Case Report

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Cutaneous diffuse large B cell lymphoma mimicking extrapulmonary tuberculosis

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Abstract

The differential diagnosis for an adult cervical lymphadenopathy often includes infectious diseases and malignancy. Extrapulmonary tuberculosis (TB) is an infectious disease that can manifest with cutaneous lesions or tuberculosis lymphadenitis, which can present as a neck mass. Among other cancers, B cell lymphoma can also first present with cervical lymphadenopathy that appears as a firm neck mass. However, TB and B cell lymphomas differ in most other presenting signs and symptoms. In this case report, we present an unusual case of a patient who first presented with bulky, necrotizing masses, lymphadenopathy, and cutaneous lesions suspicious for extrapulmonary TB and was partially responsive to RIPE therapy. However, this patient was later diagnosed with atypical diffuse large B cell lymphoma (DLBCL) with cutaneous involvement, showing that cutaneous DLBCL can closely mimic the common signs of extrapulmonary TB.

Introduction

Cervical lymphadenopathy is a common finding that prompts inpatient otolaryngology consults. Along with congenital causes, infections and neoplasms are primarily considered in the differential diagnosis of the neck mass. Recent travel, trauma to the head and neck, history of substance abuse, or exposure to animals suggest an infectious cause, and history of alcohol or tobacco abuse, or previous radiation treatment increases suspicion for malignancy [1]. Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis that can present as a neck mass in cases of extrapulmonary TB. TB poses a current worldwide threat due to the recent emergence of HIV and antimicrobial resistance against M. tuberculosis2 but is endemic to certain geographic areas and populations living in close quarters, such as people who are homeless or incarcerated. Specifically, the regional rates of TB especially along the United States-Mexico border are much higher than the national average [3]. Extrapulmonary TB accounts for 20% of all TB cases and can present as cutaneous TB or tuberculosis lymphadenitis, among other forms [2]. The pathogenesis of cutaneous TB involves either exogenous inoculation, contiguous spread from a local focus, or hematogenous dissemination [2]. Cutaneous TB has a wide variety of clinical presentations, including lupus vulgaris, scrofuloderma, tuberculous gumma, and acute miliary tuberculosis, and it can present anywhere on the skin [2]. Tuberculosis lymphadenitis presents as a granulomatous inflammation of the lymph nodes with caseating necrosis [4]. Scrofula is a cervical tuberculous lymphadenitis that occurs from the hematogenous or lymphatic dissemination of pulmonary TB or reactivated latent TB and often presents as a painless, red, firm mass along the upper border of the sternocleidomastoid muscle [5]. As a result, scrofula must be considered in the differential diagnosis of large neck masses.

Among other cancers, B cell lymphomas, which make up the majority of the non-Hodgkin's lymphomas (NHL), are another etiology of cervical lymphadenopathy. Diffuse large B cell lymphoma (DLBCL) is an aggressive form of B cell lymphoma that accounts for approximately 25% of B cell lymphoma cases worldwide [6]. DLBCL often first manifests as painless, enlarged cervical lymph nodes and a rapidly growing mass. Around one-third of DLBCL patients present with B symptoms, including fever, night sweats, and weight loss, and approximately half of DLBCL patients have extranodal involvement, most commonly in the gastrointestinal tract [6]. Spinal cord compression is a common manifestation of NHL, and superior vena cava syndrome and compression of airways are also observed in DLBCL [6]. We present an atypical case of DLBCL in a patient that presented with signs and symptoms initially suggestive of extrapulmonary TB, complicating the patient's diagnostic and therapeutic course.

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Case report

A 67-year old man with a history of homelessness and unspecified psychosis presented to the Emergency Department with multiple subcutaneous, necrotic masses to the upper right trunk, bilateral neck, axilla, and back with cutaneous cavitation (**Figure 1**). The patient was brought to our institution's Emergency Department from the US-Mexico border by his son. The patient's children reported that the patient disappeared from his family for 15 years and with no access to medical care and believed the patient was living on the streets of Tijuana and San Ysidro. As a result, certain parts of his history were indeterminate and filled in by his estranged children.

