Sarcoidosis Presenting with Pleural Involvement: A Case Report

Plevral Tutulumla Seyreden Sarkoidoz: Olgu Sunumu

Ali Kadri Çırak, Zeynep Öndeş, Nur Yücel

Abstract

Sarcoidosis is a multisystemic, granulomatous disease with particular involvement in the lungs and the intrathoracic lymph nodes. Pleural fluid has been reported to occur in 0% to 5% of the cases in the literature. Diagnosis depends on the presence of non-caseating granulomas in the biopsy sample and the exclusion of other possibilities. A 77-year-old woman with complaints of shortness of breath and a dry cough was found to have non-necrotizing granulomatous inflammation in pleural biopsy and computed tomography guided transthoracic Tru-Cut biopsy specimens. This was a rare case in which partial recovery was achieved through treatment with methylprednisolone for a year in reduced doses.

Key words: *Sarcoidosis, pleural effusion, biopsy.*

Özet

Sarkoidoz, nedeni bilinmeyen, en sık akciğerleri ve intratorasik lenf nodlarını tutan, multisistemik, non-kazeifiye granülomatöz bir hastalıktır. Literatürde plevra sıvısı görülme sıklığı %0-5 arasında bildirilmektedir. Tanı plevra biyopsisinde kazeifikasyon nekrozu içermeyen granülom gösterilmesi ve granülom yapan diğer nedenlerin dışlanması ile konulur. Eforla nefes darlığı ve kuru öksürük şikayetleri olan 77 yaşındaki kadın hastamızın plevral biyopsi ve BT eşliğinde transtorasik tru-cut biyopsi örneklerinde "nekroz içermeyen granülomatöz enflamasyon" saptadık. Giderek azaltılan dozlarda bir yıllık metilprednisolon tedavisiyle tama yakın iyileşme sağladığımız olguyu nadir görülmesi nedeniyle sunuyoruz.

Anahtar Sözcükler: *Sarkoidoz, plevral efüzyon, biyopsi.*

Sarcoidosis is a multisystemic, non-caseating granulomatous disease with an unknown etiology that commonly affects the lungs and the intrathoracic lymph nodes (1). Sarcoidosis is generally seen in adults between 20 and 40 years of age, with a second peak evident in women over 50 (2). Diagnosis is made by evidence of non-necrotizing granulomas histopathologically, together with clinical and radiological findings. Pleural involvement in sarcoidosis is rare, but pleural fluid, pneumothorax, pleural thickening and nodules, hydropneumothorax, and chylothorax may be seen (3). Clinically significant pleural involvement is found in 2% to 4% of the patients (4). It is usually a paucicellular, lymphocyte-predominant exudate, with a pleural fluid/serum protein ratio that is more consistently in the exudative range based on the pleural fluid lactate dehydrogenase (LDH) criterion. A definitive diagnosis is made with finding of granuloma that does not include caseous necrosis in the pleural biopsy and exclusion of other reasons for granuloma (4).

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CASE

A 77-year-old female patient presented with shortness of breath and a dry cough, which had increased over 2 months. She didn't smoke and there was no other known disease. Her physical examination revealed diminished lung sounds in the right hemithorax. No pathological finding was disclosed in the biochemistry and complete blood count; the erythrocyte sedimentation rate was 36 mm/hour. An electrocardiogram showed a normal sinus rhythm and a tuberculin skin test was negative. Her chest radiogram revealed pleural effusion in the right side, and an increase in non-homogenous density in the right middle zone (Figure 1). Thorax CT examination revealed massive lesions at the level of the right upper lobe bronchus and atelectasis density enhancement around the lesion, a consolidation area (atelectasis) involving air bronchograms in the middle lobe, pleural fluid in the right hemithorax, and a subcarinal lymph node 13 mm in diameter (Figure 2). Positron emission tomography/computed tomography (PET-CT) examination showed pathologically increased fluorine-18 fluorodeoxyglucose uptake in the right paratracheal (SUVmax: 4.9) and subcarinal (SUVmax: 6.0) lymph nodes in the right upper lobe mass lesion (SUVmax: 13.1).

Lung cancer involving the mediastinum and pleural metastasis was considered clinically and radiologically. Thoracentesis was performed. The pleural fluid biochemistry was compatible with exudative fluid and the adenosine deaminase level was 10 U/l (Table 1). Cytological examination of the pleural fluid revealed lymphocyte cells. Examination of the mass lesion in the lung and subcarinal lymph node with fiberoptic bronchoscopy and endobronchial ultrasound-guided fine-needle aspiration (EBUS-FNA) were not diagnostic. Non-necrotizing granuloma compatible with sarcoidosis was detected in a sample of the Tru-Cut biopsy taken from the mass lesion in the lung with CT guidance (Figure 3). Abrams biopsy sample taken to determine pleural fluid etiology revealed non-necrotizing granulomatous pleuritis compatible with sarcoidosis. (Figure 4).

