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Pseudotumoral Sarcoidosis: About Four Clinical Observations

D. Chahid[1*], G. Salhi[1], M. Ahachim[1], B. Daher[2], N. Yassine3

[1]Resident in Pulmonology, Cheikh Khalifa University Hospital, Casablanca, Morocco
[2]Professor of Pulmonology, Cheikh Khalifa University Hospital, Casablanca, Morocco
[3]Professor of Higher Education in Pulmonology, Cheikh Khalifa University Hospital, Casablanca, Morocco

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***Corresponding author:** D. Chahid
Resident in Pulmonology, Cheikh Khalifa University Hospital, Casablanca, Morocco

Abstract | **Case Report**

Introduction: Sarcoidosis is a systemic granulomatous disease of unknown etiology. Its pseudotumoral presentation is rare but represents a frequent diagnostic pitfall because of its clinical and radiological similarity to malignant tumors. ***Methods:*** We report five cases of pseudotumoral sarcoidosis observed between 2021 and 2024. ***Results:*** All patients presented with radiological abnormalities suggestive of neoplasia. The diagnosis was confirmed by biopsy showing non-caseating granulomas. All patients received corticosteroid therapy with favorable outcomes. ***Conclusion:*** Recognizing this atypical form is essential to avoid misdiagnosis and inappropriate treatments.

Keywords: Sarcoidosis, pseudotumoral, granulomas, caseous necrosis, corticosteroid therapy.

INTRODUCTION

Sarcoidosis is an inflammatory granulomatous disease of unknown origin, histologically characterized by well-formed non-caseating epithelioid and giant-cell granulomas. It predominantly affects young adults and shows a predilection for the lungs and mediastinal lymph nodes, although any organ may be involved.

The so-called pseudotumoral form is rare and often misleading. It manifests as large focal or nodular lesions that can mimic primary or metastatic tumors on both clinical and radiological assessment. This atypical presentation can delay diagnosis and expose patients to invasive procedures or inappropriate treatments.

Through this series of five cases, we describe the clinical, radiological, biological, and histological features of pseudotumoral sarcoidosis, emphasizing the importance of considering this diagnosis when encountering any suspicious tumor-like mass in a young adult.

PATIENTS AND METHODS

This was a retrospective descriptive study conducted in two university hospitals. We included five patients hospitalized between January 2021 and March 2024, in whom the diagnosis of pseudotumoral sarcoidosis was established based on a combination of clinical, radiological, and—most importantly—histological findings.

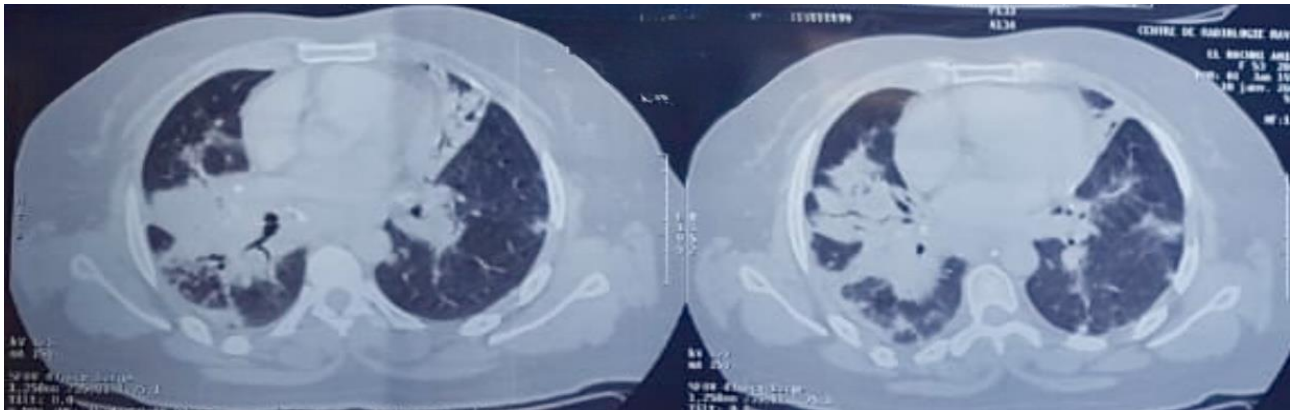
For each patient, the following data were collected: age, sex, medical history, clinical presentation, imaging findings (chest X-ray, chest CT scan), biological results (ACE levels, serum calcium, infectious workup), histological findings (lymph node, pulmonary, or hepatic biopsies), treatment, and clinical/radiological evolution.

