Chilaiditi’s Sign: Lesser Known Cause for Elevated Diaphragm

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A seventy year male with complaints of dyspnea nonproductive cough, generalized chest pain, constipation, mild abdominal pain following meals was referred for abnormal chest radiograph. His symptoms began three years ago following total laryngectomy with partial pharyngectomy for carcinoma larynx. He was a former smoker and a known hypertensive.

On examination, apex beat was visible in left fourth intercostal space in mid-clavicular line and had normal breath sounds with few crepitations over both lung bases. Bowel sounds were heard over right inframammary region. Chest radiograph showed bilateral raised diaphragms and interposition of bowel loops between liver and right diaphragm (Figure 1), which were not seen in preoperative chest radiograph taken three years ago. His CT scan of the chest showed interposition of bowel loops between liver and right diaphragm (Figure 2). Abdominal ultrasonography showed interposition of bowels loops between liver and right diaphragm and did not show signs of volvulus. Patient was treated with laxative and had symptomatic improvement for constipation and abdominal pain.

The Chilaiditi’s sign is a condition characterized by interposition of the small or large intestine between the liver and the right hemidiaphragm. When associated with symptoms it is referred as Chilaiditi’s syndrome. Chilaiditi’s sign is an incidental radiological finding. Chilaiditi’s syndrome may have abdominal pain, vomiting, anorexia, constipation, flatulence, air swallowing and dyspnea. The prevalence of Chilaiditi’s sign is 0.025% to 0.28% and more in elderly men.

Chilaiditi’s sign is an acquired condition rather than a congenital. The causes include hepatic factors: ptosis of the liver, small liver, relaxation of the suspensory ligament and fixation of the liver due to adhesions; intestinal: absence of normal suspensory ligament of transverse colon, abnormality or absence of the falciform ligament, redundant colon, congenital malrotation or malposition of the colon, and diaphragmatic: paralysis or eventration.

Chilaiditi sign is seen in liver cirrhosis, chronic obstructive pulmonary diseases, near-term pregnancy, obesity, mental disorder and primary lung cancer. In liver cirrhosis, ascites can creates a space between the liver and the right diaphragm into which the intestine can easily migrate.

Chest radiograph shows presence of haustral folds in the gas between liver and the diaphragm indicating gas within the large bowel confirming Chilaiditi’s sign. Chilaiditi’s syndrome can have associated transverse colon volvulus and should be ruled out. Chilaiditi’s sign can be differentiated from diaphragmatic hernia and pneumoperitoneum by identifying haustral folds within the gas and intact continuity of the diaphragm respectively. Patients can be treated conservatively with laxatives nasogastric decompression when symptomatic and may need surgical intervention when associated with volvulus. Awareness of this acquired variant of Chilaiditi’s sign in a patient may avoid unwarranted investigations and intestinal injury during percutaneous transhepatic procedures.

References