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Mycobacterial Spindle Cell Pseudotumor of the Lymph Nodes

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Abstract

Mycobacterial spindle cell pseudotumor (MSP) is characterized by benign proliferation of spindle-shaped histiocytes containing acid-fast *Mycobacterium*. It is usually seen in immunocompromised patients. Limited literature is available regarding MSP. In this article, we report a case of 36-year-old African American male with past medical history of HIV (diagnosed in 2005), noncompliance who presented with generalized weakness, fever, and dizziness on ambulation and was found to have generalized lymphadenopathy and underwent biopsy of the lymph nodes, which was consistent with MSP.

Keywords

acquired immunodeficiency syndrome, *Mycobacterium avium*, *Mycobacterium tuberculosis*, MTB, HIV, spindle cell tumor, mycobacterial spindle cell pseudotumor, immunosuppression

Introduction

Lymphadenopathy can be caused by a number of diseases and drugs and the location of lymphadenopathy can often point toward specific etiologies. A history and physical examination will most often lead to a differential diagnosis of peripheral lymphadenopathy, which often requires further evaluation (eg, laboratory evaluation, imaging, and/or biopsy).

Human immunodeficiency virus (HIV) infection has become a global pandemic and can affect every system in the human body and thereby can have wide spectrum of clinical manifestations.

Lymphadenopathy is common in HIV infection. Nontender adenopathy primarily involving the axillary, cervical, and occipital nodes develops in the majority of individuals during the second week of acute symptomatic HIV infection, concomitant with the emergence of a specific immune response to HIV.[1] Furthermore, different opportunistic infections such as tuberculosis, toxoplasmosis, disseminated fungal infections (histoplasmosis), cytomegalovirus infection, and malignancy such as non-Hodgkin lymphoma and sarcoidosis may also present with lymphadenopathy.[2] We report a case of 36-year-old African American male with past medical history of HIV who presented with generalized weakness, fever, and dizziness on ambulation and was found to have generalized lymphadenopathy and underwent biopsy of the lymph node, which was consistent with MSP.

Case Presentation

A 36-year-old African American male with a past medical history of HIV (diagnosed in 2005) presented to the emergency department for generalized weakness, fever, and dizziness on ambulation. The patient has not been taking his anti-HIV medications for past 3 years. Review of system positive for non-bloody diarrhea, 40 pounds weight loss over several months, chills, night sweats, and productive cough. Vital signs on presentation revealed blood pressure of 118/62 mm Hg, heart rate of 136 beats/minute, respiratory rate of 14 breaths/minute, temperature of 38.5 °C, and oxygen saturation of 99% on room air. On examination, there were palpable bilateral axillary lymphadenopathy. On initial laboratory evaluation, the following values were noted: total leucocyte count 9.4 $\times$ 10^3/μL (4.5-11 $\times$ 10^3/μL), hemoglobin 9.2 g/dL (12-15.5 g/dL), platelets 112 $\times$ 10^3/μL (140-440 $\times$ 10^3/μL), absolute neutrophil count 6.47 $\times$ 10^3/μL (1.7-7 $\times$ 10^3/μL), absolute lymphocyte count 0.50 $\times$ 10^3/μL (0.9-2.9$\times$ 10^3/

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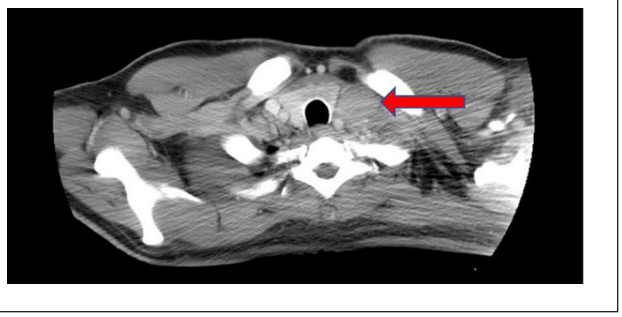

Figure 1. Computed tomography showing left supraclavicular adenopathy.

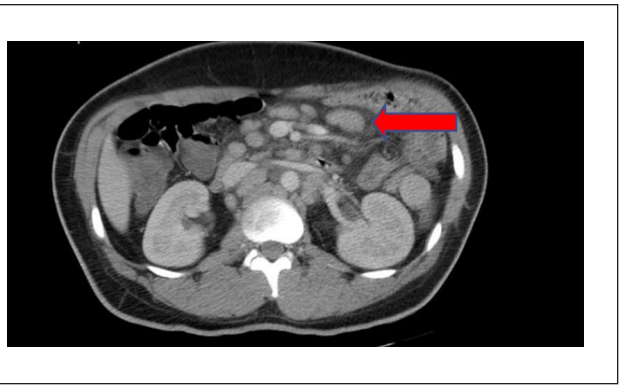

Figure 2. Computed tomography showing multiple enlarged mesenteric lymph nodes.

