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Case report

Sarcoidosis presenting as a solitary pulmonary mass

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Abstract

Sarcoidosis has a wide varying presentation. Pulmonary sarcoidosis typically presents with bilateral hilar adenopathy and reticulonodular opacities on radiography [1]. Rarely, it can present as a single solitary mass. Here we present a case of a 39 year old African-American male who presented with cough and pleuritic chest pain. Initial imaging revealed a right lower lobe airspace opacity, concerning for pneumonia. Despite treatment with antibiotics, symptoms and radiological findings persisted. A PET scan revealed a FDG positive right lower lobe pulmonary mass. Biopsy of the mass and lymph nodes revealed non-caseating granulomas suggestive of sarcoidosis. This case showcases a rare presentation of pulmonary nodular sarcoidosis.

1. Introduction

Sarcoidosis is a multisystem inflammatory disorder with a wide-ranging presentation. More than 90% of cases present as pulmonary sarcoidosis, with hilar adenopathy and reticulonodular opacities on radiography [1]. Rarely, it can present as a solitary pulmonary mass. We present a case of nodular pulmonary sarcoidosis presenting as a solitary lung mass masquerading as a primary lung carcinoma.

2. Case

A 39 year old African-American male with no significant medical history presented with fever, dry cough, and pleuritic chest pain for one month. He endorsed drenching night sweats with a ten-pound weight loss. Review of systems was positive for diarrhea, lack of appetite, headache, and myalgia. Social history was significant for tobacco and marijuana use including vaping products. He had no significant occupational or drug exposure. On examination he had a temperature of 101.8 °F, pulse of 83 beats per minute, blood pressure of 135/79 mmHg, respiratory rate of 20 breaths per minute, and no significant systemic findings. Laboratory workup revealed a leukocytosis of 13,000 cells/μL, a negative influenza and respiratory syncytial virus panel. Chest x-ray revealed a right lower lobe airspace opacity. A computed tomography (CT) of his chest showed a 6 × 4.7 × 3.3 cm right lower lobe mass-like density, enlarged right hilar lymph node measuring 1.5 cm, and scattered pulmonary nodules (Fig. 1). He was discharged home with a course of antibiotics and prednisone.

Due to unremitting symptoms a CT scan four weeks later showed persistent right lower lobe opacity, right hilar lymph node, and a small right pleural effusion, concerning for a primary lung carcinoma. A positron emission tomography (PET) scan revealed a markedly PET positive right lower lobe pulmonary mass, right hilar lymph node, mediastinal lymph nodes, and osseous lesions concerning for a metastatic disease (Fig. 2). A bronchoscopy and endobronchial ultrasound (EBUS) showed no endobronchial lesions. Cultures from bronchoalveolar lavage, biopsy, and flow cytometry were negative. Pathology, however, showed granulomas from the right hilar lymph node. A subsequent CT guided biopsy of the right lower lobe opacity revealed non-necrotizing granulomas, with no evidence of malignancy (Fig. 3).

An extensive infectious workup was negative. A repeat CT scan 4 months later showed a reduction in the right lower lobe mass, hilar lymph node, and resolution of the right pleural effusion (Fig. 1). The patient also endorsed improvement in symptoms.

3. Discussion

Sarcoidosis is a multi-organ immunological disease of unknown etiology histologically characterized by non-necrotizing granulomas. Pulmonary sarcoidosis is seen in 90% of cases, however 30% of patients can present with extrapulmonary manifestations [1]. Pulmonary sarcoidosis is characterized by hilar adenopathy and reticulonodular opacities on radiological imaging. Though less common, pulmonary sarcoidosis can...
present as a single pulmonary nodule, multiple pulmonary nodules, or solitary pulmonary mass, findings which may mimic malignant disease. Differentiating between malignancy and sarcoidosis is often difficult as presentation and imaging are similar.

Nodular sarcoidosis represents a rare atypical form of pulmonary sarcoidosis, with an incidence of 1.6–4% [2]. Due to its limited incidence and reporting, little is known about nodular sarcoidosis. Similar to other presentations of sarcoidosis it commonly affects African-American women [3]. The mean age of presentation is 35 years of age [4]. Patients typically present with constitutional symptoms including fever, fatigue, and weight loss. Although the symptoms can be unremittent and disturbing, there is minimal impairment in lung function [5]. Imaging typically reveals multiple pulmonary nodules or masses, seen when granulomas coalesce [6]. However, solitary pulmonary lesions have been reported. An observational study on 33 cases of nodular sarcoidosis revealed that 18% of patients presented with a solitary mass or nodule [4]. Although large pulmonary masses are extremely rare, nodular sarcoidosis of size up to 7.5 cm have been described [7]. Lesions predominately involve the upper lobes and are generally located in the periphery of the lungs, with ill defined, irregular borders [4,8]. PET scans are inadequate to differentiate between sarcoidosis and malignancy as both are FDG positive and can affect multiple organs.

Pathological diagnosis is the gold standard test to irrefutably diagnose sarcoidosis. Both transbronchial and transthoracic biopsy have been well described. Biopsy of more than one area should be considered, as malignancy can have reactive granulomatous changes. Classically, histology will reveal non-necrotizing granulomas commonly coalesced together, with negative fungal, acid-fast bacilli, and bacterial cultures.

Treatment of nodular sarcoidosis is similar to other presentations of sarcoidosis. Glucocorticoids are considered the first line treatment, as they attenuate the inflammatory process. For patients who do not tolerate or respond to steroid therapy, immunosuppression therapy can be considered. Fortunately, nodular sarcoidosis has a favorable outcome and a handful of cases resolve spontaneously without treatment [9].

This case highlights the various pulmonary manifestations of sarcoidosis. Nodular sarcoidosis presenting as a solitary pulmonary mass is a significantly rare presentation of pulmonary sarcoidosis. This showcases the importance of maintaining a broad differential diagnosis.

Due to its low incidence and nonspecific biochemistry laboratory findings, biopsy is key to diagnosis.

Declaration of competing interest

We declare no conflict of interests and have received no funding for this publication. The manuscript is original, and has not been published nor is in consideration for publication elsewhere. All authors have reviewed and approved the manuscript. All author members have been listed above.

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