SARCOIDOSIS AS CHEST PAIN: AN ATYPICAL CLINICAL PRESENTATION

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ABSTRACT

A 36-year-old man reported a four-month history of left-sided chest pain accompanied by exertional dyspnea. Initial physical examination and routine laboratory tests were unremarkable. Chest X-ray showed bilateral diffuse interstitial nodular opacities with perihilar consolidations. Follow-up chest CT revealed peri-lymphatic nodularity mainly affecting the mid and upper lung zones, distributed along peri-bronchovascular bundles, subpleural surfaces, and fissures. This resulted in central upper lobe conglomerations, along with hilar and mediastinal lymphadenopathy. The next day, bronchoscopy with endobronchial ultrasound-guided transbronchial biopsy was performed. The histopathological analysis identified non-necrotizing, well-formed granulomas within dense, hyalinized, sclerotic tissue, confirming the diagnosis of sarcoidosis.

Sarcoidosis is a systemic granulomatous disorder pathologically characterized by the formation of non-necrotizing granulomas. Global epidemiological data remain incomplete, largely because many cases remain clinically silent. When symptomatic, patients typically exhibit respiratory manifestations including chronic cough, dyspnoea, or thoracic discomfort. In emergency settings, management priorities include preventing disease-related complications through the use of appropriate laboratory and imaging studies, coordinated with specialist input, followed by prompt outpatient follow-up.

While sarcoidosis does not rank among the six most critical aetiologies of chest pain, clinicians should consider it in their differential diagnosis. Early recognition helps prevent the progressive organ damage and significant morbidity seen in advanced disease stages.

Keywords: Sarcoidosis, Lung Diseases, Chest Pain, Chronic Cough, Bronchoscopy, Granuloma, Dyspnoea, Radiography, Lung

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INTRODUCTION

Chest pain is the second most common chief complaint in emergency departments, accounting for approximately 6.4 million cases each year. Practical clinical evaluation requires quickly distinguishing between possible causes to reduce both immediate and long-term complications. [1] While pulmonary sarcoidosis rarely leads to sudden life-threatening issues, it remains an important diagnosis to consider in certain patients presenting with chest pain. Prompt intervention is essential to prevent ongoing lung damage and other related complications. We present a case of a 36-year-old man with pulmonary sarcoidosis, focusing on rapid specialist consultation and diagnostic steps to avoid future disease problems.

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CASE PRESENTATION

A 36-year-old Caucasian male presented to the emergency department with a four-month history of left-sided chest discomfort and exertional dyspnea. He described the pain as a persistent, dull ache that is not related to exertion. He also reported a longstanding, non-productive cough unrelated to acute illness or physical activity, along with an unintentional weight loss of 12 pounds over the past month. His medical history was significant only for prior ureterolithiasis, and he reported no regular medication use. Tuberculosis screening with purified protein derivative testing conducted months earlier was negative. The patient had no history of tobacco use and no family history of autoimmune or genetic disorders.

Initial assessment revealed typical vital signs. Pulmonary auscultation detected mild wheezing and coarse breath sounds localized to the left upper lung field, without evidence of egophony or pectoriloquy. Examination showed no cutaneous abnormalities or digital clubbing.

DIAGNOSTIC EVALUATION INCLUDED:

- Electrocardiography demonstrating normal sinus rhythm (82 bpm) without ischemic changes
- Unremarkable laboratory results (complete blood count, comprehensive metabolic panel, and troponin T)
- Chest radiography reveals bilateral diffuse interstitial nodular opacities with perihilar consolidations, more pronounced on the left (Image 1)
- Contrast-enhanced chest CT showing peri-lymphatic nodularity mainly in the mid and upper lung zones, distributed along peri-bronchovascular bundles, subpleural surfaces, and fissures, with associated central upper lobe conglomerations and mild bilateral hilar/mediastinal lymphadenopathy (Image 1).

Following the pulmonologist`s consultation, the working diagnosis encompassed lymphoma, mycobacterial infection, fungal aetiologies, and sarcoidosis. Diagnostic bronchoscopy with endobronchial ultrasound guidance was performed, including transbronchial biopsies

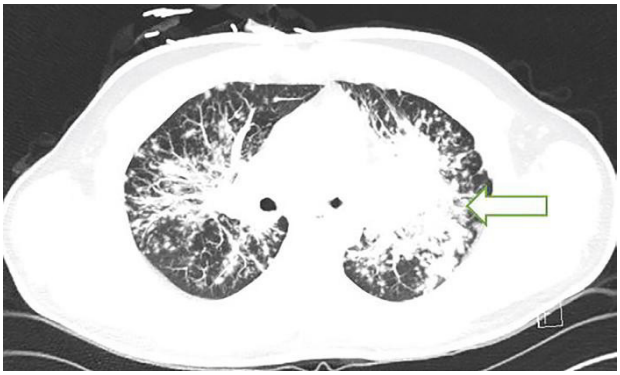

Image 1: Contrast-enhanced chest CT demonstrated peri-lymphatic nodularity predominantly affecting the mid and upper lung zones, distributed along peri-bronchovascular bundles as well as subpleural and fissural surfaces (arrow).

and bronchoalveolar lavage. The lavage fluid showed no evidence of fungal elements, acid-fast bacilli, or neoplastic cells. Histopathological examination of biopsy specimens demonstrated multiple non-necrotizing granulomas within hyalinized sclerotic tissue, confirming pulmonary sarcoidosis (Stage 3). Treatment was initiated with daily prednisone and thrice-weekly sulfamethoxazole-trimethoprim prophylaxis for two months. This regimen resulted in complete symptomatic resolution.

