Case Report

Chilaiditi Syndrome in a Patient with Ischemic Heart Disease

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ABSTRACT

Chilaiditi syndrome is a rare condition incidentally found in radiography of the chest and abdomen. It may be associated with transient dyspnea and abdominal or chest pain. Herein, we present a man with ischemic heart disease who was incidentally found to have Chilaiditi sign.

A 65-year-old man, a known case of ischemic heart disease who had undergone percutaneous coronary intervention twice, the last of which was 10 months before, presented with dyspnea on exertion in the last week. On physical examination, he had no abnormal findings. A chest radiograph showed the interposition of a segment of the colon in between the liver and right hemidiaphragm, a condition called Chilaiditi sign. For the possibility of in-stent restenosis of the coronary arteries, the patient was visited by a cardiologist who followed the patient up and finally ruled out the diagnosis based on his clinical judgment, electrocardiography, and serum troponin. After 10 months of follow-up, the patient is doing well.

The presence of Chilaiditi sign may lead to a false-positive diagnosis of diaphragmatic hernia. Chilaiditi syndrome may cause transient dyspnea; however, persistent dyspnea on exertion in a patient with ischemic heart disease should primarily be attributed to cardiovascular causes rather than the Chilaiditi syndrome.

Keywords: Chilaiditi syndrome; Dyspnea; Coronary restenosis; Diaphragm

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INTRODUCTION

First described in 1899 by Antoine Béclère (1), and later on in 1910 by Dimítrios Chilaiditi, a Greek radiologist (2), Chilaiditi syndrome is a rare condition incidentally found in radiography of the chest and abdomen. The syndrome may be associated with abdominal pain and distention, bloating, nausea and vomiting, and changes in intestinal habits. The patients may also present with more unusual manifestations such as cardiac dysrhythmias, transient dyspnea, shortness of breath, and substernal and chest pain (3, 4). However, in most instances, it is asymptomatic, a condition called the Chilaiditi sign (5). It has an incidence of 2.5–28 per 10,000 people worldwide, 22 in Fars province, southern Iran (6); it is more often seen in elderly and male patients (male:female ratio of 4:1). The incidence varies in different disease conditions. For instance, it is 2200 per 10,000 people in patients with post-necrotic cirrhosis, 270 in chronic obstructive pulmonary disease, and 200 in near-term pregnancy (6, 7). The origin of the condition is not well established, but it may be either congenital or acquired (8). Herein, we present a man presented with dyspnea and Chilaiditi syndrome.

CASE REPORT

A 65-year-old man, a known case of ischemic heart disease, hypertension, and hyperlipidemia, came in with the chief complaint of shortness of breath in the last week. The symptom worsened on exertion. He had neither liver cirrhosis nor chronic obstructive lung disease. He had undergone percutaneous coronary intervention (PCI) twice — once 3 years before and another, 10 months before. Later on, he received valsartan, 80 mg orally once a day; bisoprolol, 1.25 mg orally before bed; rosuvastatin, 40 mg orally once a day; acetylsalicylic acid (ASA), 80 mg orally once a day; and clopidogrel, 75 mg orally twice daily. He was obese (body mass index of 30 kg/m2). On examination, he had a pulse rate of 70/min, regular; respiratory rate of 16/min, regular; blood pressure of 120/80 mm Hg, sitting, right arm; and an oral temperature of 37 °C. The jugular venous pressure was normal. He had normal first and second heart sounds with no murmur. On lung auscultation, he had a bilateral symmetrical expansion of the lungs with clear breathing sound over all the lung fields. He had a fatty, distended abdomen with no tenderness or rebound tenderness. Bowel sounds were normal. Examination of the extremities and neurological examination were unremarkable. His liver function tests, done 3 days before, were normal. Chest radiograph showed the interposition of a segment of the colon in between the liver and right hemidiaphragm. Neither pneumoperitoneum nor pneumothorax was observed (Figure 1). For the possibility of in-stent restenosis of the coronary arteries (9), the patient was referred to a cardiologist who followed the patient up and finally ruled out the diagnosis based on his clinical judgment, electrocardiography (ECG), and serum troponin. After 10 months of follow-up, the patient is doing well.