μL), blood urea nitrogen 16 mg/dL (8.6-10.3 mg/dL), serum creatinine 1.07 mg/dL (0.60-1.30 mg/dL), troponin 0.045 ng/mL (<0.03 ng/mL), creatinine kinase 86 U/L (30-223 U/L), prothrombin time 13.7 seconds (9.9-13 seconds), international normalized ratio 1.0 (0.9-1.1), partial thromboplastin time 44.7 seconds (25.2-37.4 seconds), HIV viral load 1 423 440 copies/mL, CD4 helper cells 5/μL (359-1519/μL), CD4/CD8 ratio 0.03 (0.92-3.72), lactate dehydrogenase 359 U/L (140-271 U/L), ferritin level 4412.0 ng/mL (16.4-294 ng/mL), and lactic acid was 1.3 mmol/L (0.5-2.2 mmol/L). Electrocardiogram showed sinus tachycardia of 111 beats/minute. Computed tomography (CT) of the head without contrast was negative. Chest X-ray showed no active disease. Noncontrast CT of the chest, abdomen, and pelvis showed left supraclavicular adenopathy (Figure 1), multiple enlarged mesenteric lymph nodes (Figure 2), mildly enlarged retroperitoneal lymph node, and hepatosplenomegaly. An excisional biopsy of the left axillary lymph node revealed epithelioid histiocytic aggregates without caseating necrosis and acid-fast bacilli within the epithelioid histiocytes (Figures 3 and 4). Immunohistochemistry analysis was positive for CD68 (Figure 5) and negative for S100, CD21, CD1a, and CD35. These results were consistent with mycobacterial spindle cell pseudotumor. Blood, stool, and sputum

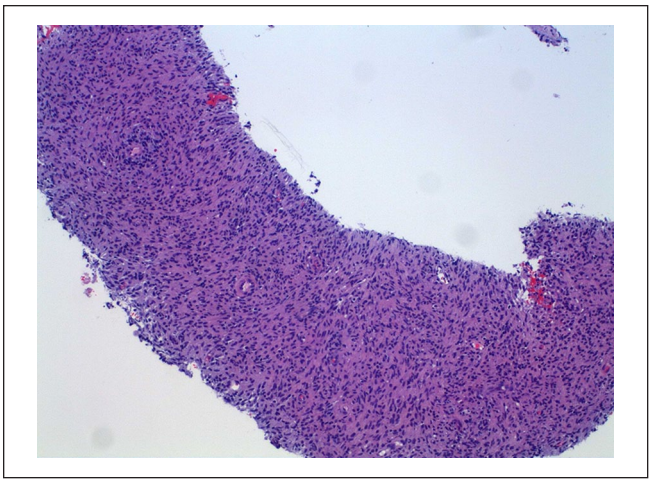

Figure 3. Biopsy of the axillary lymph node showing epithelioid histiocytic aggregates without caseating necrosis (hematoxylin and eosin ×200) and acid-fast bacilli within the epithelioid histiocytes.

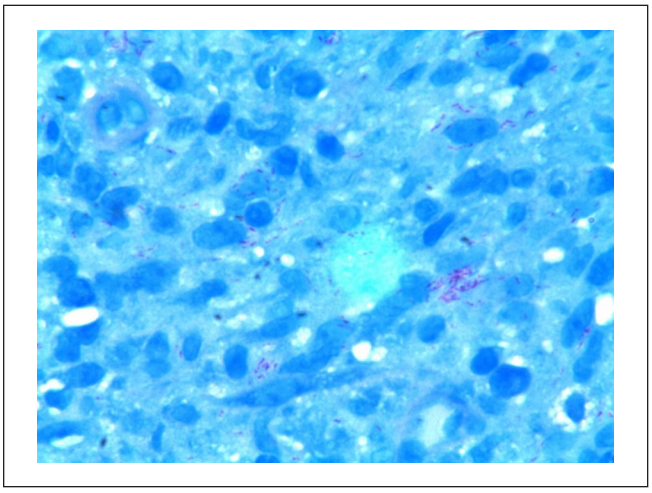

Figure 4. Acid-fast stain of the lymph node revealed numerous positive bacilli.

cultures were positive for *Mycobacterium avium*. Polymerase chain reaction of the biopsy tissue was negative for *Mycobacterium tuberculosis* complex. The patient was started on ethambutol, azithromycin, and rifabutin. His symptoms including dizziness improved over the course of his hospital stay. Fever resolved after day 9 of initiation of antimycobacterial drugs. Antiretroviral therapy was started on day 10 post commencement of antimycobacterial drugs. He was seen in infectious disease outpatient clinic a month after the diagnosis and was improving clinically.