DISCUSSION

Sarcoidosis is a systemic granulomatous disorder of unknown cause, characterized by the proliferation of CD4+ T-helper lymphocytes and the activation of macrophages in affected tissues. Current evidence indicates that these results are due to an abnormal immune response to environmental triggers or microbial antigens in individuals with a genetic predisposition. [2, 3]

The actual global prevalence remains difficult to determine because of the high rate of asymptomatic cases; however, U.S. estimates suggest an annual incidence of roughly 60 cases per 100,000 adults. [4] Epidemiologic studies show a bimodal age distribution, with over 80% of cases occurring between ages 20-50 years and a secondary peak observed in patients aged 50-65 years. [2, 3] The disease tends to affect female patients, African American populations, and nonsmokers, with about 10% exhibiting familial clustering. [2-4] While mortality rates range from 2-5%, mainly due to respiratory complications, chronic disease symptoms often lead to significant morbidity. [5]

Sarcoidosis exhibits significant variability in both onset and clinical signs, depending on the affected organ systems, necessitating ongoing diagnostic vigilance. Pulmonary involvement is the most common, occurring in over 90% of cases. [2] Extrapulmonary manifestations often involve the liver, spleen, musculoskeletal system, skin, cardiovascular tissue, and neural structures. [2, 3] About 30% of patients are asymptomatic at diagnosis, with abnormalities found incidentally. [5]

The most common symptomatic presentations include chronic cough, shortness of breath, or chest discomfort of unclear cause.[4,5] Typical findings may include fever episodes, erythema nodosum, and bilateral hilar lymphadenopathy (Löfgren syndrome). [3, 4] Systemic complications such as disturbances in calcium metabolism, kidney stones, inflammatory joint disorders, and heart problems should lead to a thorough evaluation. [6] Other classic presentations include Heerfordt-Waldenström syndrome, which features uveo-parotid inflammation along with cranial nerve issues. [2, 3]

Diagnosing sarcoidosis often takes 3-6 months from the initial presentation due to its varied symptoms. The diagnosis relies on three main criteria: compatible clinical and radiographic signs, histopathological confirmation of noncaseating granulomas, and thorough exclusion of other possible conditions. Initial lab work should include a complete blood count, a comprehensive metabolic panel (including kidney and liver function tests), serum and urinary calcium levels, vitamin D levels, and angiotensin-converting enzyme levels. Necessary infectious disease tests should include HIV screening and tuberculosis evaluation.

Imaging and procedural evaluation typically involve chest radiography and computed tomography, with bronchoscopy providing histopathological confirmation through biopsy specimens and bronchoalveolar lavage analysis. Pulmonary function testing offers additional objective measures when clinically appropriate. Chest radi-

ography remains especially valuable because it shows characteristic pulmonary involvement patterns that are classified into four progressive stages according to the Scadding system.

Therapeutic intervention in sarcoidosis is primarily recommended for patients with symptomatic active disease.[4] Current guidelines indicate that asymptomatic patients with Stage I disease, characterized by bilateral hilar lymphadenopathy without parenchymal involvement, generally do not require pharmacologic treatment but should undergo annual clinical and radiographic monitoring.[3]

For symptomatic patients with Stage II or III pulmonary involvement, systemic corticosteroids are the first-line treatment, with follow-up assessments recommended every three months. The same approach applies to patients with significant extrapulmonary manifestations requiring treatment. The standard initial regimen includes prednisone 20-40 mg daily for 4-6 weeks, followed by a gradual taper in responders.[3] Treatment response should be evaluated every 3-6 months through a comprehensive assessment, including symptom monitoring, pulmonary function tests, and chest X-rays. [5]

When corticosteroid therapy fails or is poorly tolerated, methotrexate is the most frequently used second-line agent. Other options for refractory cases include azathioprine, leflunomide, or TNF-□ inhibitors such as infliximab, particularly for patients with worsening disease despite standard treatments. [3, 4]

Patients developing Stage IV pulmonary fibrosis with treatment failure should be referred promptly for lung transplantation evaluation. Comprehensive management must also include regular screening for potential complications, such as cardiac sarcoidosis and pulmonary hypertension, along with appropriate intervention when these conditions are identified. Disease relapse is common, especially in pulmonary cases, making ongoing surveillance essential.

Therapeutic complications pose significant challenges in long-term management. Corticosteroid use carries risks of metabolic problems, such as diabetes mellitus and hypertension, while all immunosuppressive therapies increase susceptibility to opportunistic infections like pulmonary aspergillosis and Pneumocystis jirovecii pneumonia. [3, 5] In the United States, progressive respiratory failure caused by pulmonary fibrosis is the leading cause of death related to sarcoidosis. [2, 3, 5] The development of pulmonary hypertension in chronic fibrotic disease not only indicates a higher risk of death but may also require evaluation for transplantation.

CONCLUSION

While emergency physicians are skilled at recognizing and managing immediate causes of chest pain that could be life-threatening, they must also stay alert for conditions like sarcoidosis that, although not acutely dangerous, could cause serious long-term health problems if not properly treated. Effective emergency department management of such cases involves prompt specialty consultation and clear follow-up plans for patients with symptoms, to ensure appropriate ongoing care.

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