



Chilaiditi syndrome, unusual complication of rather innocuous abnormality: Case report

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General Note

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ABSTRACT

In Chilaiditi syndrome there is an interposition of the colon between the liver and the right side of diaphragm leading to clinical symptoms, whereas in Chilaiditi sign there is only imaging evidence of the interposition and are mostly asymptomatic. Here, we report a case of 68 year old patient who was previously diagnosed as obstructive sleep apnoea since long, had a delayed diagnosis which may be due to the interposition of the colon between the liver and the right side of diaphragm leading to clinical symptoms, being intermittent, this time fatal.

Keywords: Chilaiditi syndrome, Chilaiditi sign, obstructive sleep apnoea, intermittent

1. INTRODUCTION

Hepato-diaphragmatic transposition of large intestine is sometimes seen as incidental finding on chest X rays during routine chest and abdomen imaging (0.1-1.0%) especially in elderly. Mostly it is asymptomatic and do not contribute to respiratory symptoms and called 'Chilaiditi's Sign' (Tzimas et al., 2009). Rarely it may present with volvulus of colon or acute intestinal obstruction or respiratory distress and called 'Chilaiditi's Syndrome' (Fisher et al., 2003). Patients may present with right upper quadrant abdominal pain, abdominal distention, nausea and vomiting, altered bowel habits, substernal pain, cardiac arrhythmias and breathlessness (Sevgi et al., 2006; Gulati et al., 2008). It has been shown to be associated with chronic liver disease e.g. cirrhosis or chronic lung conditions making room in lower thoracic outlet for intestines thence getting pushed between liver and right dome of diaphragm (Esha et al., 2018). Here we report this case in a 68 year old patient with multi-organ involvement with severe sepsis, who presented with sleep apnoea, right upper abdominal pain and respiratory distress owing to the interposition of the large bowel between the liver and the diaphragm causing an increase in the thoracic pressure.

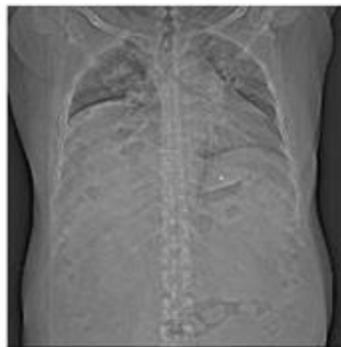
2. CASE REPORT

A 68 years old Male patient non Smoker, non alcoholic, diagnosed cervical spondylosis (5 months ago) with no other prior co-morbidities presented in our emergency department with complain of cough with fever, breathlessness and yellowish expectoration for 5 days. He had history of lethargy, weakness and excessive daytime sleepiness with nocturia & urinary incontinence. He also had history of change of voice for 6 months. There was no history of abdominal symptoms of pain, vomiting, loose motions or constipation. There was no history of abdomino-thoracic trauma in the past. He had neither a history of any allergic diseases nor was on any medication.

On general examination, patient was afebrile, drowsy but arousable, disoriented, Weight = 98 kg, Pulse: 114 / min, regular and normal volume, BP = 130/84 mm of Hg in right arm supine, respiratory rate = 36, sPO₂ = 90% on Room Air. Rest of general examination was unremarkable.

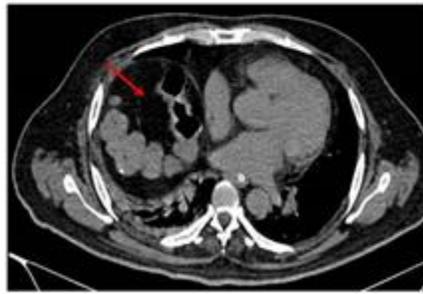
On Chest auscultation there was diminished breath sounds at right posterior infra-scapular region with bilateral crackles and wheezes. Abdomen was distended, soft, no hepatosplenomegaly with sluggish bowel sounds. General laboratory tests revealed haemoglobin of 16.6 mg%, haematocrit 52.2%, and white blood cell count 14,200/cmm. His base line arterial blood gas analysis showed pH of 7.324, Pco₂ 77.4 mmhg, pO₂ 67.1 mmhg and HCO₃ of 33.3 mmol/L. His blood sugar, kidney function test, liver function test, lipid profile and thyroid function test were normal. His chest and abdominal X-ray revealed an elevation of the right hemidiaphragm caused by the presence of a dilated colonic loop interposed between the liver and right diaphragm [Figure 1].

Figure 1- Chest x-ray showing loop of colon between liver and diaphragm.



No signs of intestinal obstruction were seen. His abdominal CT scan with contrast was obtained which showed that the between right diaphragm and liver, there was a loop of colon with no evidence of free air or free fluid [Figure 2].

Figure 2 – CT Scan of abdomen showing loop of colon (red arrow)



Patient was put on conservative treatment like non-invasive ventilation, intravenous fluid therapy as well as antibiotic, nasogastric bowel decompression, stool softeners and enemas. During hospital stay, patient developed acute respiratory distress syndrome, put on mechanical ventilation, but later on succumbed due to multiorgan failure.