Pleural fluid, bronchial aspiration, bronchoalveolar lavage, EBUS-FNA and CT-guided transthoracic Tru-Cut specimens were found to be negative in acido-resistant bacilli smear and culture.

The blood angiotensin-converting enzyme (ACE) level was 60 U/l (normal: 8-52 U/l), serum calcium level was 9.5 mg/dL (normal: 8.6-10 mg/dL), and 24-hour urinary calcium was 125 mg/24 hours (normal: 42-353 mg/24 hours). Ophthalmological examination was normal. Spirometric evaluation was forced expiratory volume in one second (FEV1): 1.40 L (85%), forced vital capacity (FVC): 1.50 L (75%), FEV1/FVC: 88%, and diffusing capacity of the lung for carbon monoxide (DLCO): 15.4 mL/mmHg/minute (48%).

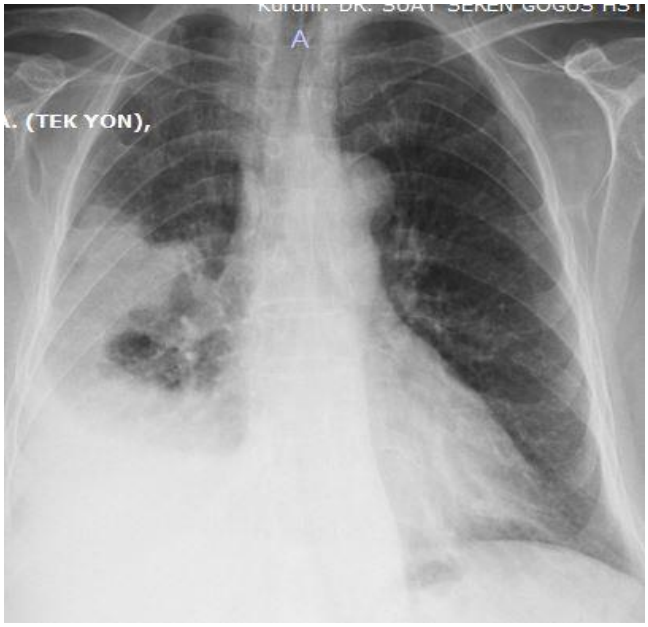

Figure 1: *Posterior anterior chest X-ray revealed bilateral hilar enlargement, pleural effusion and parenchymal infiltration at the left upper zone*

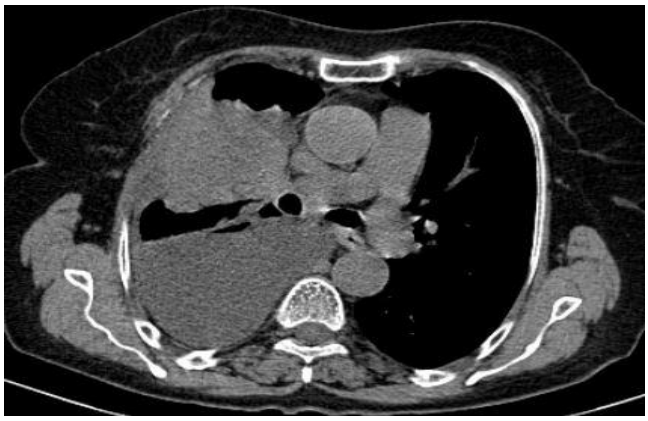

Figure 2: *Thoracic CT findings*

Tablo 1: *Biochemichal parameters of serum and pleural fluid of case*

	Serum	Pleural fluid
Total protein (g/dl)	7,1	5,2
LDH (U/L)	153	156
ADA (U/L)	NA	10
ACE (U/L)	60	NA
Calcium (mg/dl)	9,5	NA
Eryrocyte sedimentation rate (mm/h)	36	NA

LDH: Lactate dehydrogenase, ADA: Adenosin deaminase, ACE: Angiotensin converting enzyme, NA: not applicable

Symptomatic stage II lung and pleural sarcoidosis was diagnosed. Methylprednisolone (0.5 mg/kg/day) was initiated and the dose was gradually reduced. Clinical radiological improvement (Figure 5 and 6) was observed during follow-up and at the first year of treatment.

