CASE REPORTS

Unicentric castleman's disease in the posterior pleural cavity

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ABSTRACT

Introduction: Unicentric Castleman's disease is a rare lymphoproliferative disorder. Patients are usually asymptomatic, and disease is found incidentally on imaging studies. Although a benign condition, unicentric Castleman's disease does increase the risk of other malignancies, and therefore, complete surgical resection is recommended. Here we report the case of a 48-year-old smoker who presented with an incidental lung mass.

Case presentation: A 48-year-old man presented to the hospital with a persistent cough in the setting of a 48-pack-year smoking history. A contrast-enhanced CT of the chest revealed a single pulmonary mass in the posterior chest cavity concerning for malignancy.

Conclusions: Unicentric Castleman's disease can be a rare cause of a lung mass. Unlike primary lung malignancy, however, unicentric Castleman's disease has an excellent prognosis.

Key Words: Lymphoproliferative disorder, Human herpes virus 8, Interleukin-6, Lollipop sign

1. INTRODUCTION

Castleman's disease (CD) is an uncommon lymphoproliferative disorder, the pathogenesis of which is not well understood. Also known as angiofollicular lymph node hyperplasia, CD was first described in 1956 by Benjamin Castleman.[1] CD occurs wherever lymph nodes are found, and in 1989, it was recognized that CD was associated with a substance secreted from lymph nodes. Further research led to the discovery of the substance, interleukin-6 (IL-6), a pro-inflammatory cytokine.[2]

In the clinical setting CD has two forms: a unicentric localized disease and a multicentric systemic disease. The forms are dependent on whether the disease affects a single lymph node causing local symptoms or whether the disease elicits a systemic response. There is also histologic variation between unicentric Castleman's disease (UCD) and multicentric Castleman's disease (MCD). UCD can histologically be separated into three subtypes: plasma cell, hyaline vascular, or mixed. Contrary, MCD can be separated into four histologic subtypes: plasma cell, hyaline vascular, mixed, or plasmablastic.[3,4] The hyaline-vascular variant accounts for the majority of unicentric disease and is characterized by lymphoid follicular hyperplasia and vascular proliferation into the interfollicular region. The plasma cell variant is characterized by polyclonal plasma cells within the interfollicular zone, as well as vascular proliferation.

Due to the numerous clinical forms and pathological types, CD can present in a variety of ways. UCD is usually asymp-

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tomatic and presents for the first time incidentally on imaging. MCD, alternatively, occurs most frequently in immunocompromised patients and is often associated with systemic illnesses such as HIV or infection with human herpes virus 8 (HHV-8). HHV-8 is specifically associated with the plasmablastic form of MCD.[5] MCD can manifest itself with a wide range of systemic symptoms, the most notable of which is typical B-symptoms including fevers, night sweats, and weight loss.[6] Patients with MCD often develop secondary tumors such as Kaposi Sarcoma, which is also associated with HHV-8, Hodgkin disease, and non-Hodgkin lymphoma.[5] While MCD is associated with more aggressive disease and relatively poor survival, UCD is a generally indolent process.

UCD most commonly presents in the mediastinum, but other areas including the neck, abdomen, and retroperitoneum are common as well. UCD confined to the thoracic cavity is generally associated with the hila of the lung or the mediastinum.[4] Intrapulmonary involvement is rare.[7] A slight female predominance has been noted, and in contrast to MCD, UCD presents earlier in the third and fourth decades. Although CD is a benign condition, it has been related to an increased risk of other malignancies and diseases, and thus, surgical resection is the current standard therapy for UCD.[1] After surgical resection, annual follow-up with PET/CT and laboratory studies is recommended for five years to ensure the patient remains disease-free.[8] A case of local UCD recurrence 9 years after surgical resection has been reported in the literature.[9]

2. CASE PRESENTATION

A 48-year-old African American male with past medical history significant for depression, hypertension, old granulomatous disease, and a 48-pack year smoking history presented to an outside hospital with a non-productive cough. A contrast-enhanced CT scan of the chest showed a 3.0 cm $\times$ 2.3 cm soft tissue density in the posterior chest adjacent to the T6 left posterior spine (see Figure 1). There was no associated mediastinal lymphadenopathy, although calcified mediastinal lymph nodes were present, likely from old granulomatous disease. The initial differential diagnosis included: peripheral bronchogenic carcinoma, neurogenic tumor, and extramedullary hematopoiesis. Initial laboratory studies revealed a normal CMP, normal CRP, HIV negative, normal liver function tests, normal serum protein electrophoresis, negative Hepatitis B surface antigen, negative Hepatitis B Core IgM, negative Hepatitis A IgM. Abnormal labs included slightly elevated monocytes (10.7), eosinophils (5.8), and Hepatitis C EIA and antibody.

