

Pulmonary or not the question is now? False pulmonary radiological manifestation of non-pulmonary diseases

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ABSTRACT

We presents four patients with respiratory symptoms and radiological finding but without pulmonary diagnosis at the end. The first case is mitral chordae rupture, which is understood as a COPD exacerbation due to the dyspnea and fatigue. Considering normal auscultation finding, not smoker, the overall finding did not indicate COPD. Urgent heart ultrasound gave right diagnosis. The second was admitted as bilateral pneumonia. CT scan showed that it was a large intestinal hernia. The third case was presented as pleural effusion after the onset of acute chest pain. Profile radiography and CT scan diagnosed aortic aneurysm dissection and the patient underwent emergency surgery. The fourth patient underwent chest X-ray as part of the preoperative preparation of gallbladder calculosis, where a nodular tumor shadow was seen. CT scan showed that was a pericardial cyst. Imaging findings must be correlated with clinical manifestations. This paper presents some of the faces of non-pulmonary diseases with respiratory manifestations that can lead us a misdiagnosis and sometimes lethal outcome. A multidisciplinary approach, more diagnostic procedures with an adequate history of illness will give us the right diagnosis. In this way, the patient will receive appropriate treatment.

KEYWORDS: respiratory symptoms, chest radiography, pericardial cyst, mitral valve

INTRODUCTION:

Chronic respiratory diseases such as chronic obstructive pulmonary disease (COPD), asthma, fibrosis, sarcoidosis, lung cancer, pneumoconiosis, are among the most common diseases worldwide, because of the ubiquity of noxious environmental, occupational inhalational exposures and smoking. Joan Soriano and colleagues found that nearly 545 million people in the world had a chronic respiratory disease in 2017, with a tendency to decrease in the following years(1). Most common respiratory symptoms are dyspnea, cough, hemoptysis, chest pain, fatigue. All of respiratory acute or chronic pulmonary diseases have one or more of them (2).

Those symptoms can be manifestation of many extra-pulmonary diseases such as heart, blood vessels, gastrointestinal, neurological, renal and other diseases (3). So we can have problem to recognize what is main cause, which organ is affected and treat patients adequately. Patients are often treated incorrectly for this reason, time is lost for timely treatment and unfortunately, a fatal outcome often occurs. A physical examination, a well-taken medical history direct us towards the right diagnosis, but sometimes they are completely non-specific. After the clinical examination the first next step is a chest X-ray which can also leave us without a definitive diagnosis. Many radiographic findings can be presented as pulmonary such as pleural effusion or infiltration and camouflage extra-pulmonary disease. We need multidisciplinary approach and lot of experience to find right answer.

The aim of this case series was to show how many common radiological manifestations or respiratory symptoms of non-pulmonary diseases, can falsely lead us to a lung disease diagnosis and mistreatment.

SERIES CASE REPORTS:

We presents four different patients who were referred to a Clinic for Pulmonology, University Clinical Center of Serbia, for pulmonary examination due to radiological pulmonary changes with respiratory symptoms but not pulmonary findings at the end of examination.

CASE REPORT 1

The first case is 52 years old man, non-smoker, with mitral chordal rupture, which is understood as a COPD exacerbation due to the dyspnea and fatigue when walking up hill. He had chest discomfort which did not have before, with tachycardia. He dose not have chest pain but some kind of discomfort and get out of breath faster when he walk. Considering radiographic and pulmonary auscultation findings were normal and symptoms were acute from that morning, patient

was not smoker, the overall finding did not indicate COPD. New finding was systolic murmur over the mitral orifice. He performed urgent heart ultrasound where diagnose was made.

CASE REPORT 2

The second case was 56 years old men with cough, dyspnea and mid-chest pain. She was urgently hospitalized at our clinic due to radiographically suspected massive basal bilateral pneumonia (Figure 1).

Patient was treated with combined antibiotic therapy. Suspicious was the normal finding of inflammation parameters that were in the reference range that did not fit in such a massive suspected pneumonia. We performed chest CT scan and CT showed that it was a large hiatus hernia of intestines (Figure 2). She was operated in few days and recovered completely.