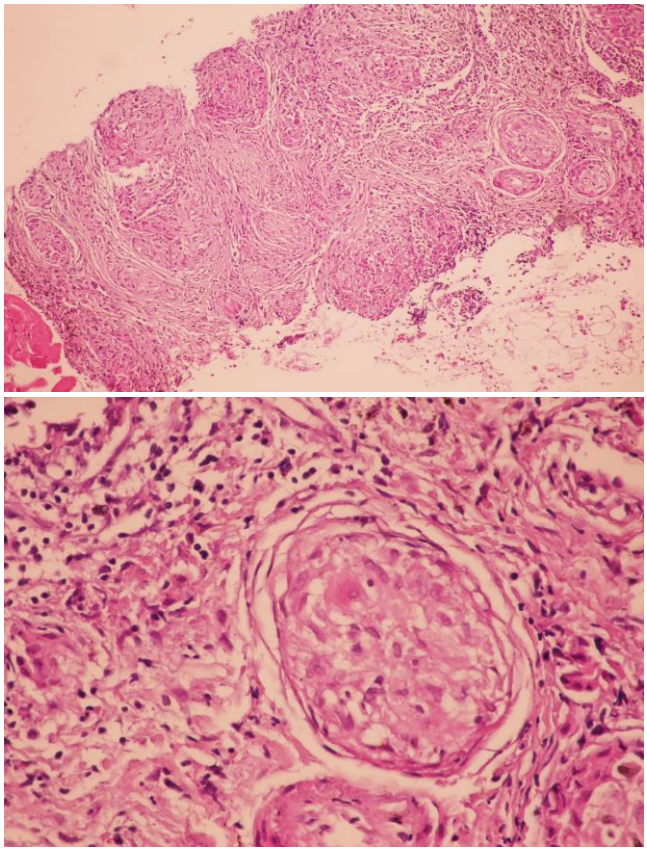

Figure 3: *Presence of non-necrotizing granuloma on tru-cut lung biopsy (H&E, x100 and x400)*

DISCUSSION

Sarcoidosis is an idiopathic multisystemic granulomatous disease, which frequently involves the bilateral lymph nodes, pulmonary parenchyma, and eye and skin lesions (1). Pleural involvement is quite rare, though Schaumann wrote the first report on this entity in 1933 (5). It is not entirely certain why pleural involvement is scarce, despite the fact that pulmonary parenchymal and nodal involvement is present in almost all reported cases. The reasons could be multifactorial: (a) the mere presence of pleural effusion associated with sarcoidosis cannot be considered to be caused by sarcoidosis, (b) small pleural effusions can be missed on routine chest X-rays, (c) in a tuberculosis endemic country like ours, most pleural effusions are incorrectly diagnosed as tubercular and empirically treated with anti-tuberculosis therapy, and hence missed, (d) a lack of histopathological evidence of pleural involvement, or (e) a lack of awareness regarding this rare manifestation leading to the diagnosis being missed. Pleurisy in sarcoidosis has been considered to be related to either inflammation of the visceral and parietal pleura caused by peripheral lung granulomas, or a disturbance of the venous and lymphatic circulations. It is typically a paucicellular, lymphocytic-predominant, and protein discordant exudate with low LDH, further supporting the view of increased capillary permeability with minimal pleural space inflammation being the causative mechanism in the formation of pleural fluid in sarcoidosis and reinforcing the hypothesis of a few advocates of a "protective pleural mechanism" keeping pleural spaces dry (6).

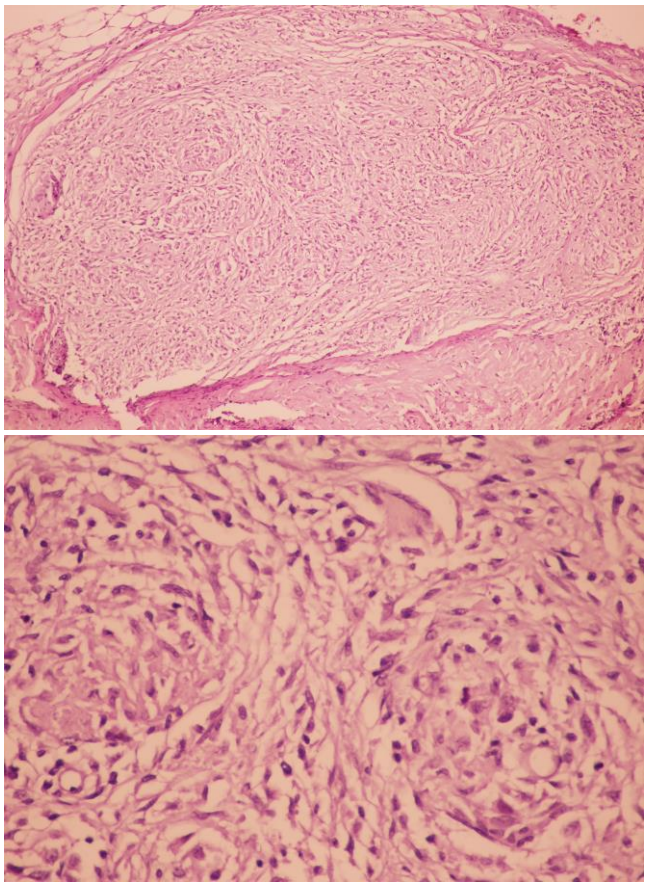

Figure 4: *Presence of non-necrotizing granuloma on tru-cut lung biopsy (H&E, x100 and x400)*

Sarcoidosis-related pleural fluid may be completely asymptomatic; however, some patients may suffer from severe dyspnea and/or pleuritic chest pain (6). The current patient's complaint was dyspnea.

