

CAZURI CLINICE

Multiple bilateral traumatic pulmonary pseudocysts in a 53 year-old male diagnosed retrospectively

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REZUMAT

Pseudochiste pulmonare multiple bilaterale traumatice la un pacient de 53 de ani, diagnosticate retrospectiv

Pseudochistele pulmonare traumatice (PCTP) reprezintă o complicație rară ce poate fi întâlnită după un traumatism toracic. Se întâlnește mai frecvent (75-100%) la copii și adulții tineri. Un pacient de 53 de ani s-a prezentat cu multiple chiste pulmonare bilaterale după un accident rutier. Pacientul a fost evaluat pentru abcese pulmonare, tuberculoză și granulomatoză Wegener, cu rezultate negative. Radiografia pulmonară de control a arătat rezoluția spontană a pseudochistelor, care au fost înlocuite de pneumatocelae. La pacienții cu istoric recent de traumă, PCTP trebuie avute în vedere, pentru a evita investigațiile invazive inutile.

Cuvinte cheie: pseudochiste pulmonare, traumatism toracic

ABSTRACT

Traumatic pulmonary pseudocyst (TPPC) is a rare complication, which might be encountered after thoracic trauma. It is most often (75-100%) seen in children and young adults. A 53 year-old male presented with multiple bilateral pulmonary cysts after a motor vehicle accident. We evaluated the patient for abscess, tuberculosis, and Wegener's granulomatosis with negative results. Follow up chest X-rays showed spontaneous resolutions of pseudocysts with replacement with pneumatocelae. In patients with recent chest trauma, TPPC should be kept in mind to prevent unnecessary invasive tests.

Key words: pulmonary pseudocysts, thoracic trauma

Introduction

Traumatic pulmonary pseudocyst (TPPC) is an uncommon complication following blunt and rarely penetrating chest trauma. A level I trauma center reported 14 patients within 11 years which represent 0,1% of all chest trauma patients in the center. All of them were young, aging between 13 and 24 years old¹.

In this article we present the case of a 53 years-old man with bilateral multiple TPPC which was diagnosed retrospectively.

Case report

A 53-year-old male suffered a motor vehicle accident injury in May 2007. He was the seat-belted driver of the car. After the accident, he had chest pain but did not address any hospital. Two weeks later he complained of repeated hemoptysis. A chest X-ray (Fig. 1) in another hospital on 22 May 2007

showed multiple bilateral cystic lesions of the lungs, but he refused further evaluation. On 31 July 2007, he was admitted to our hospital with major complaints of dyspnea, cough, hemoptysis and fever. He was a smoker and addicted to opiate but he denied intravenous drug abuse. He was diabetic and had previous coronary artery bypass graft surgery. He had no respiratory distress on admission. He was edentulous, and his false denture set was broken during the accident. His heart rate was 86/minute, blood pressure 130/90 mmHg, respiratory rate 20/minute, and body temperature 37,3 °C. Arterial blood gas analysis revealed pH of 7,49, pCO₂ of 28,8 mm Hg, pO₂ of 61,3 mm Hg, bicarbonate of 22,3 mmol/L, and oxygen saturation of 92,4%. On admission day, chest X-ray showed at least three round to oval masses in the left lung with infiltration in right upper lobe (Fig. 2). Chest computed tomography (CT) scan (Fig. 4) showed bilateral cystic lesions

and bilateral patchy infiltrates. At that moment we had no access to his first chest X-ray. Para nasal sinuses X-ray was normal. We discussed several presumptive diagnosis: lung abscesses, tuberculosis, and Wegener's granulomatosis.

Laboratory tests revealed white blood cell count of 12.000/mm³, and blood glucose level of 325 mg/dl. Anticytoplasmic antibodies (both cANCA and pANCA) were negative. Bronchoscopy revealed no endobronchial lesion. Bronchoalveolar lavage samples as well as three sputum samples were negative for acid fast bacilli and malignant cells. CT scan-guided transthoracic needle biopsy of one of the masses was done. Histopathology of the biopsy was reported as only mild inflammation without any signs of malignancy or granuloma formation. He insisted on discharge, and refused further clinical evaluation. We requested a follow-up visit and a new chest X-ray was performed on 1 January 2008, which showed spontaneous resolution of most of the cysts and replacement with pneumatoceles (Fig. 3). Among his previous radiographs, we accidentally found his chest X-ray taken on 12 May 2007, two weeks after the accident (Fig. 1). Comparison of these three X-rays facilitated the retrospective diagnosis of TPPC.

