Sarcoidosis of the pleura – A case report

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Abstract

Introduction. Pleural involvement is an uncommon manifestation of sarcoidosis. It may manifest as pleural effusion, pneumothorax, pleural thickening and nodules, hydro pneumothorax, trapped lung, hemotorax, or chylothorax. The incidence of pleural effusion with sarcoidosis ranges from 0% to 5% but has been reported to be as high as 7.5%. Pleural effusions complicate sarcoidosis in < 3% of patients. Case report. We reported a 64-year-old male patient with chronic multiorgan sarcoidosis. This patient developed pleural sarcoidosis with massive pleural effusion several years after the diagnosis of sarcoidosis. A definitive diagnosis of a sarcoid pleural effusion was based on a biopsy demonstrating noncaseating granuloma. The patient responded well to the treatment (methotrexate and methyl prednisolone) with a complete withdrawal of pleural effusion following five weeks of the treatment beginning. Conclusion. The presented patient is a rare case of pleural involvement of sarcoidosis with massive effusion, who responded well to the treatment.

Key words: sarcoidosis; pleural effusion; biopsy; therapeutics.

Introduction

Pleural involvement is an uncommon manifestation of sarcoidosis. It may be manifested as a pleural effusion, pneumothorax, pleural thickening and nodules, hydro pneumothorax, trapped lung, hemotorax, or chylothorax. Clinically significant pleural manifestations occur in 2% to 4% of patients with sarcoidosis 1,2,4.5–9. With the introduction of computed tomography (CT) scans, especially high resolution CT, awareness of pleural manifestations of sarcoidosis has increased, thus allowing detection of more subtle cases of pleural involvement. Pleural manifestations of sarcoidosis may arise at the initial presentation, or at a later stage in the development of known sarcoidosis. The development of pleural sarcoidosis does not appear to have any clear prognostic value. Often the diagnosis is based on clinical findings without histologic proof because when the disease is present elsewhere, most pleural sarcoidosis does not require a biopsy to treat the patient properly. A total of 145 biopsy-proven cases of pleural involvement with sarcoidosis have been reported up to 2000 10.

Case report

A 64-year-old male patient, had been treated since 1982 for type II diabetes. In 1992 a bronchoscopy with a transbronchial biopsy was performed because of both-sided lung lesions and hilar adenopathy, and sarcoidosis of the lung was
verified. He was treated with corticosteroids for several months successfully. A few years later, because of complaints of cardiac rhythm disorder, holter monitoring and radionuclid ventriculography were done and confirmed the myocardial sarcoidosis. From that moment, on several occasions he was treated due to clinical, biochemical and radiographic signs of deterioration of chronic multorgan sarcoidosis. Chest radiography from 2000 presented the stable phase of sarcoidosis when the patient was receiving a maintenance dose of corticosteroids. At that time, remission of sarcoidosis was verified. Whenever trying to discontinue steroid treatment, the sarcoidosis relapsed, and deterioration became evident. Thus, by 2002 the patient was treated with corticosteroids, but because of a glycoregulation impairment as a consequence of this long-term treatment, the corticosteroids were discontinued and methotrexate introduced. In October 2002 a relapse of sarcoidosis was verified with radiographic findings of marked hilar adenopathy and both-sided interstitial changes in the lung parenchyma (Figure 1).

The serum angiotensin converting enzyme (ACE) level was 39 U/L, and the calcium level in 24 h urine was 7.41 mmol/L. All the other clinical and biochemical findings were normal. A bronchoscopy was performed, the endoscopic finding showed extramural compression to the inner wall of the left main bronchus. A histologic analysis of transbronchial biopsy confirmed sarcoidosis. The methotrexate treatment dose was increased with the favorable effect of sarcoidosis remission achieved soon. Then the drug dose was set to the maintenance one.

Almost a year later at the check-up, the patient complained of progressive dyspnea and chest radiography revealed the shadow of a left-sided massive pleural effusion (Figure 2).

The serum level of ACE was 124 U/L (normal range less than 52 U/L) and the calcium 24-urine level was elevated – 7.2 mmol/L. The patient was hospitalized again, underwent thoracocentesis when 2 L of serous content were evacuated, characterized as a paucicellular, lymphocyte-predominant exudate. Then a pleuroscopy with pleural biopsy was performed. The histologic finding was noncaseating granulomas, indicative for pleural sarcoidosis (Figure 3).

