

Necrobiotic Cavitory Pulmonary Nodules: A Case Report

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A 52-year-old caucasian woman presented from an outside hospital with dyspnea, headache, and 30 pound weight loss over the previous two years. She had a temperature to 100.8 F on arrival, and Computed Tomography (CT) showed lung nodules with the presence of questionable pneumonia. Her history was notable for rheumatoid arthritis treated with methotrexate, diabetes mellitus, asthma, hypertension, hypothyroidism and hyperlipidemia. She denied any tobacco, alcohol or drug use. A repeat CT demonstrated multiple, irregular, thick-walled pulmonary nodules and masses, many with central cavitations, in a predominantly peripheral basilar distribution. Some of these appear to have grown in size from the previous CT scan obtained 2 months ago, and a few were partially calcified in the left lower lobe (Figure 1). A CT guided percutaneous biopsy was performed, with a fine needle aspirate negative for malignancy, showing granulomatous inflammation, macrophages, and benign bronchial cells (Figure 2) and a core showing benign lung parenchyma with chronic inflammation and broad zones of necrosis (Figures 3A and 3B). GMS, PAS, and AFB stains were all negative for organisms. The patient returned for follow-up CT 2 months later (Figure 4) demonstrating numerous bilateral, centrally cavitating nodules in each lung lobe, predominantly in the lower segments. A thoracoscopy was performed with conversion to mini thoracotomy for a second biopsy, which again showed necrotizing granulomatous inflammation negative on special staining for acid

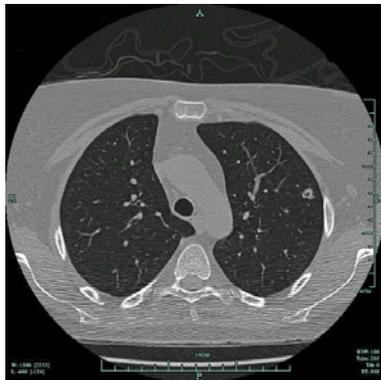


Figure 1: Presenting Thoracic CT with Multiple Bilateral Pulmonary Nodules.

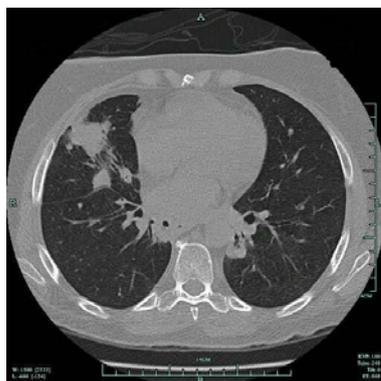
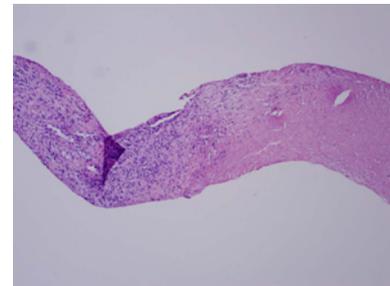
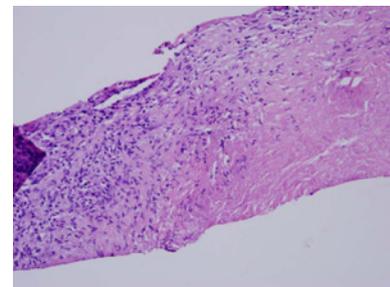


Figure 2: Fine Needle Aspirate of Rheumatoid Nodule.



Figures 3(A): Core Biopsy of Rheumatoid Nodule 10x Surrounding palisading histiocytes, vascular granular tissues, and migrating macrophages.



Figures 3(B): Core Biopsy of Rheumatoid Nodule 20x: Central collagen fibrinoid necrobiotic areas.

fast and fungal organisms. Given the clinical presentation, pathology results, and imaging, necrobiotic rheumatoid nodules were diagnosed. The patient was subsequently discharged, and follow-up chest X-ray demonstrated no significant change from prior exam. She is currently doing well, and will be followed by an outside rheumatologist.

Rheumatoid arthritis is a chronic, immune-mediated illness wherein polyarthritis is the most common presentation [1]. Extra-articular manifestations are significant in prognostication, as they tend to correlate with mortality [2,3]. Though usually restricted to pressure-prone subcutaneous sites such as the olecranon and digits, systemic rheumatoid arthritis rarely can develop in sites as the lungs, gastrointestinal tract, or brain [4-7]. Histological, pulmonary nodules are characterized by central fibrinoid necrosis, with significant surrounding epithelioid-activated macrophages [8]. The area extraneous to this is vascular, containing inflammatory migrating

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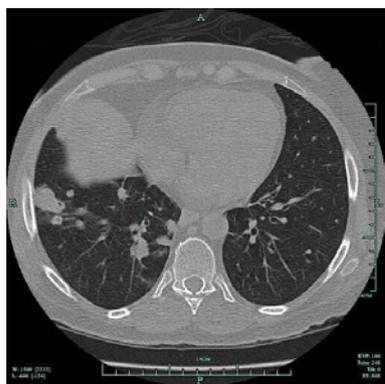


Figure 4: Follow-Up CT.

macrophages and T-lymphocytes, similar to granulomatous disease [9]. Due to the similarities between this condition and other immunological and pulmonary phenomena, clinicians must be cognizant of the large differential present when faced with a patient with this presentation. The differential diagnosis for cavitory pulmonary nodules may include Wegener's granulomatosis, septic emboli primary or secondary malignancies, amyloidosis, sarcoidosis, lymphoma, histoplasmosis, tuberculosis, and foreign body granulomas, though infection is the most likely cause [10-12]. Confirmatory diagnosis thus may only be ascertained by biopsy and pathological verification, as in this scenario.

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