CASE REPORTS

Case 1

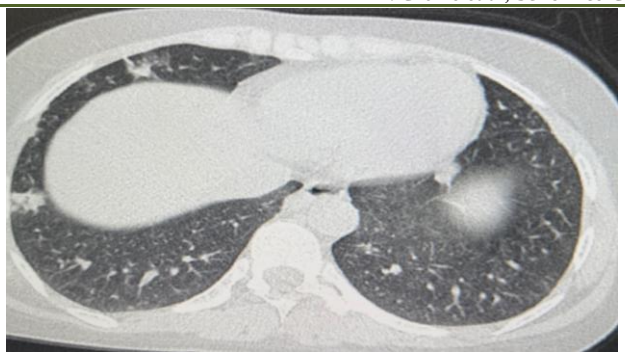
- **Age/Sex:** 53-year-old female
- **History:** No history of sarcoidosis, non-smoker, no comorbidities
- **Presenting symptoms:** Dry cough for 3 months with exertional dyspnea (mMRC II)
- **Respiratory signs:** Cough and dyspnea; no hemoptysis or chest pain
- **Extrapulmonary signs:** None
- **General condition:** Preserved, afebrile, no weight loss
- **Performance status:** 1
- **Clinical examination:** Bilateral crackles at lung bases; no pleural signs or peripheral lymphadenopathy
- **Extra-thoracic exam:** Normal skin and musculoskeletal examination

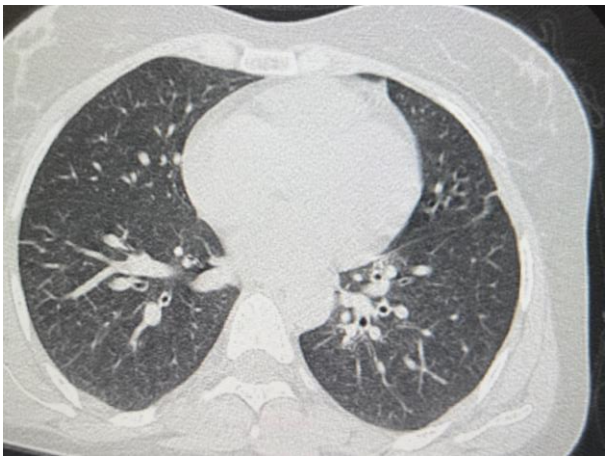
- **Chest imaging:** Diffuse bilateral parenchymal consolidations, mainly hilar, with bilateral mediastinal and hilar calcified lymphadenopathies (Barety's space). Parenchymal consolidation with air bronchogram giving a pseudotumoral appearance in the laterobasal middle lobe and Fowler segment
- **GeneXpert:** Negative
- **TST:** Not performed
- **Bronchoscopy:** Diffuse grade-2 inflammation; biopsies showing inflammatory granulomas; macrophage-predominant BAL
- **Histology:** Well-formed non-caseating epithelioid and giant-cell granulomas, no malignant cells
- **Biology:** Normal CBC (Hb 13.2 g/dL), mild lymphopenia (1200/mm³), CRP 6 mg/L, ESR 25 mm, elevated calcium (108 mg/L), elevated ACE (105 IU/L)
- **PFTs:** Normal
- **Treatment:** Prednisone 0.5 mg/kg/day (30 mg/day), tapered over 3 months; calcium, vitamin D, and PPI
- **Outcome:** Marked clinical improvement; complete radiological regression at 3 months; improved FVC (78 %) and DLCO (70 %); no relapse at 6 months