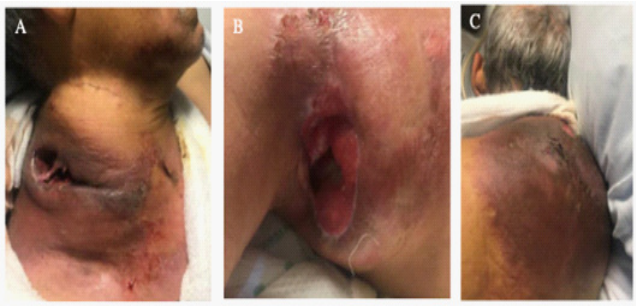

Figure 1: *The patient presented with a large masses with cavitation and necrosis in the A) neck, B) axilla, and C) upper back.*

The patient had a large, necrotic, open axillary lesion with reported hemorrhage from this site and the bilateral neck lesions. The right neck mass measured 10cm by 8 cm, felt firm and immobile upon palpation, and extended from the level of the hyoid bone down to the clavicle and over the posterior neck. The mass was ecchymotic with scant purulent drainage. The left lateral neck measured approximately 4cm by 5cm and was also indurated and immobile with minimal drainage. Ecchymotic lesions were also present around his eyes, face, and body, but the patient denied any recent trauma. A CT scan of the neck soft tissue showed a very bulky, heterogeneous, necrotic, and cavitary mass extending through the posterior neck from the level of C2 inferiorly to the right upper thorax and right shoulder, and anterolaterally into the right lateral neck spaces and thoracic inlet (Figure 2). The mass also extended anteromedially to abut the right carotid space but preserved patency of the right carotid artery. There was associated severe compression of the right internal jugular vein, which appeared narrowed but patent, and compression of the right subclavian vein, which was suspicious for non-occlusive thrombosis. Despite the size and proximity of the mass to the airway, the airway was patent and stable. Further, there were no definitive periosteal changes to the adjacent cervical spine vertebral bodies or convincing extension of the mass into the central canal. The CT of the chest showed extensive necrotic lymphadenopathy throughout the thorax and right supraclavicular region, posterior to the spine and extending into the neck with fistulization to the skin surface at many areas. Pleural and mediastinal right hilar lymphadenopathy were present, and this constellation of findings increased suspicion for tuberculosis over other granulomatous diseases or malignancy. A CT of the abdomen/pelvis showed mildly prominent, scattered lymph nodes within the abdominal mesentery, which were non-specific. There was no definite evidence to suggest abdominal TB or intra-abdominal malignancy. The neck mass was biopsied using fine needle aspiration, but pathology results were indeterminate due to tissue necrosis. Core needle biopsy obtained from axillary tissue was also nondiagnostic; no fungal or mycobacterial organisms were identified on Grocott methenamine silver (GMS) and acid-fast bacillus (AFB) smears, and there were no signs of malignancy. As a result, the patient was referred to a surgical consult for a whole tissue biopsy sample from the neck wound or axillary masses. Surgical excisional biopsy was ultimately deferred given the high clinical suspicion for extrapulmonary TB with a high risk of fistula formation. Tests for bartonella, syphilis, and HIV were also negative. Despite continued negative cultures and smears, empiric treatment for TB using rifampin/isoniazid/pyrazinamide/ethambutol (RIPE) therapy was initiated given the lack of surgical options. The patient showed a positive response to RIPE therapy, which increased suspicion for TB. He was also maintained on broad-spectrum antibiotics throughout the course of his admission given the diagnostic uncertainty.