3. DISCUSSION

Chilaiditi's Syndrome was first described by Demetrius Chilaiditi in 1910, rarely (0.25%) seen in elderly and mentally retarded (Tzimas et al 2009). Most of the time this syndrome has no clinical significance. Depending upon the position of the interposed bowel relative to the liver, this may be divided into anterior and posterior types (Sevgi et al., 2006; Gulati et al., 2008). The interposed bowel is most commonly the hepatic flexure, ascending colon, or transverse colon but involvement of the small bowel, either alone or in combination with the colon, has been reported. This syndrome may present with Gastro Intestinal, Respiratory System, Cardiovascular System or multi-organ symptoms and need early diagnosis (Esha et al., 2018). Either Congenital or Acquired and following factors may be responsible, but exact pathophysiology is not known (Dogu et al., 2004; Rachid et al., 2011):

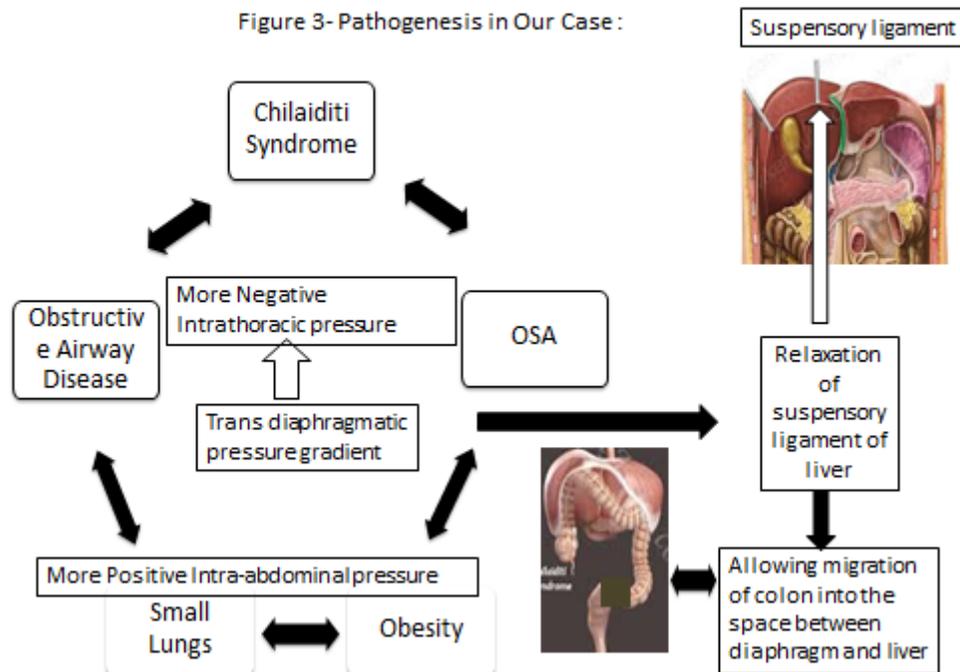
- Hepatic factors : Small liver (Cirrhosis, Hepatectomy)
- Diaphragmatic factors : Phrenic Nerve palsy or Diaphragmatic Eventration
- Lung Factors : Increased intrathoracic pressure (Tuberculosis, emphysema)
- Intestinal Factors: Megacolon, loose mesentery, abdominal trauma, increased intra abdominal pressure (Pregnancy, ascites, etc.)

Must criteria to diagnose Chilaiditi sign radiologically are; the right hemidiaphragm must be adequately displaced superiorly above the liver by the intestine, pseudoperitoneum caused by air in the bowels must be seen, and the superior margin of the liver must be positioned below the level of the left hemidiaphragm (Rachid et al., 2011).

Important differential diagnosis includes eventration of diaphragm, pneumoperitoneum, sub-diaphragmatic abscess, retroperitoneal masses, diaphragmatic hernia (Bochdalek type). Computarised Scans or Magnetic Resonance Imaging may be required in the diagnosis or in exclusion of these differentials (Rachid et al., 2011; Moaven et al., 2012). Likely contributory factors in our case are:

1. Obstructive sleep apnea: This is known to cause increase in trans-diaphragmatic pressures due to obstruction of upper airways.
2. Obesity: Generally Chilaiditi syndrome patients are elderly and thin but obesity like ascites is known to increase intraabdominal pressure.
3. Obstructive Airway disease: COPD / long standing asthma may too predispose to excessive swings in intrathoracic pressures.
4. Also, OSA does predispose to worsening of obstructive airway diseases.
5. Small Right Lung with Extrinsic Compression (already reported in literature with bronchoscopy showing near complete obstruction of RMB) extending to lower end of trachea seems secondary to Chilaiditi but might create vicious cycle of progressive worsening.

Probable pathogenesis in our case is shown in figure 3.



Learning's from our Case: Acquired Chilaiditi Syndrome

- Although 'Chilaiditi Sign' may be encountered in clinical practice as innocuous finding but it may be associated with multi-organ symptoms and involvement, where early diagnosis of Chilaiditi syndrome is warranted.
- Since its presentation is varied, it's presence requires knowledge of all possible complications and may progression if not suspected. Delayed diagnosis may be fatal as it may be long standing.
- Association with Obstructive Sleep Apnea and Bronchial asthma (Overlap Syndrome) has not been reported so far in literature and these conditions would have led to development or progression of Chilaiditi syndrome in our case.

Conflict of interest

Nil

Financial resources of the study

Nil

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