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Pleural sarcoidosis — in three patients

Abstract

Three patients with pleural sarcoidosis are reported. Pleural effusion in two patients and a massive pleural thickening that mimicked a tumour were observed. Histological examination of pleural biopsies revealed sarcoidosis. None of the patients received treatment. No recurrence of the pleural effusion was observed after a year of follow-up and the massive pleural thickening remained stable.

Key words: pleura, sarcoidosis, management

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Introduction

Sarcoidosis is a systemic granulomatous disorder of unknown aetiology whose most common manifestations include enlargement of the pulmonary hilar and mediastinal lymph nodes, nodular lesions in the lungs and involvement of other organs, such as the skin or the eyes [1]. Pleural involvement in sarcoidosis (excluding the subpleural nodules) is a rare manifestation of the disease [2]. We present three cases of histologically confirmed pleuropulmonary sarcoidosis: two presenting as pleural effusion and one as a pleural infiltrate suggestive of cancer.

Case 1

A 36-year-old male was admitted to the Department with chest pain of pleural origin and dyspnoea. The physical examination and laboratory tests were unremarkable. The chest X-ray revealed lymphadenopathy of the pulmonary hili and the mediastinum and the presence of parenchymal changes in the lower lobe of the left lung and a small amount of pleural effusion (Fig. 1). Empirical antibiotic therapy was initiated, which resulted in clinical improvement but radiological lesions were stable. Because the amount of the pleural effusion was low the diagnostic thoracentesis was not performed. Tuberculin skin test was negative and the pulmonary volume parameters determined by spirometry were normal. Abdominal ultrasound examination revealed splenomegaly. A bronchoscopy and transbronchial biopsy of the lower lobe of the left lung were performed. The histopathological examination revealed non-necrotising granulomas. Microbiology for tuberculosis and mycology returned negative. A diagnosis of pulmonary and pleuropulmonary sarcoidosis was made. Corticosteroids were not initiated and the patient was being monitored. The follow-up chest X-ray 6 months later revealed regression of the pleural effusion.

Case 2

A 66-year-old male smoker treated for the previous 4 years for chronic obstructive pulmonary disease (COPD) was admitted to the Department in good clinical condition for left pleural effusion. He

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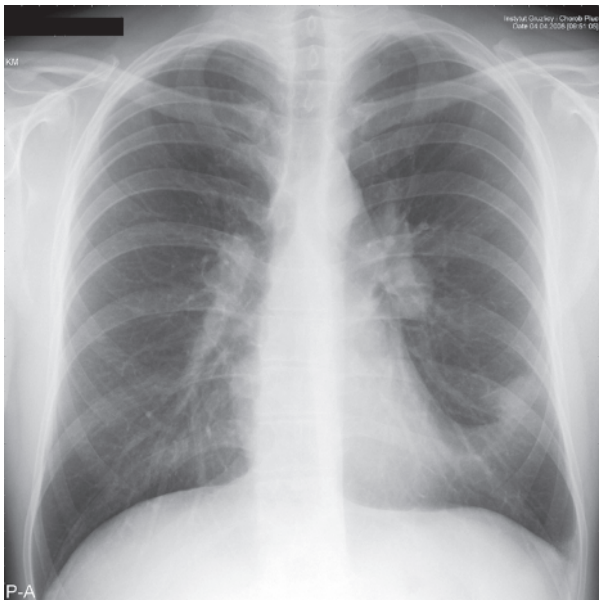

Figure 1. Case 1. Chest X-ray. A small left pleural effusion with parenchymal involvement in a patient with sarcoidosis

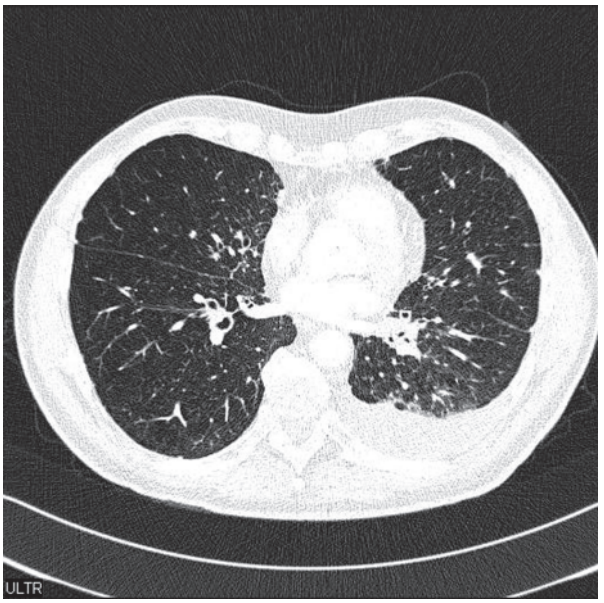

Figure 2. Case 2. Chest computed tomography scan. The left pleural effusion and subpleural nodules in a patient with sarcoidosis