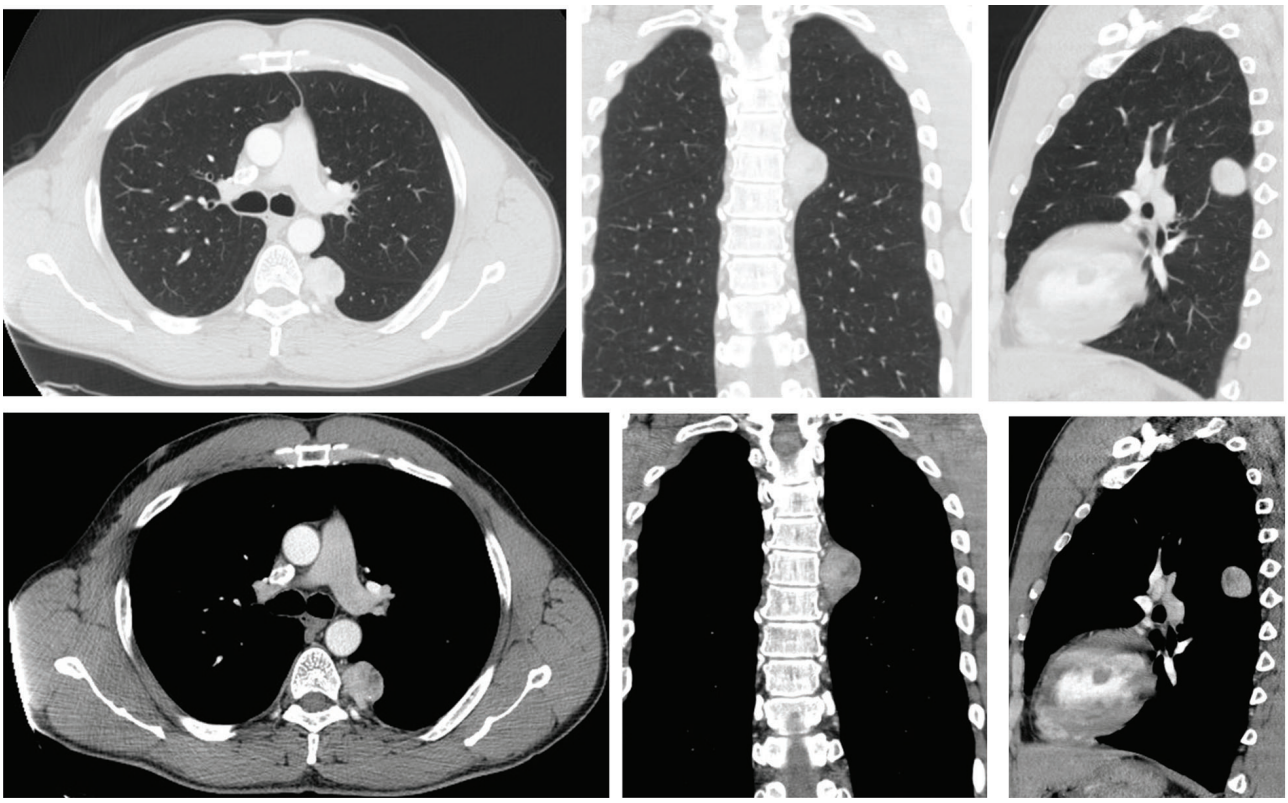

Figure 1. Contrast-enhanced CT Chest. Axial, coronal and sagittal images of the chest on lung and soft tissue windows reveal a pleural-based soft tissue density nodule in the posterior left hemithorax at the level of the carina

