation requiring over-the-counter laxative use. He was not in distress, and physical examination was notable for percussive tympany over the right upper quadrant with caudally displaced liver. Review of laboratory analysis was unremarkable, including normal cell count, electrolytes, hepatic function and negative coeliac panel. Assessment of previous CT imaging of the abdomen unexpectedly revealed air under the right diaphragm (figure 1).

QUESTION

What is the diagnosis?

ANSWER

Close inspection of the CT scan was notable for presence of air with haustral markings, suggesting a pseudopneumoperitoneum resulting from colonic interposition between the liver and right diaphragm (figure 1, arrow). Colonoscopy showed a narrow angulated entrance to the proximal transverse colon which was gently navigated with a paediatric instrument using carbon dioxide as the insufflating agent. No obstructing lesions were found. The patient was subsequently discharged home in stable condition on oral Senokot and Docusate regimen.

Figure 1 CT scan of abdomen.

First described by Demetrius Chilaiditi in 1910,¹ this type of pseudopneumoperitoneum is seen when part of the transverse colon becomes interposed between the liver and diaphragm due to compromised local anatomy. Its prevalence is rare, accounting for an estimated 0.025%–0.28% of the general population.² It can be associated with schizophrenia, mental retardation, cirrhosis, phrenic nerve palsy, colonic redundancy and obesity. Chilaiditi sign does not change with position, and close inspection allows visualisation of colonic haustra. Physical examination may be remarkable for tympany over the right upper quadrant without abdominal tenderness or rebound. Symptomatic constipation, bloating, pain or vomiting in the presence of Chilaiditi sign characterises Chilaiditi syndrome. Complications are uncommon, but may include colonic volvulus, ischaemia and bowel obstruction. Treatment of underlying medical condition and symptomatic medical support lead to clinical improvement. Proper recognition of Chilaiditi sign in a patient with abdominal pain is important as radiological image may be erroneously mistaken for a sign of perforated viscus and lead to an unnecessary emergent surgery.

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