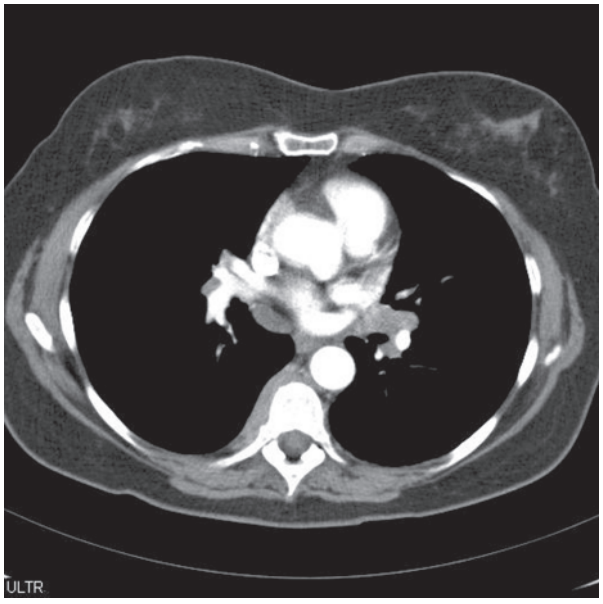

Figure 3. Case 3. Chest computed tomography scan. Thickened pleura mimicking a tumor in a patient with sarcoidosis. Mediastinal lymphadenopathy

gave a history of antituberculous treatment in 1963 without a microbiological confirmation. The physical examination revealed dullness to percussion and reduced breath sounds over the lower field of the left lung. Pulmonary function tests revealed signs of moderate obstruction. The chest CT scan demonstrated generalised lymphadenopathy of the pulmonary hili, the mediastinum and the abdominal cavity with the presence of small nodules in the lungs located along the vessels, interlobular septi and in the subpleural area, and a considerable amount of effusion in the left pleura (Fig. 2). A pleural puncture was performed and 1600 ml of a lymphocytic exudate (lymphocytes accounted for 88% of the cells) was drained. Histopathological examination of a pleural tissue sample collected with the Abrams needle showed non-specific inflammatory infiltrates. No tumour cells or acid-fast bacilli were demonstrated in the pleural fluid. Bronchoscopy revealed a concentric narrowing of the middle lobe bronchus. Histopathological examination of a bronchial wall tissue showed signs of inflammation and cultures of the bronchial secretions, including cultures for *Mycobacterium tuberculosis*, were all negative. The tuberculin skin test was also negative. A left-sided videothoracoscopy was performed and tissue samples from the lower pulmonary lobe and the pleura were collected. Histopathological examination revealed non-necrotising granulomas both in the lung and the pulmonary pleura. A diagnosis of pleuropulmonary sarcoidosis was made. No corticosteroids were given. The pleural effusion did not recur over the one year of follow-up.

Case 3

A 52-year-old female smoker complaining of dyspnoea and chest pain was admitted for hilar and mediastinal lymphadenopathy discovered on a chest X-ray. A chest CT scan additionally revealed isolated nodules in both lungs and a large, about 10-cm thick infiltrate on the right pleura located near the spine but without signs of its destruction (Fig. 3). The bronchial tree appeared normal on

bronchoscopy. Microbiological tests for *Mycobacterium tuberculosis* and mycological tests were negative. The tuberculin skin tests negative. Pulmonary function tests revealed moderate airway obstruction, normal total lung capacity and vital capacity with a mildly reduced carbon monoxide diffusing capacity. A right-sided videothoracoscopy was performed and tissue samples were collected from the enlarged lymph nodes and the pleural infiltrate. Histopathological examination did not reveal malignant cells. Cultures for acid-fast bacilli and fungi were all negative. Histopathological examination revealed non-necrotising granulomas in the tissue samples from the lymph nodes and the pleural infiltrate. A diagnosis of pleural and lymph node sarcoidosis was made. After a year of follow-up (without treatment) the radiological picture of the chest showed no progression and the pleural abnormalities remained stable.