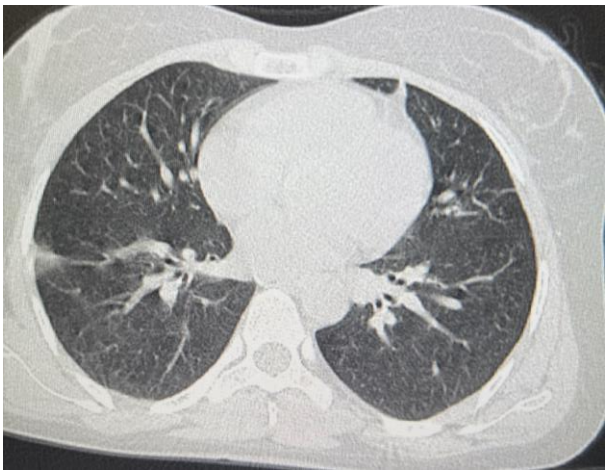


Case 2

- **Age/Sex:** 34-year-old female
- **History:** Chronic pansinusitis operated by bilateral meatotomy and ethmoidectomy
- **Presenting symptoms:** Prolonged fever without respiratory symptoms, with rhinorrhea
- **Respiratory signs:** Headaches
- **Extrapulmonary signs:** None
- **General condition:** Preserved; fever 38.2°C; no weight loss
- **Performance status:** 1
- **Clinical examination:** Normal respiratory and general examination
- **Chest imaging:** Multiple subpleural basal, middle lobe, and lingular nodules, some cavitated; largest measuring 47.7 mm (right) and 30×19 mm (left)
- **GeneXpert:** Negative
- **TST:** Not performed
- **Bronchoscopy:** Diffuse grade-2 inflammation; congestive mucosa with scattered hemorrhagic spots; thickened/edematous bronchial spurs; reduced bronchial lumen; no endobronchial tumor
- **BAL:** 65 % macrophages, 25 % lymphocytes, 5 % neutrophils, 5 % eosinophils
- **Histology:** Non-caseating epithelioid granulomas
- **Biology:** Normal CBC (Hb 13.5 g/dL), lymphocytes 1100/mm³, CRP 8 mg/L, ESR 28 mm, normal calcium, ACE 96 IU/L
- **PFTs:** Normal (TLC 96 %, FVC 95 %, FEV1 98 %, FEV1/FVC 100 %, DLCO 88 %)
- **Treatment:** Prednisone 30 mg/day for 3 months with tapering
- **Outcome:** Rapid disappearance of fever; complete regression of nodules at 3 months; stable lung function; no relapse at 6 months



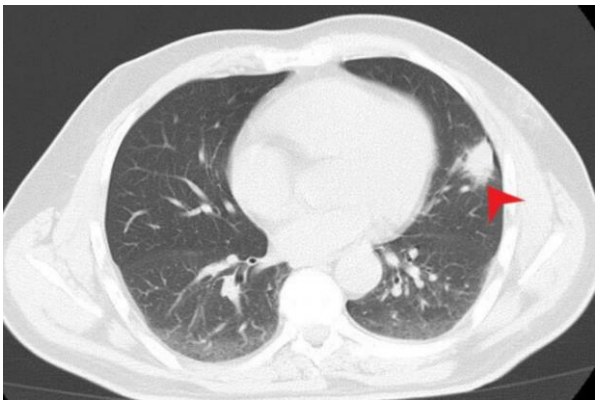




Case 3

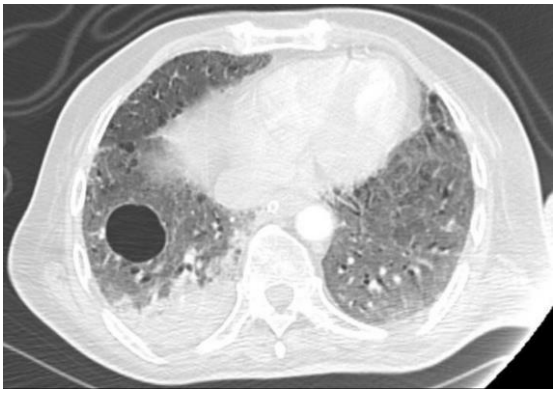
- **Age/Sex:** 57-year-old male
- **History:** Former smoker (15 pack-years)
- **Presenting symptoms:** Dyspnea and dry cough for 2 months
- **Respiratory signs:** Dyspnea (mMRC III), dry cough
- **Extrapulmonary signs:** None
- **General condition:** Preserved
- **Performance status:** 1–2
- **Clinical examination:** Bilateral diffuse crackles; no peripheral lymphadenopathy
- **Chest imaging:** Spiculated 3-cm round opacity in the right middle lobe; no hilar or mediastinal lymphadenopathy
- **GeneXpert:** Negative
- **TST:** Not performed
- **Bronchoscopy:** Grade-1 diffuse inflammation
- **BAL:** 55 % macrophages, 35 % lymphocytes, 7 % neutrophils, 3 % eosinophils
- **Histology:** Non-caseating granulomas
- **Biology:** Hb 12.9 g/dL, lymphopenia (950/mm³), CRP 12 mg/L, ESR 35 mm, calcium 2.68 mmol/L, ACE 130 IU/L
- **PFTs:** Severe restrictive defect (TLC 68 %, FVC 51 %, FEV1 57 %, FEV1/FVC 93 %); DLCO not measured
- **Treatment:** Prednisone 60 mg/day (1 mg/kg/day) tapered over 4 months

