Case Report

# Sarcoidosis: A great mimicker of lymphoma: A case report

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## ABSTRACT

Sarcoidosis is a chronic inflammatory condition of multifactorial origin. Positron emission tomography-computed tomography (PET-CT) is a useful tool for diagnosing and prognosticating the disease. Here, we present the case of a 62-year-old female, a known diabetic, who presented with a history of progressive weight loss despite optimal control of her diabetes. X-ray and ultrasound abdomen showed features of generalized lymphadenopathy, and PET-CT findings were suggestive of lymphoma. A biopsy of the lymph node revealed non-caseating granuloma, and serum angiotensin-converting enzyme levels were not elevated. Diagnosis of sarcoidosis was considered, and started on oral steroids. An interval CT scan showed a reduction in the size of the lymph nodes and an improvement in symptoms. Hence, physicians should use clinical, radiological, and pathological tools together to differentiate sarcoidosis from other inflammatory disorders with generalized lymphadenopathy.

**Key words:** Lymph nodes, Lymphoma, Positron emission tomography-computed tomography, Sarcoidosis

Sarcoidosis is a multisystem granulomatous disease of unknown etiology, characterized histologically by the presence of non-caseating granulomas. The lungs and intrathoracic lymph nodes are the most commonly affected sites, but virtually any organ system may be involved. Clinical presentation is highly variable, ranging from asymptomatic radiographic findings to severe systemic illness [1]. The diagnosis of sarcoidosis often poses a challenge due to its ability to mimic other conditions, such as lymphoma, tuberculosis, and other granulomatous diseases. In particular, fluorodeoxyglucose-positron emission tomography-computed tomography (FDG-PET-CT), while valuable for detecting metabolically active lesions, may not reliably differentiate between sarcoidosis and malignancies [2].

We report a case of systemic sarcoidosis initially suspected to be lymphoma on PET-CT, but subsequently diagnosed through lymph node biopsy.

## CASE REPORT

A 62-year-old female, known diabetic on oral hypoglycemic agents and insulin therapy, had optimal control of diabetes. She presented with a history of weight loss of 8 kg over a 3-month duration. There was a history of mild night sweats. She had no history of fever, loss of appetite, or early satiety. There were no symptoms of abdominal discomfort, dysphagia, jaundice, or diarrhea. No clinical symptoms of thyrotoxicosis. She had no cardio-respiratory complaints.

A general physical examination revealed few discrete cervical lymph nodes, and systemic examination was unremarkable, and there was no organomegaly.

The patient underwent routine investigations, which showed elevated erythrocyte sedimentation rate (70 mm/h). Her complete blood count, renal parameters, and liver function tests were within normal limits. HbA1c was 6.9%

Chest X-ray showed bilateral hilar lymphadenopathy with few discrete micronodularities and increased broncho-vascular markings (Fig. 1). Ultrasound abdomen showed mild hepatomegaly with multiple periportal and peripancreatic lymph nodes. In suspicion of tuberculosis, sputum (induced) for acid-fast bacillus, cartridge-based nucleic acid amplification test (CB-NAAT), and Mantoux test were done, which were found to be negative. HIV serology was negative. FDG-PET scan was done in view of the evaluation of lymphadenopathy, which showed multiple enlarged metabolically active cervical and supraclavicular, mediastinal, hilar, perihilar, and upper abdominal lymphadenopathy, suggestive of lymphoma (Fig. 2). There were also FDG-reactive multiple nodular lesions in the lungs. A possibility of stage IV lymphoma with pulmonary infiltration was reported by a radiologist.

The supraclavicular lymph node biopsy was taken, which showed multiple discrete non-caseating granulomas with multinucleated giant cells with no evidence of lymphoma (Fig. 3).