Discussion

Chest trauma frequently produces pulmonary contusions, hematomas, hemothorax, pneumothorax, pneumomediastinum, but rarely causes cystic lesions¹. The terms used to describe these cystic lesions in literature are pseudocysts, pseudocystic hematomas, traumatic cysts, or traumatic lung cavities. The term 'pseudocyst' is appropriate, because the lesions do not have epithelial lining or bronchial wall elements as a true cyst^{1,2}.

In a recent article by Yazkan and coworkers³ two mechanisms for development of TPPC were suggested, as following: „The rapid compression and decompression lacerates alveoli and interstitium, and the concomitant retraction of the surrounding elastic lung tissue leaves small cavities filled with air and/or fluid, which tend to grow until a pressure balance is achieved between the cavity and the surrounding tissue. Another proposed mechanism suggests that if the glottis is closed or a bronchus is obstructed at the moment of injury, the air in the compressed lung segment fails to exit fast enough and the parenchyma and/or interstitium lacerates in a „bursting“ pattern and forms a cavity“³.

It is most often (75-100%) seen in children and young adults^{1,4}, probably because their thorax is elastic and the lung parenchyma is easily injured when a large pressure gradient is generated between a proximal obstruction and multiple hyper inflated alveoli¹.

Symptoms due to TPPC are usually mild and sometimes the patient is asymptomatic. The patient's complaints of hemoptysis, chest pain and cough were attributed to the pulmonary parenchyma traumatic injury but not to the TPPC itself. Hemoptysis may occur in up to 56% of cases. Usually it is not life-threatening. However massive hemoptysis with need for urgent thoracotomy and lobectomy is reported by Meloni et al⁵.

On chest X ray an air fluid level is usually seen and the size of the image may range from 2 to 14 cm in diameter. CT scan is helpful for early detection and can show more precisely the location and size of the cyst⁴. TPPC may appear

immediately or within a few hours after the traumatic injury and their resolution usually takes 2-3 months¹. In our patient resolution took approximately eight months. Our patient developed bilateral pseudocysts, with resolution of the cysts in the right lung and bleeding or infection within left side cysts three months later. They were then absorbed and converted to pneumatoceles.

Pulmonary pneumatoceles are thin-walled, air-filled cysts that develop within the lung parenchyma. They are most often a complication of *S. aureus* pneumonia. Non-infectious causes are barotraumas, hydrocarbon ingestion and eosinophilic granuloma⁶.

In this patient, our initial presumptive diagnosis was tuberculosis especially since he was a diabetic, which is a predisposing risk factor for tuberculosis. Tuberculosis was ruled out by the negative smears for acid-fast bacilli. The diagnosis of TPPC was made retrospectively.

Cysts detected in adult patients presenting with trauma may also have a non-trauma related etiology. The differential diagnosis of cavitory lesions in adults are tuberculosis, hydatid disease, coccidioidomycosis, pneumonia or cavitating bronchogenic carcinoma, Wegener's granulomatosis, congenital cysts, blebs, and bullae^{4,7,8}. Unlike other types of cystic or cavitory lesions, the size of the TPPC changes in a relatively short time. Thus, a series of chest X-rays taken over several days can be useful to differentiate TPPC from other kinds of lesions, and extensive examination is unnecessary⁸. In this patient, the evolution of cysts and their spontaneous resolution favored the diagnosis of TPPC.

TPPC are self-limiting benign lesions and their treatment is conservative. Surgery may be indicated in some cases, such as bleeding or rupture into the pleural space, infection, respiratory deterioration⁴. TPPC can rupture and lead to a secondary pneumothorax that may require a thoracostomy tube. Prophylactic use of antibiotics is not routine. However, they are necessary for the treatment of an infected TPPC⁹.

In **conclusion**, we present an adult patient with multiple TPPC, which was diagnosed retrospectively and resolved spontaneously. In patients with chest trauma history, TPPC should be kept in mind to prevent unnecessary invasive tests.