CASE REPORT 3

The third case was 61 years old men admitted at our clinic, diagnosed as left pleural effusion (Figure 3) after the onset of acute pain in the left hemithorax with propagation in the back. He dose not have cough, fever or dyspnea. He was hypotensive, sweating and gave the impression of a very serious patient. We performed emergency profile radiography, chest ultrasound and chest CT scan. Diagnosis was aortic aneurysm dissection and the patient underwent emergency surgery.

CASE REPORT 4

The fourth patient was 67 years old woman, who underwent chest X-ray as part of the preoperative preparation of gallbladder calculus. Finding was enlarge oval shadow at X-ray chest radiography and differential diagnosis was lung cancer. She dose not have any respiratory symptoms except fatigue and minor dyspnea. Further diagnostics that included chest ultrasound because we planed fine needle biopsy and CT scan determined that was a pericardial cyst that appeared after pericarditis a year ago (Figure 4). No operative treatment was performed, but the patient has regular checkups with cardiologists and cardiac surgeons.

DISCUSSION:

Many non-pulmonary diseases demonstrate a wide variety of clinical and radiological chest manifestation. Similar symptoms can lead us to believe that cause is a lung disease, but the cause can be totally different. The most common symptom is dyspnea. In 1999. ATS published a consensus statement on dyspnea (4). Dyspnea is a common symptom of pulmonary, cardiovascular, gastrointestinal, psychological, hematological and neuromuscular diseases. Dyspnea is a problem affecting up to half of patients admitted to a hospitals and one quarter of ambulatory treated patients (4). Patients describe dyspnea as chest tightness or inability to get a deep breath. In our three cases dyspnea was dominant symptom. In patient with initial diagnosis of bilateral pneumonia but et the end that was hiatus hernia of intestines, shortness of breath was probably caused by compression of lung tissues with bowel and a near-complete collapse of the lung, and also maybe aspiration of undigested food. Patient was admitted emergency and antibiotics was started at first day. Unusual result was normal value of inflammatory parameters

because of that we performed chest computed tomography which remains the modality of choice to confirm the diagnosis. With CT scan we can see anatomical details of hernia contents and complications such as perforation or strangulation (5). X-ray chest can be described as atelectasis or pneumonia because of that CT scan is gold standard for this problem. Dyspnea was not caused by lung disease and radiography finding was not pneumonia, even all sings were in that direction. Dyspnea was a main symptom in patient with pericardial cyst. Pericardial cyst is benign rare congenital mass, usually asymptomatic but when reaching a relevant size they can cause symptoms such as dyspnea, chest pain and cough. It can be due to compression of lung structured or inflammation of the cyst, which may lead to sudden death, cardiac tamponade (6). Usually is found incidentally during routine chest X-ray with profile view, echocardiography or CT scan, as in case of our patient during preoperative preparation of gallbladder calculus. Most pericardial cysts are at the right cardiophrenic angle as in our case. In that radiological presentation we need to think in differential diagnoses on hiatus hernia, bronchogenic cyst, pleural effusion or tumors. Computed Tomography is the modality of choice to confirm the diagnosis. Treatment options are percutaneous aspiration or surgery (6). Our patient was not operated but she is on regular checkups and she is without any symptoms.

It is not uncommon for patients to be referred to a pulmonologist with a diagnosis of COPD without ever having spirometry tests, without ever have been diagnosed this disease. Not all smokers have COPD. In our case, the patient is a non-smoker. He described the feeling as discomfort and tightness in the chest. Due to the acute dyspnea, the doctor in general practice assumed that it was asthma or COPD. However, the patient had no obstructive findings but dominant finding was systolic murmur over the mitral orifice. In our case, transthoracic echocardiography confirmed the diagnosis of ruptured mitral chordae. According to literature mitral valve prolapse following rupture of the chordae tendineae is a major cause of mitral regurgitation. Main causes for rupture are bacterial endocarditis, connective tissue abnormalities, hypertrophic cardiomyopathy, blunt chest trauma and other (7).