Discussion

Sarcoidosis is a systemic granulomatous disease of unknown aetiology which most commonly affects the lymph nodes, lungs, skin, eyes, liver and heart [3]. Pleural sarcoidosis is rare, although its precise incidence is difficult to establish due to incomplete reports. Huggins et al. [4] investigated 181 patients with sarcoidosis. Only 2.8% of them showed signs of pleural effusion on ultrasound and sarcoidosis was established as the cause of the pleural effusion only in 1.1% of these patients. Lynch et al. [4] estimate the prevalence of pleural effusion in patients with sarcoidosis at 2–4%. Brauner et al. [6] showed that pleural infiltrates or thickenings can be found in 20% of patients with sarcoidosis.

Non-specific pleural thickening, pleural effusion or pleural plaques are the most common manifestations of pleural sarcoidosis with pleural nodules or pneumothorax being much less commonly observed [2]. The advent of high-resolution computed tomography (HRCT) had contributed to the increased detectability of even the most subtle pleural abnormalities [7, 8]. Thanks to HRCT small subpleural nodules can now be detected in 22–76% of the cases [2].

Pleural effusion may be the first sign of sarcoidosis [9] or may develop in later stages [10]. Nusair et al. [11] reported a case of pleural effusion accompanied by splenic rupture as symptoms of sarcoidosis relapse after a long-lasting remission. Pleural effusion in the course of sarcoidosis is most commonly seen on the right side, although the reason for this is unknown. Bilateral pleural effusion is reported in 22% of the cases [4]. The amount of liquid is generally small, as in our first patient, although some patients may present with massive effusion. Krawczyk et al. [12] reported a case of sarcoidosis with massive bilateral pleural and pericardial effusion in a 30-year-old woman. Her pleural cavity had been tapped five times during the 17 days of hospitalisation with a total of 4 litres of fluid having been drained. About 2 litres of fluid was drained in one of our patients.

A diagnosis of pleural sarcoidosis can only be based on histopathological examination, after ruling out all the other causes of pleural effusion, such as tuberculosis, malignancy or congestive heart failure [13]. From the clinical point of view it is very important to first rule out tuberculosis. In contrast to sarcoid granulomas, tuberculous granulomas show caseation. In some cases, however, caseation may not be present or may only be slightly pronounced. Microbiological evaluations, particularly for *Mycobacterium tuberculosis*, must therefore be performed on each biopsy specimen in addition to histopathological examination. In our patients, the results of microbiological tests on biopsy specimens were all negative, which allowed us to rule out *tuberculosis*.

The pleural effusion in the course of sarcoidosis is most commonly an exudate and mainly contains lymphocytes [2], although in a minority of cases it can be a transudate with predominance of eosinophils [14]. It is very rarely bloody [10].

Pleural effusion may appear at any radiological stage of sarcoidosis, although it is most commonly reported in stage II. According to some reports, patients with sarcoidosis in whom pleural involvement is observed (manifested as pleural effusion) show a higher tendency towards progression within the pulmonary interstitium. These patients are much more frequently diagnosed with stage IV disease and impaired pulmonary function manifested by reduced carbon monoxide diffusing capacity and a restrictive ventilation pattern [8]. It may well be that the appearance of pleural effusion in sarcoidosis correlates with its more active course. In one report, sarcoid pleural effusion was observed in 11.1% of patients with an exacerbation of sarcoidosis within the lungs versus only 0.6% of patients with stable disease [4].

The management of patients suffering from sarcoidosis with pleural involvement should follow an individual approach and take into consideration the fact that in the majority of cases the effusion resolves spontaneously within 1–3 months [2, 13]. Systemic corticosteroids may only be justified in symptomatic patients and patients with recurrent pleural effusion which may lead to chro-

nic pleural irritation and thickening resulting in fibrothorax. Decortication may be an effective treatment option for these patients [15].

The patients we reported here were in good general condition and did not present severe symptoms. Also, pulmonary function testing did not reveal any significant abnormalities. Corticosteroids were therefore not used. The pleural effusion did not recur in any of the patients and the massive pleural thickening in the third patient did not progress over the one year of follow-up.

In conclusion, it should be kept in mind that sarcoidosis is a systemic granulomatous disease that may affect various organs and tissues, including the pleura. Pleural involvement is rare. The pathomechanism of fluid accumulation in the course of sarcoidosis is unknown with the following being listed as rare causes: narrowing of the vena cava superior, sarcoid nodules in the bronchi that lead to their narrowing or damage to the lymphatic vessels. Some authors postulate the existence of the so-called "protective pleural mechanism" that would prevent fluid accumulation in the pleural cavity in some patients with sarcoidosis [2]. Corticosteroid treatment is not necessary in the majority of patients, although it is usually effective in all the forms of pleural sarcoidosis with the exception of pleural thickening, which may be chronic and irreversible. The uncommon manifestation of sarcoidosis in the form of pleural effusion requires additional diagnostic tests and often delays the diagnosis.

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