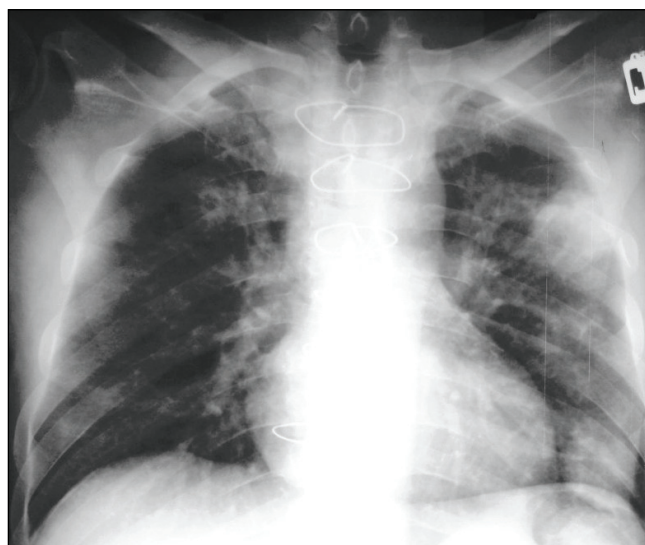
Figure 1.

Chest X-ray taken on 21 May 2007 shows several bilateral round or oval masses with cystic change in some.

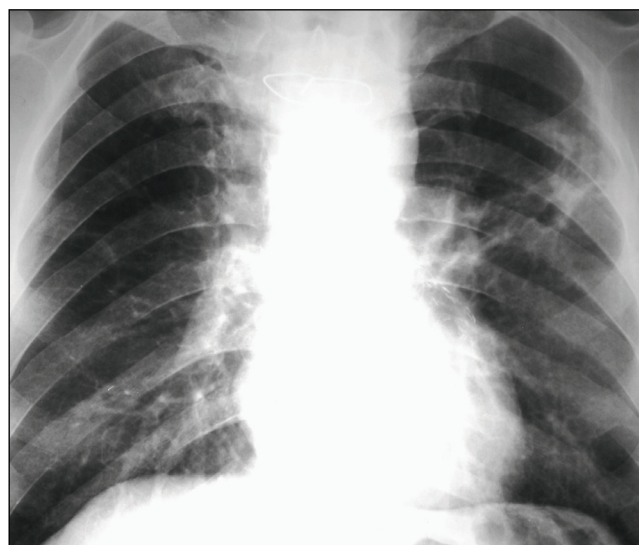


Figure 2.

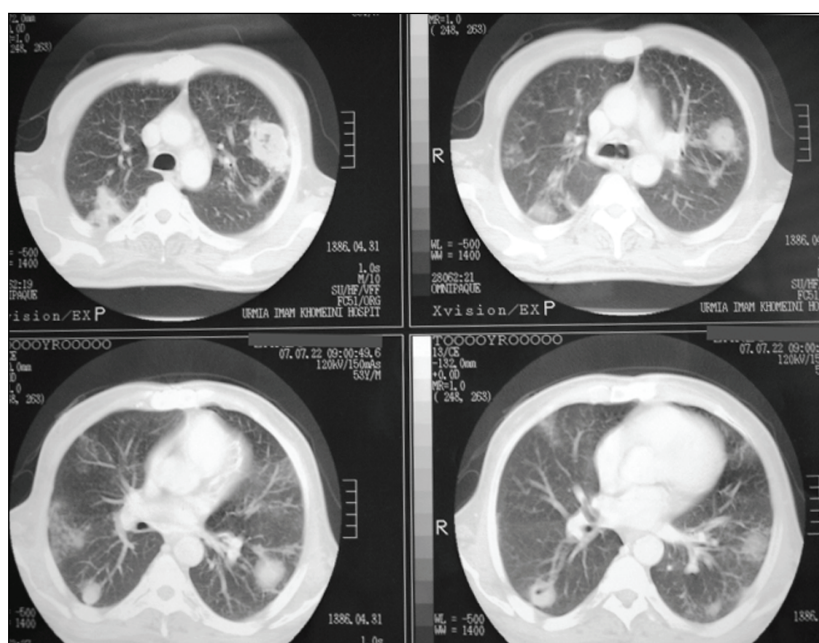
Chest X-ray on 30 July 2007 shows resolution of most of the masses on the right side but masses on left are filled, probably secondary to infection or hemorrhage.

**Figure 3.**

Chest X-ray on 1 January 2008, shows resolution of cysts and changing of some to pneumatoceles, and resolution with fibrosis in the left upper lobe lesion.

**Figure 4.**

CT scan of the chest shows bilateral thick wall cavities and patchy consolidations (22 July 2007).



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