What is Chilaiditi Sign? A Case Report as Seen in a Patient With Acute Coronary Syndrome

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Background

- Patient is a 71-year-old female who presents to the emergency department with a 2 day history of progressive shortness of breath after a coughing spell. She typically has these coughing spells which would self resolve, but this time it progressed to dyspnea on exertion with associated substernal chest pressure without any radiation. She denies any fevers, chills, syncopal episodes, or previous history of myocardial infarction(s).
- Vitals: BP 148/71 mmHg, HR 114 bpm, RR 21 (spO2 94% on 4L)
- Labs (Initial): Troponin-I 1.16 ng/ml, Potassium of 3.3 mEq/L, WBC 16.5, A1c 5.5%, LDL 136 mg/dl, and normal thyroid studies.

Physical Exam

General: uncomfortable

Respiratory: decreased breath sounds throughout; labored breathing noted

Cardio: no JVD, RRR, no murmurs

GI: soft, nontender, normal bowel sounds

Differential Diagnosis

- ACS
- Pulmonary Embolism
- Pneumonia

Diagnostic Imaging/Studies

EKG #1 - sinus rhythm with occasional premature ventricular complexes

EKG #2 - left anterior fascicular block with possible septal infarcts and T-wave changes reflecting possible lateral ischemia (Figure 1).

CXR - marked elevation of the right diaphragm with colonic interposition (Figure 2).

Chest/Thorax CTA - revealed bibasilar atelectasis on the right as well as colonic hepatic interposition and right hemi-diaphragmatic elevation with mild colonic stool burden (Figure 3).

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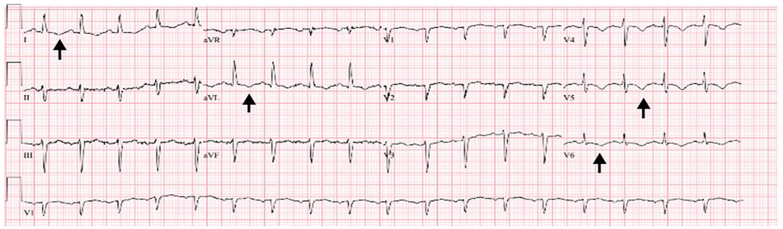
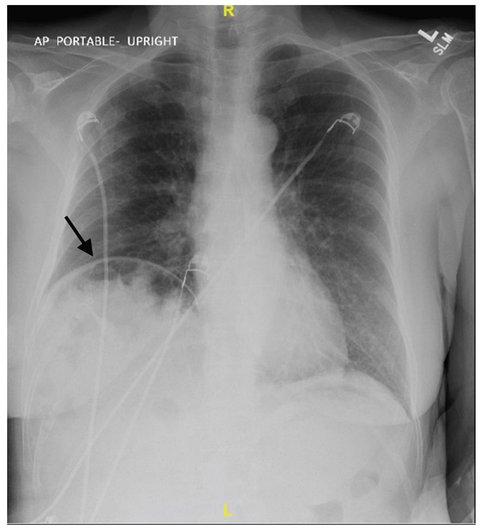
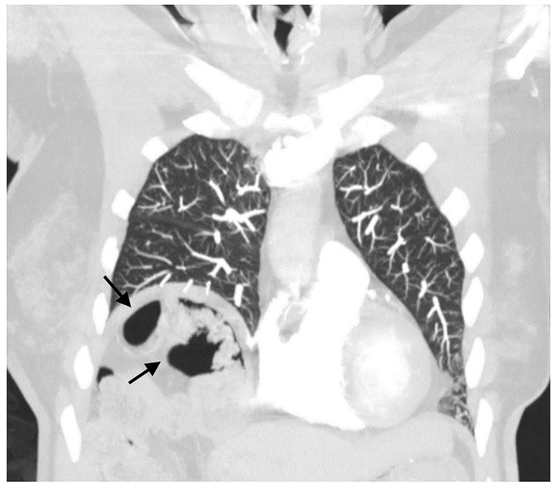


•Figure 1: Notable t-waves changes in the lateral leads



•Figure 2: Marked Elevation of Rt Hemidiaphragm



•Figure 3: Consistent elevation of right hemi-diaphragm with colonic interposition and mild stool burden

Discussion

- Chilaiditi sign is the radiologic finding whereas Chilaiditi Syndrome is the clinical manifestation. The etiology of Chilaiditi Syndrome, while often unknown, can be congenital or acquired. [2] This includes the absence of dispensary or falciform ligaments, malrotation and paralysis of the right diaphragm. [1] Although an extremely rare disease, a common cause is thought to be chronic obstructive pulmonary disease, COPD. With the elevation of the lower thoracic cage, there is more space available for colonic interposition to occur. Further, diseases that tend to increase the space between the liver and diaphragm, such as cirrhosis and overall decreased hepatic size, may further promote Chilaiditi sign/syndrome.
- Given signs and symptoms of Chilaiditi syndrome often mirror those of bowel obstruction. The diagnosis is made based upon radiographic imaging. Close inspection of an abdominal X-ray film, specifically in left lateral decubitus position may reveal colonic haustra under the right diaphragm. [4] However, plain film x-rays are often nonspecific. [5] Most often, if suspected, computed tomography (CT) scan is now the image modality of choice. This is because it often helps confirm findings of bowel under the diaphragm, but also helps differentiate from potential life-threatening diagnosis such as acute abdomen, pneumoperitoneum and subphrenic abscesses. [6]
- The treatment of Chilaiditi syndrome often will vary based upon the patient's clinical picture. In our case, our patient was diagnosed with acute coronary syndrome while Chilaiditi sign was an incidental finding on CTA chest. However, in symptomatic cases management is often conservative and consists of bowel rest, decompression, and fluid hydration. [7,8] Patients who fail conservative management should likely under exploratory laparotomy to avoid possible complications including both colonic volvulus and obstruction, herniation, and strangulation. [9] Further, it is important to note that counseling patients regarding lifestyle modifications including: a healthy diet, exercise, and routine bloodwork to monitor their lipids and blood sugar levels is important in the prevention of Chilaiditi Syndrome. [10]

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