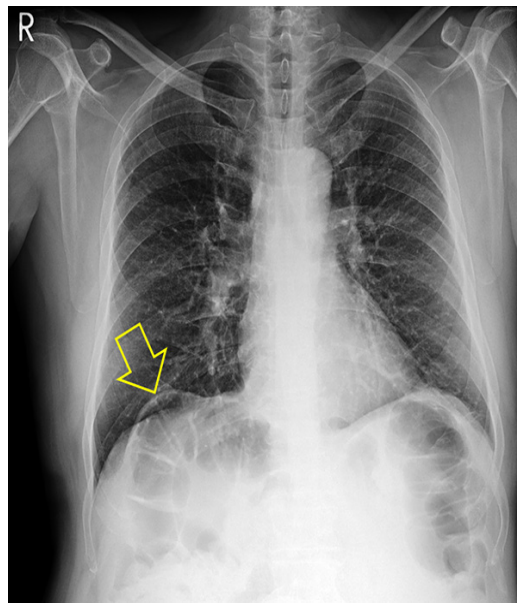

Figure 1. The interposition of a segment of the colon between the liver and the right hemidiaphragm (arrow), the Chilaiditi sign. The chest radiograph is otherwise normal.

DISCUSSION

Chilaiditi syndrome is more frequently observed with certain disease conditions such as liver cirrhosis and chronic obstructive lung disease (6). Our patient had none of these conditions. Diaphragmatic injury may be a differential diagnosis in a patient presenting with dyspnea and a chest radiograph depicted in Figure 1. Although it is uncommon and just comprises 1% of traumatic injuries (10), given the high risk associated with the condition, diaphragmatic hernia should be ruled out. Pneumoperitoneum may also present in those with diaphragmatic defects. But, there was no pneumoperitoneum in our patient; nor had he experienced any trauma. Therefore, a diaphragmatic hernia seemed to be very unlikely, and we concentrated more on his PCI and its probable associated in-stent restenosis (9). Nonetheless, it is worth noting that, in general, Chilaiditi sign may lead to a false-positive diagnosis of diaphragmatic hernia, particularly in those who have a history of trauma to their chest and abdomen (3). Chilaiditi syndrome may cause transient dyspnea. The presence of persistent dyspnea on exertion in our patient, on one hand, and the

potential high risk of in-stent restenosis, which was more likely in our patient (despite the fact that he had received a full dose of ASA and clopidogrel), on the other hand, led us to think more about cardiovascular causes of the dyspnea and thus referred the patient for cardiology evaluation. The cardiologist followed the patient and finally ruled out the diagnosis based on his clinical judgement, ECG, and serum troponin. After 10 months of follow-up, the patient is doing well.

A search of the *PubMed* yielded four additional case reports with comparable findings. The presentation of our patient was similar to that observed in a case report from the United states, an 81-year-old woman with a history of ischemic heart disease. Similarly, the acute coronary sysndrome was ruled out by ECG and measuring the troponin level (11). A comparable case was reported in a 51-year-old man with a history of hypertension and ischemic heart disease (12). Another report describes a patient with Chilaiditi sysndrome and a history of angina pectoris. Ischemic heart disease was ruled out based on the results of an ECG, stress test, 2D echocardiography and examination of the cardiac markers. The authors put forth the proposition that the angina-like symptoms would be attributed to the stimulation of the cardiac nerve fibers' endings, overstretching of the major vessels including the aorta and vena cava, the internal compression of the chest, or a combination of all these factors (13). These findings were corroborated by another study (14).

In conclusion, the presence of Chilaiditi sign may lead to a false-positive diagnosis of diaphragmatic hernia. Chilaiditi syndrome may cause transient dyspnea; however, persistent dyspnea on exertion in a patient with ischemic heart disease should primarily be attributed to cardiovascular causes rather than the Chilaiditi syndrome.

CONFLICT OF INTEREST:

The authors declare no conflict of interest related to this work.

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