Chest pain is symptom of many respiratory diseases as pneumonia, pulmonary embolism, tuberculosis or malignancy (8). Also it can be a sign of gastro-esophageal reflux, achalasia, myocardial infarction, aortic dissection, neuromuscular disorder and many other. In our third case patient had pleural effusion on chest radiography with chest pain. Initially diagnosis was some pulmonary disease as pleurisy, malignancy or pulmonary embolism. With a chest pain that was justified thinking. But patient was hypotensive, he was sweating, because of the pain he was agitated and took a forced position in bed, in that moment he gave the impression of a very serious patient. After additional diagnostic with CT scan diagnosis was aortic dissection. He underwent emergency surgery. Acute aortic dissection occurs due to the separation of the layers of the aortic wall and blood entry between the intima and media. An acute aortic dissection is very serious condition and associated with very high mortality (9). The chest x-ray may show a widened mediastinum or pleural effusion in the hemithorax due to rupture, as in case of our patient. Guidelines recommend CT aortography for definite diagnosis. Chest pain with propagation in back with hypertension is typical for aortic dissection, but if the patient is hypotensive then that is a sign of a rupture as in our patient case (9). He was fully recovered after surgery because dissection was discovered on time.

Numerous pulmonary radiographic manifestations of non-pulmonary diseases that can lead us down the wrong path, require further diagnostics. Radiographic pleural effusion does not necessarily have to be of pulmonary origin, it can be part of systemic diseases, pancreatitis, heart failure, kidney failure and many others (10). In the case of our patient, pleural effusion was part of the aortic dissection with dramatic acute clinical manifestation that did not fit into the most common chronic diseases manifested by pleural effusions. Because of that a chest CT scan was performed. Chest radiography is still initial modality for diagnostic of pleural disease (11), but when we still have doubt we can perform thoracic ultrasound, computed tomography, magnetic resonance imaging and positron emission tomography. Those procedures have important roles in further investigation of cause many lung diseases (11). It is important to emphasize the advantages of applying these different imaging modalities in order to provide the final diagnosis in correlation with the clinical picture. Also in case our patient with pericardial cyst and suspected bilateral pneumonia, chest CT scan gave the final diagnosis and in that way wrong treatment was avoided. The role of imaging in different diseases varies somewhat depending on the specific disorder. Radiology, and especially computed tomography (CT), can be important in making a diagnosis. Imaging finding must be correlated with typical clinical manifestations.

CONCLUSION

This paper presents some of the faces of non-pulmonary diseases with respiratory manifestations or chest radiography finding that can lead us a misdiagnosis. That can prolong time for diagnostics with wrong treatment, unwanted consequences or fatal outcome. Only multidisciplinary approach, more diagnostic procedures and a better clinical examination with an adequate history of illness will give us the right diagnosis. Deep knowledge of the typical and atypical characteristics of pulmonary and non-pulmonary diseases with similar manifestation is crucial in right diagnosis and treatment and better outcome.

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Figures



Figure 1- Chest X ray-suspected bilateral pneumonia



Figure 2-Chest CT scan showed large intestines hiatus hernia



Figure 3- Chest radiography-left pleural effusion

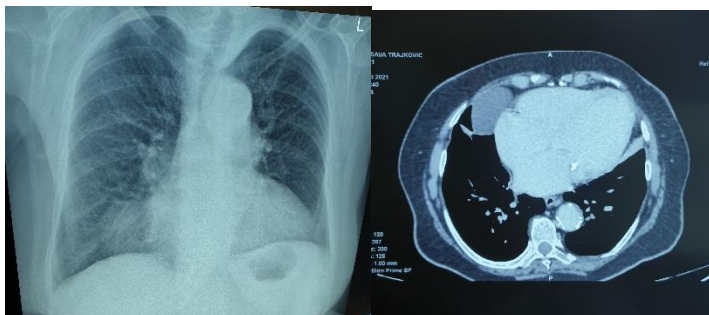


Figure 4-pericardial cyst