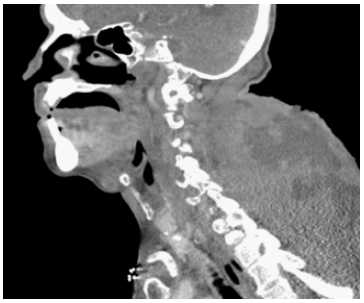

Figure 2: *Sagittal cut of a CT soft tissue neck with contrast obtained on admission. The scan demonstrates a large, internally necrotic mass of the posterior neck and upper back.*

CT scans of the chest and soft tissue of the neck one week after admission showed worsening ulceration, suggestive of progressive internal necrosis (**Figure 3**). Differential considerations continued to favor an infectious process, such as an atypical or mycobacterial infection, with malignancy also remaining on the differential. Further, a new, small right pleural effusion with progressive opacification of the right lung apex, likely related to atelectasis, was observed. Two weeks later, atelectasis was confirmed, and severe compression of the proximal aspect of the right subclavian vein was noted. During the course of his hospital stay, the patient continued to bleed from cutaneous masses, and the resulting severe normocytic anemia was controlled with blood transfusions. His symptoms rapidly progressed to subcutaneous emphysema, likely related to compromised skin integrity. Pending pathology of another lymph node biopsy conducted three weeks after admission, the patient continued to be treated for TB regardless of negative cultures. The second core biopsy from a left infraclavicular lymph node conclusively showed aggressive B-cell lymphoma with no evidence of mycobacterium. Despite the new diagnosis of diffuse large B cell lymphoma (DLBCL), the patient was not a candidate to chemotherapy, so palliative care was initiated. One week after the diagnosis of DLBCL, the patient passed away.

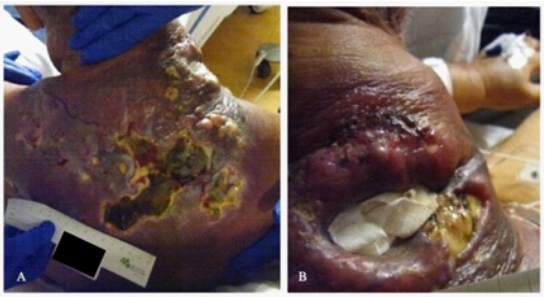

Figure 3: *Progressive necrosis of the cavitary lesions of the patient's A) upper back and B) lateral neck.*

Discussion

The reported case is of a rare cutaneous form of DLBCL, which has an incidence of approximately 4 cases per million people [7]. The most frequently documented dermatological features of cutaneous DLBCL include white patches with salmon-colored backgrounds, scales, and branching vessels, [7] but these features were not seen in this patient. While both DLBCL and tuberculous lymphadenitis cause cervical lymphadenopathy, this patient presented with severe cutaneous ulcerations on the neck, axilla, and back with partial necrosis, phenomena commonly observed with cutaneous TB. The patient also presented with pleural and mediastinal right hilar lymphadenopathies on chest CT and lung atelectasis, which are frequent complications of TB [8] but very rarely documented in association with cutaneous DLBCL or typical DLBCL.

In this case, diagnosis was challenging given the negative smears and the indeterminate biopsy results. However, extrapulmonary TB is known to yield low numbers of bacilli and is thus very difficult to detect on AFB smears and culture [9]. As a result, TB continued to be included on the differential diagnosis and was treated empirically. Suspicion for TB further increased when the patient had a positive response to the initiation of RIPE therapy. Additionally, given the patient's history of homelessness, recent residence in cities close to the US-Mexico border, and lack of medical care, TB was favored over malignancy. However, a full picture of the patient's past medical history was not available given his difficulty recalling his medical history, estrangement from his family, and loss to follow up from the healthcare system for over 15 years. Associations between B lymphomas and TB have been previously documented in the literature. Notably, a few cases have highlighted the diagnostic dilemmas in differentiating between TB and Hodgkin's lymphoma [10-12]. Further, TB and lymphoma have been shown to co-occur in a patient due to lymphoma-related immunosuppression [13,14]. Here, we show that cutaneous DLBCL can manifest with symptoms that mimic those of extrapulmonary TB. As a result, cutaneous DLBCL must be considered in the differential diagnosis of a patient with bulky, necrotic masses with cutaneous cavitation that appear consistent with a diagnosis of extrapulmonary TB on first impression in order to facilitate earlier diagnosis and intervention.

Conflicts of Interest:

The authors declare no conflicts of interest at this time.

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