- **Outcome:** Clinical and functional improvement (FVC 78 %); complete radiological resolution



Case 4

- **Age/Sex:** 69-year-old female
- **History:** End-stage renal disease on dialysis
- **Presenting symptoms:** Diffuse arthralgias; afebrile
- **Respiratory signs:** None
- **Extrapulmonary signs:** Non-erosive peripheral arthralgias
- **General condition:** Good
- **Performance status:** 0
- **Clinical examination:** No synovitis, no lung crackles, no cutaneous or neurological signs
- **Chest imaging:** Alveolo-interstitial pneumopathy with cavitary lesions in the right lower lobe; micronodules with traction bronchiectasis
- **GeneXpert:** Negative
- **TST:** Not performed
- **Bronchoscopy:** Grade-1 diffuse inflammation
- **BAL:** 70 % macrophages, 20 % lymphocytes, 5 % neutrophils, 5 % eosinophils
- **Histology:** Mediastinal biopsy showing non-caseating granulomas
- **Biology:** Hb 13.4 g/dL, lymphocytes 1000/mm³, CRP 4 mg/L, ESR 20 mm, calcium 2.66 mmol/L, ACE 82 IU/L
- **PFTs:** Mild restrictive defect (TLC 82 %, FVC 76 %, FEV1 78 %, FEV1/FVC 85 %, DLCO 69 %)
- **Treatment:** Prednisone 30 mg/day for 3 months
- **Outcome:** Complete regression of arthralgia; stable lung function



DISCUSSION

Pseudotumoral sarcoidosis is a rare but well-recognized form of systemic sarcoidosis. It represents a true diagnostic challenge due to its radiological and clinical similarity to pulmonary, lymphomatous, or metastatic malignancies [1,2]. In our series, as in those of Patel *et al.*,[3] and Lee *et al.*,[4], the initial differential diagnosis was neoplastic in most cases, highlighting the need for increased awareness.

Clinically, our patients presented with mild or non-specific symptoms such as cough, dyspnea, or low-grade systemic manifestations. This discrepancy between the dramatic radiologic appearance and the subtle clinical findings has been emphasized by Baughman *et al.*,[5], who note that imaging alone cannot reliably differentiate between tumor and granulomatous disease.

Biological abnormalities are helpful but not constant: elevated ACE levels, observed in 4 of our 5 patients, are reported in 60–80 % of cases [6,7], whereas hypercalcemia occurs in only 10–20 % [8]. In tuberculosis-endemic regions, the absence of Mycobacterium tuberculosis in samples, as in our series, is a strong argument for sarcoidosis [9,10].

Diagnosis is based on histology showing non-caseating epithelioid and giant-cell granulomas, a mandatory criterion according to ATS/ERS recommendations [11]. Lee *et al.*,[4] and Judson [12] stress the need to biopsy any pseudotumoral lesion before considering surgical or oncologic management, as diagnostic errors remain frequent.

Therapeutically, all our patients responded favorably to corticosteroids, consistent with the literature. Prednisone at an initial dose of 0.5–1 mg/kg/day remains the first-line treatment [5,11]. In a multicenter European cohort (n=84), Statement *et al.*,[13] reported significant clinical and radiological improvement in 85 % of patients treated with corticosteroids. However, 10–15 % relapse or become steroid-dependent, requiring second-line therapy such as methotrexate, azathioprine, or mycophenolate mofetil [14,15]. Smith *et al.*,[16] showed that adding methotrexate reduced relapses and allowed durable steroid sparing.

In our series, no relapse occurred during the 6-month follow-up, which is encouraging but requires longer observation. Long-term monitoring is crucial, as 20–30 % of patients relapse within 2–3 years of stopping treatment [17,18].

New research avenues include biomarkers such as soluble IL-2 receptor (sIL-2R), chitotriosidase, and lysozyme [19,20], as well as FDG-PET metabolic imaging. Zhang *et al.*,[21] showed that certain metabolic patterns (SUV > 12, spiculated nodules) may predict better steroid response.

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