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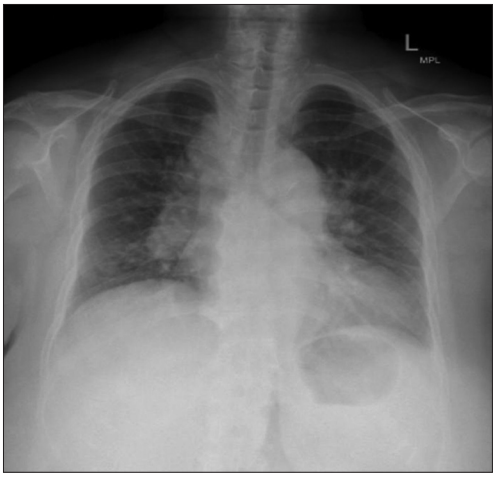

**Figure 1: Chest X-ray shows bilateral hilar lymphadenopathy and right paratracheal lymphadenopathy giving a Garland triad, also known as the 1-2-3 sign, with few discrete micronodularity and increased bronchovascular markings**

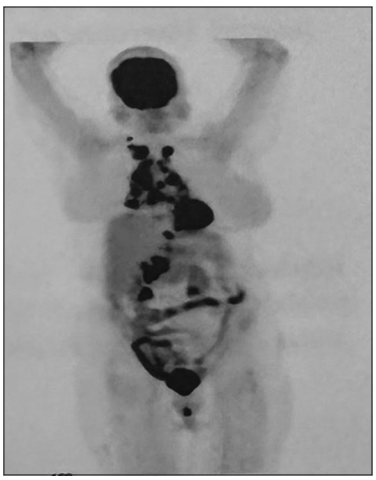

**Figure 2: Fluorodeoxyglucose (FDG)-positron emission tomography scan shows multiple enlarged metabolically active lymph nodes in cervical, supraclavicular, mediastinal, bilateral hilar, infra-hilar, right anterior and posterior para-cardiac, and upper abdominal region. There were also FDG-reactive multiple nodular lesions in the lungs**

With the differentials of sarcoidosis, tuberculosis, and lymphoma in mind, serum angiotensin-converting enzyme (ACE) levels were tested and found to be within normal limits (26.00 U/L). Serum calcium was in the upper limit of normal (11 mg %). Since there was no other evidence of disseminated tuberculosis, and there was symmetrical hilar lymphadenopathy, the patient was diagnosed with possible sarcoidosis and started on steroid treatment.

The patient was followed and monitored for response, after 6 weeks with a tapering dose of steroids. The patient had gained 2 kg of weight, and an interval CT scan was done, which showed a reduction in the size of the hilar lymphadenopathy (Fig. 4a and b). The patient is doing well on follow-up and is on a minimal dose of steroids.

## DISCUSSION

Sarcoidosis is a chronic multisystem inflammatory disorder of unknown etiology, characterized by the formation of non-caseating granulomas. Its pathophysiology involves a complex interplay of genetic susceptibility, environmental triggers, and immune dysregulation. Microbial agents such as *Mycobacterium* and *Propionibacterium acnes* have been implicated as potential antigens that initiate granulomatous inflammation in genetically predisposed individuals [1].