Other causes of pleural effusion were excluded. Following the diagnosis, the methotrexate dose was increased to 10 mg per week and 20 mg daily of methylprednisolone was introduced. After 5 weeks of the treatment, a complete withdrawal of the pleural effusion was evident (Figure 4). After that the methotrexate dose was set to the maintenance one of 5 mg per week, and methylprednisolone to 15 mg every second day. After three months methylprednisolone was withdrawn.
Our patient had left-side massive pleural effusion unlike the majority of published cases. Sarcoïdosis-related pleural effusions occur slightly more commonly in the right lung (45%) than in the left lung (33%)\(^4\). The reason for the right-sided predominance is unclear and is not related to organ involvement. Bilateral effusions have been reported in 22% of cases\(^4\).

The onset of pleural effusion ranges from being coincidental with the first diagnosis of sarcoïdosis\(^17\) to occurring several years after the diagnosis was made. The latter was the case we have described, our patient had progressive and profound dyspnea lasting for several weeks. In most cases published, the effusions were an incidental finding\(^2,4,5,8,17-20\). Patients with a sarcoïd pleural effusion usually have extensive parenchymal disease (radiographic stage 2 or stage 3) as it was the case in our report, but also frequently have extrathoracic sarcoïdosis\(^8,9,11,21\). In a series of pleural sarcoïdosis with biopsy of visceral and parietal pleural surfaces performed, most cases were radiographic stage II and III sarcoïdosis\(^22\). It appears that with progression of the parenchymal disease, the prevalence of pleural effusions decreases, while that of pleural thickening and pneumothorax increases\(^4\). Nevertheless, sarcoïd-related pleural effusions can occur in all Scadding radiographic stages. There are no specific radiologic features of the pleural effusions that occur in sarcoïdosis to suggest the cause, except for the presence of associated parenchymal disease or intrathoracic lymphadenopathy. Although being generally small to moderate, occasionally effusions can be massive\(^5,9,11,16-21\), the same situation being with our patient who had left-side massive sarcoïd-related pleural effusion; sometimes they can be bilateral\(^5,9,11,14,16,20-23\) and rarely loculated\(^24\). Sarcoïd-related pleural effusions have been described as exudates or transudates; our patient had serous, paucicellular, lymphocyte-predominant exudate. However, most series\(^5,9,11,14,16,18-22,25-28\) have not reported the criteria used to classify these pleural effusions. Higgins et al.\(^7\) have thus summarized the pleural fluid characteristics of all sarcoïd-related pleural effusions reported in the literature. The majority of sarcoïd-related pleural effusions are exudative. The appearance of the pleural fluid is most commonly serous, sporadically it is serosanguinous\(^11,15,19,22\) and an extremely rare finding is a bloody pleural effusion. The nucleated cell count is typically low at ≤ 1,100 cells/µL. Lymphocytosis occurs in two thirds of cases\(^1,2,4,5,9\), with predominance of CD4 lymphocytes\(^1,4\). Few cases of pleural fluid eosinophilia have been reported\(^29-31\). The typical finding in sarcoïd pleural effusions is a paucicellular, lymphocyte-predominant exudate, with a pleural fluid-serum protein ratio more consistently in the exudative range than the pleural fluid lactate dehydrogenase (LDH) criterion, as was the case with outpatient’s effusion. The dysynchrony between the pleural fluid protein and LDH ratios suggests that the pathogenesis of sarcoïd-related pleural effusions is most consistent with increased capillary permeability with minimal pleural space inflammation. A definitive diagnosis of sarcoïd pleural effusion in the presented case relied on the pleural biopsy sample demonstrating noncaseating granulomas, with the exclusion of granulomatous diseases of the pleura.
known etiology, which is in accordance with the standard diagnostic approach. When it comes to treatment, our patient was treated for chronic sarcoidosis with methotrexate for a longer period of time up to the development of pleural effusion. As sarcoid pleural effusion was diagnosed, the drug dose was increased to 10 mg per week and for as long as 6 months with or without corticosteroids. If the effusion is present, it may resolve spontaneously or require corticosteroids for resolution. The majority of these effusions, unlike the sarcoid pleural effusions in a series of 181 outpatients with sarcoidosis, resolve spontaneously. The time of spontaneous resolution is variable, but most resolve in 1 to 3 months. However, there are reports of resolution at 2 weeks with corticosteroid therapy and for as long as 6 months with or without corticosteroids. If the effusion is symptomatic and recurrent, steroid therapy is recommended for symptomatic relief and to hasten the resolution of the effusion. Incomplete resolution of these effusions has been reported with eventual progression to chronic pleural thickening or a trapped lung. Decortication has been successful in relieving dyspnea in a patient who had lung entrapment from sarcoidosis.

**Conclusion**

The presented patient is a rare case of pleural involvement of sarcoidosis with massive effusion, who responded well to the treatment.

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**Statement of interest**

The authors declare no conflict of interest.

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