Sarcoidosis-related pleural effusion is slightly more common on the right side and is usually an exudate with lymphocytic predominance (7,8). The findings of our case were similar to those seen in the literature.

Information in the literature is limited regarding the ACE level in sarcoidosis-related pleural effusion (9). In the current case, as sarcoidosis was not initially considered

clinically and radiologically, the pleural ACE level was not examined.

Pleural involvement is more frequently seen in stage II and III sarcoidosis patients (10,11). Our patient was at stage II of the disease. The exact diagnosis of pleural involvement in sarcoidosis and the differential diagnosis with other causes of granulomatous pleuritis depend on the pathological findings in pleural biopsies obtained with a closed pleural biopsy, medical thoracoscopy, or video-assisted thoracoscopic surgery (4). We obtained a pleural tissue specimen using an Abrams biopsy.

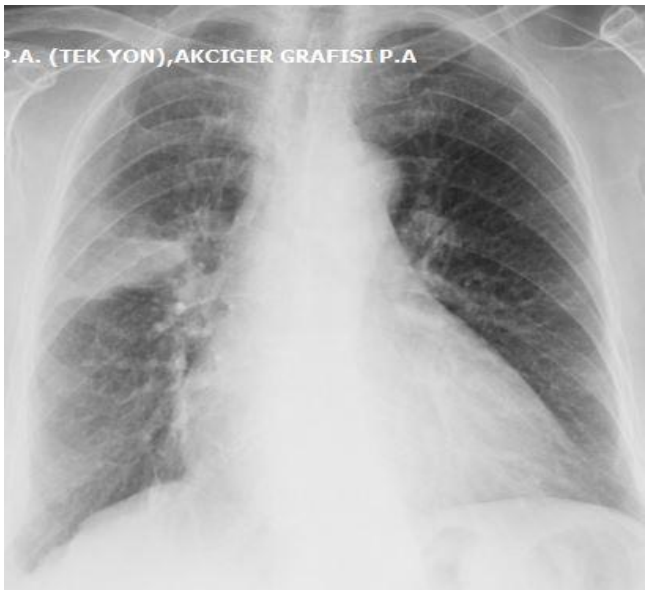

Figure 5: *Control posterior anterior chest X-ray*

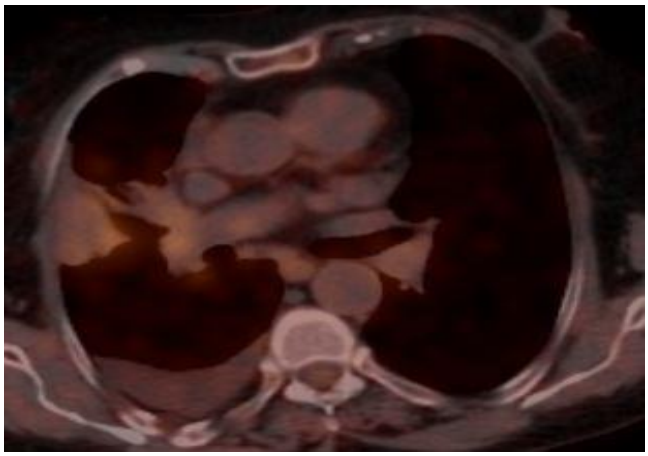

Figure 6: *Control PET/CT findings*

According to the literature, sarcoid pleural effusions may resolve spontaneously or require corticosteroids for resolution. The length of time for spontaneous resolution varies, but most resolve in 1 to 3 months. If the effusion is symptomatic and recurrent, steroid therapy is recommended for symptomatic relief and to hasten the resolution of the effusion. Decortication has been successful in relieving dyspnea in a patient who had lung entrapment from sarcoidosis (11,12). Clinical-radiological improvement was achieved with steroid therapy in our case.

The current case was presented to highlight the possibility of sarcoidosis in patients with pleural effusion. However, other pleural pathologies should be excluded and the diagnosis confirmed by biopsy.

CONFLICTS OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

Concept - A.K.Ç., Z.Ö., N.Y.; Planning and Design - A.K.Ç., Z.Ö., N.Y.; Supervision - A.K.Ç., Z.Ö., N.Y.; Funding -; Materials - N.Y., Z.Ö.; Data Collection and/or Processing -; Analysis and/or Interpretation - N.Y.; Literature Review - N.Y.; Writing - A.K.Ç., Z.Ö., N.Y.; Critical Review - A.K.Ç.

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