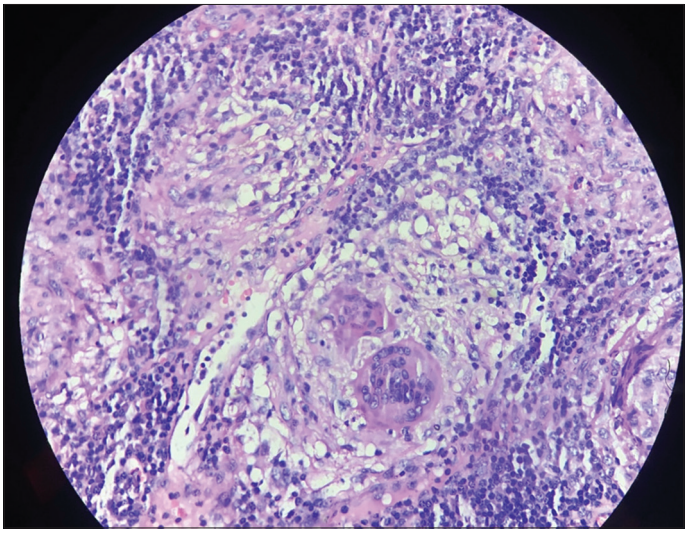

**Figure 3: Histopathology shows granuloma with multinucleated giant cells with minimal necrosis**

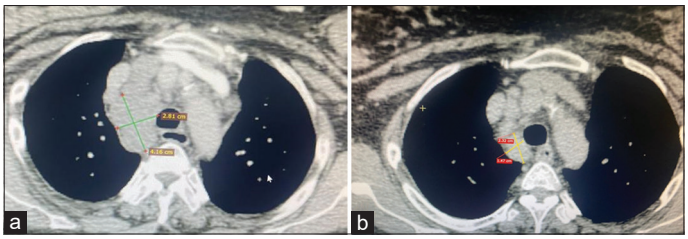


**Figure 4: Contrast-enhanced computed tomography of the thorax shows a right hilar lymph node measuring 42 × 28 mm (a), which should be reduced in size and measured 23 × 14 mm on follow-up after 6 weeks of treatment (b)**

The lungs are the most commonly affected organ, and pulmonary sarcoidosis typically presents with symptoms such as dry cough, fatigue, and exertional dyspnea. In advanced stages, it can progress to respiratory failure. The scadding classification, based on chest radiographic findings, remains a useful tool in both the diagnosis and prognostication of pulmonary sarcoidosis [2].

Lymphadenopathy, particularly bilateral symmetrical hilar lymphadenopathy, is a hallmark of sarcoidosis [3]. Extrathoracic involvement, particularly of the abdomen, is also frequent and may manifest as asymptomatic transaminitis, periportal, and para-aortic lymphadenopathy, or hepatosplenomegaly [4]. Generalized lymphadenopathy, while a known presentation, can mimic other pathologies such as tuberculosis or lymphoma, leading to diagnostic confusion.

Laboratory findings such as elevated serum ACE and hypercalcemia are supportive but not definitive for diagnosis. Notably, ACE levels can be elevated in other conditions, including lymphoma [5]. In our case, while serum calcium was within the

upper normal range, ACE levels were not elevated, demonstrating the limited sensitivity of these markers.

The differentiation between sarcoidosis and lymphoma is particularly challenging, given that both conditions can present with non-caseating granulomas. There are case reports of lymphomas presenting with granulomatous inflammation, further complicating the diagnostic process [6]. The term "sarcoidosis-lymphoma syndrome" was introduced by Brincker in 1986 to describe the association between sarcoidosis and lymphoproliferative disorders, particularly where sarcoidosis precedes the diagnosis of lymphoma [7,8]. Our patient presented with strong clinical and radiological suspicion of lymphoma; however, histopathological evaluation revealed non-caseating granulomas consistent with sarcoidosis. The patient showed marked clinical improvement following corticosteroid therapy. Tuberculosis, a major differential diagnosis, was excluded based on negative tissue CB-NAAT results.

Chest radiography remains the initial imaging modality of choice, often complemented by CT for detailed evaluation. In cases with systemic manifestations, magnetic resonance imaging and FDG-PET can be employed. FDG-PET, based on the Warburg effect, is increasingly used in evaluating malignancies, fever of unknown origin, and inflammatory conditions [9]. However, false positives due to conditions such as tuberculosis, sarcoidosis, and autoimmune disorders are well-documented [10].

Recent studies suggest that FDG-PET may have both diagnostic and prognostic roles in sarcoidosis, especially in assessing disease activity and guiding biopsy sites [11]. Ultimately, a combination of clinical, radiological, and histopathological data are essential to confirm the diagnosis of sarcoidosis and to effectively rule out malignancy and infections.

Although sarcoidosis is often self-limiting, treatment is indicated in cases with organ dysfunction, neurosarcoidosis, or hypercalcemia. Corticosteroids remain the mainstay of treatment, whereas steroid-sparing agents such as methotrexate and azathioprine are useful in long-term management or when steroids are contraindicated [12].

## CONCLUSION

Sarcoidosis is a multisystem inflammatory disorder that can closely mimic malignancies such as lymphoma, especially when presenting with generalized lymphadenopathy and FDG-avid lesions on PET-CT. This case highlights the diagnostic challenges involved and underscores the importance of integrating clinical, radiological, and histopathological data to arrive at a definitive diagnosis. While PET-CT is a valuable imaging modality, it should not be interpreted in isolation. Early and accurate diagnosis of sarcoidosis allows for the timely initiation of appropriate immunosuppressive therapy, thereby avoiding unnecessary oncological treatments and improving patient outcomes.

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