For the diagnosis, a CT-guided biopsy of the mass was performed, and initial pathology revealed a reactive lymphoproliferative process. The core biopsy showed lymphoid tissue with an atypical germinal center architecture. One of the H&E sections showed cores of lymphoid tissue with follicles showing moderately accentuated mantle zones with concentric "onion skinning" and small, round germinal centers that appeared focally atretic. Small interfollicular blood vessels showed mild hyalinization with some vessels penetrating into the atretric germinal centers, giving the characteristic "lollipop lesion". The findings were morphologically consistent with Castleman's disease, hyaline vascular variant. The patient subsequently underwent thoracoscopy with complete excision of the lesion. The pathology of the excisional specimen revealed a similar pattern of lymphoid tissue with scattered, spaced out follicles, many of which were atretic and remarkable for expanded mantles with an onion-skin appearance (see Figure 2). Thin hyalinized vessels penetrated to the center of the follicles, resembling a lollipop structure (see Figure 3). Flow cytometry on the pleural fluid showed no significant abnormalities.

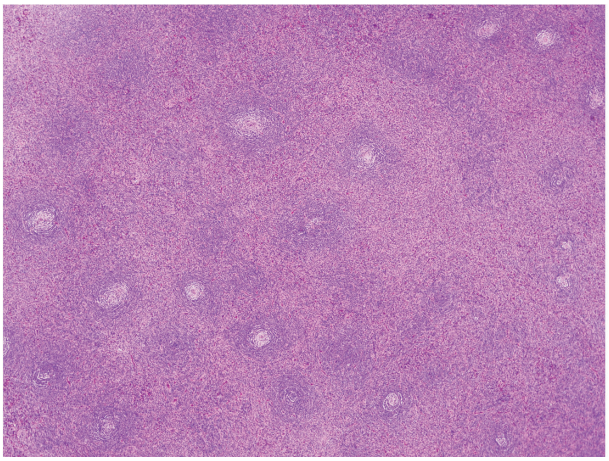

Figure 2. Histopathologic findings include evenly spaced atretic follicles and expanded mantle zones with "onion skinning". Low power image (hematoxylin and eosin, 20 × magnification) of excisional biopsy specimen

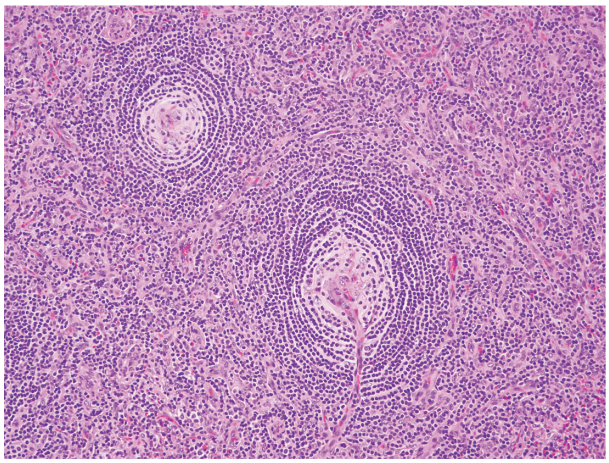

Figure 3. Histopathologic findings include germinal centers fed by hyalinized vessels, giving them a "lollipop" appearance (hematoxylin and eosin, 100× magnification)

3. Discussion

Unicentric Castleman's disease is an isolated lymphoproliferative disorder most frequently seen in young adults. These patients are typically asymptomatic and disease is found incidentally. The exact cause of unicentric Castleman's disease is not known although pro-inflammatory cytokines such as IL-6 are thought to play a strong role. The most commonly involved sites are the mediastinum, retroperitoneum, and axilla.[10] The most common CT finding of UCD is a solitary enlarged lymph node that demonstrates intense post-contrast enhancement.[11] UCD is most often encountered as part of a clinical or radiographic differential diagnosis for an isolated lesion. The diagnosis may be suspected on core biopsy, but since Castleman's-like changes can be seen as a reactive process adjacent to other causes of lymphadenopathy (including malignancies such as carcinoma or lymphoma), excisional biopsy serves as the gold standard for definitive diagnosis. There is no standard therapy indicated for UCD; however, complete surgical excision is usually performed with a 5-year survival rate approaching 100%.[12,13]

Conflicts of Interest Disclosure

The authors have declared no conflicts of interest.

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