Discussion

Mycobacterial spindle cell pseudotumor (MSP) was first reported in 1985 in a 54-year-old cardiac transplant patient who presented with progressive swelling in the hand and

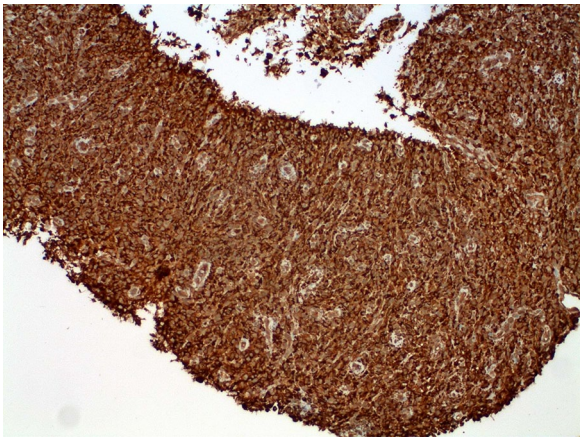

Figure 5. Immunohistochemistry analysis positive for CD68.

organism identified was *Mycobacterium avium*.[3] Presenting sign and symptoms depend on the area of involvement by MSP. It can occur in a number of locations with lymph nodes being most common followed by skin. Other site of infection reported in the literature are spleen, liver, colon, appendix, lungs, nasal septum, brain, heart, and bone marrow.[4] Li et al reported a 54-year-old female who presented with chest pain and on imaging (echocardiography/coronary computed tomography) found to have irregular mass of 7 × 3 cm in the left ventricle. The patient underwent surgical resection and pathology was consistent with mycobacterial spindle cell pseudotumor.[5] Another report of a 50-year-old male who presented 1 × 1 cm indurated ulcer and several yellowish firm papules located on the shaft and free edge of the penis foreskin and biopsy was consistent with MSP.[6]

MSP usually occur in immunocompromised patients (HIV, solid organ transplant, lymphoma, bone marrow transplant, diabetes mellitus, and patients receiving immunosuppressive therapy—corticosteroids, tumor necrosis factor inhibitor, tacrolimus, and azathioprine).[4] It has also reported post Bacille Calmette-Guérin vaccination in infants.[7] Ismail et al reported a 69-year-old Caucasian man with past medical history of sarcoidosis on steroids who presented with headaches and partial seizures and brain imaging showed a contrast enhancing solitary extra-axial tumor within the right temporal area. The patient underwent craniotomy and resection of the mass and path was consisted with MSP.[8]

Kaposi sarcoma and MSP both are associated with HIV. Both can present with similar clinical (skin and/or visceral organs involvement) and pathological (spindle cell proliferation) manifestations; however, differentiation is of paramount importance given both are treated differently, thereby rigorous histopathological examination should be done. Acid-fast stain can differentiate between the 2 entities. Furthermore, immunostaining helps differentiate between MSP and other spindle cell tumors like histiocytomas, sarcomas, and schwannomas.[8] Most common organism reported to cause MSP is *Mycobacterium avium* complex followed by *Mycobacterium tuberculosis* complex.[4] Mycobacterium culture and/or polymerase chain reaction can identify the organism and guide further treatment based on species identified. Treatment of MSP include antimycobacterial drugs and or surgery. Sfeir et al study demonstrated that antimycobacterial therapy improved outcome as compared with surgery alone or no treatment and suggested that antimycobacterial therapy theory should be given even if the lesion was surgically resected.[4]

Conclusion

Our case adds to the limited literature regarding MSP both clinical and pathological significance. MSP should be included in the differential diagnoses of generalized lymphadenopathy especially in immunosuppressed patients and in-depth histopathological analysis should be done. High index of suspicion is required in the appropriate clinical scenario so that prompt and appropriate intervention can be undertaken.

Declaration of Conflicting Interests

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Ethics Approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed Consent

Verbal informed consent was obtained from the patient for their anonymized information to be published in this article.

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