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Case Report

Cervical Tuberculous Lymphadenitis-Scrofula in Southern Mexico — A Case Report

Dominguez Gonzalez-Edward Darielle[1]*, Coyoc-Euan-Manuel Alejandro[1], Euan Cervera-Víctor Manuel[1], Cabrera Tamayo-Heidy Beatriz[1], Gonzalez Panti-Jesús Augusto[1], Uicab Ku-José Alfredo[1], Colli Heredia-Juan Pablo[2]

[1]Departamento de Medicina Interna del Hospital General de Especialidades "Dr. Javier Buenfil Osorio", 24039 San Francisco de Campeche, Campeche, México.

[2]Jefe de servicio del Programa de Medicina Interna del Hospital General de Especialidades "Dr. Javier Buenfil Osorio", 24039 San Francisco de Campeche, Campeche, México.

***Corresponding Author:** Dr. Edward Darielle Dominguez Gonzalez, Internal Medicine Program of the Hospital de Especialidades de Campeche "Dr. Javier Buenfil Osorio", Av. José López Portillo (By Patricio Trueba de Regil), 24050 Campeche, México. ORCID: 0009-0000-9462-134X

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Abstract

Tuberculous lymphadenitis, also known as scrofula or colliquative tuberculosis, caused by Mycobacterium tuberculosis, is the most common clinical form of extrapulmonary tuberculosis. However, it is currently rare, and there are few reports in Campeche despite being a high-frequency epidemiological area. We present the case of a 28-year-old man who began his current illness two months prior, with unquantified fever, a 15-day history of cough, and a 5-kg weight loss over one month. A diagnosis of pulmonary tuberculosis with treatment abandonment was confirmed. He presented to the hospital with right-sided neck pain and a 3 cm injury. Fine-needle aspiration of the lesion yielded purulent-caseous material, which was positive for acid-fast bacilli (AFB) using Ziehl- Neelsen staining. Our case highlights the importance of maintaining a high index of suspicion to differentiate mycobacterial infection from other causes of lymphadenopathy, especially in immunocompetent adolescent patients.

Keywords: *Tuberculous lymphadenitis; Scrofula, Mycobacterium tuberculosis; Mexico*

Introduction

Mycobacterium tuberculosis is an acid-fast bacillus (AFB) whose only reservoir is humans, causing both pulmonary and extrapulmonary disease. Pulmonary tuberculosis is the most common form, transmitted from person to person through aerosols containing the bacillus. [1-2] Extrapulmonary forms are autoinfections and include lymphadenitis or scrofula, scrofuloderma, and lupus vulgaris, which are the most common clinical forms of cutaneous tuberculosis; they also include renal, meningoencephalic, bone, testicular, and hepatic forms [3-4]. Scrofula is the most common extrapulmonary form, of which 90% is caused by *M. tuberculosis* and 10% by nontuberculous Mycobacterium, such as *M. scrofulaceum and M. avium.* The latter two are acquired through accidental or surgical trauma or biomaterial implants; the main reservoir of *M. scrofulaceum* is the environment (water, soil, and dust) [5].

Tuberculous lymphadenitis due to *M. tuberculosis* is characterized by lymphadenopathy that commonly affects the lymph nodes of the upper border of the sternocleidomastoid muscle and the supraclavicular fossa, painless, of firm consistency, may become red or purplish in color and are usually unilateral, although in HIV-positive patients they may be bilateral; in rare cases it may have accompanying symptoms, such as fever and weight loss [6]. The microbiological diagnosis of scrofula is established by detecting M. tuberculosis in samples taken by fine-needle aspiration or excisional biopsy, followed by bacilloscopy with observation of the microorganism. Histopathology shows a chronic granulomatous reaction with a predominant mononuclear infiltrate, accumulation of epithelioid histiocytes and Langhans cells, with caseous necrosis in the center.

However, this does not necessarily confirm a tuberculous infection; similar results could be obtained from subcutaneous mycoses, leprosy, and syphilis. Diagnostic blood tests, such as QuantiFERON® -TB Gold in tube (QFT-GIT) based on IFN-γ release (IGRA) and T-SPOT.TB based on enzyme-linked T-cell-mediated immune response (ELISPOT), can be performed to avoid nonspecific reactions, such as those that occur with PPD. In addition, molecular tests based on DNA detection have been developed; however, their high cost and lack of availability limit their use in developing countries, so the most important thing is the clinical presentation and visualization of the bacilli in the tissue biopsy. [7].

In Mexico, tuberculosis is still considered endemic, and according to information provided by the tuberculosis prevention and control program in 2020, there were 24,560 new cases distributed as follows: 81.5% pulmonary tuberculosis, 5.6% lymph node tuberculosis, 1.6% meningeal tuberculosis, and 11.4% other types, which are poorly recorded due to their diagnostic complexity. Currently in Mexico, the clinical practice guidelines of the Ministry of Health recommend four drugs for the treatment of pulmonary and extrapulmonary tuberculosis: Isoniazid 10-15 mg (I), Rifampicin 15 mg (R), Pyrazinamide 25-30 mg (Z), and Ethambutol 20-30 mg (E). The duration of treatment depends on the management regimen; the 2 HRZE/4 HR regimen is administered for 6 months, and the HRZE regimen for 9 months [8].

We present the case of a young adult male with cervical lymphadenopathy in whom acid-fast bacilli were observed on Ziehl-Neelsen staining, treated with a four-drug antituberculosis regimen for six months, resulting in clinical cure, with no reactivation at 12 months of follow-up.

Case Presentation

A 28-year-old man from Campeche, currently unemployed, has resided in Cereso (Koben) for approximately 7 years. He currently has no chronic degenerative diseases. His current illness began 2 months ago with an unquantified fever, a 5-kilo weight loss in 1 month, and a cough lasting 15 days. He consulted multiple doctors who only provided symptomatic treatment. However, the patient did not improve, so he decided to go to the emergency room of our hospital unit where tests were performed that confirmed the diagnosis of pulmonary tuberculosis. Treatment was prescribed, but the patient abandoned it of his own accord. One month later, he returned with pain in the right side of his neck, which, after some time, became abscessed and drained spontaneously, leaving a scar where they appeared. On physical examination, the patient showed no respiratory symptoms, vesicular breath sounds were present, and lung fields were clear. In the right cervical region, corresponding to the superficial cervical lymph node chain, a 3 cm diameter lesion was observed (Figure 1). On palpation, it was tender to pressure, with a lesion not adhered to deep planes, a regular surface, erythema, and a firm consistency.

A non-contrast computed tomography scan of the chest was performed, revealing a cavitary lesion in the right upper lobe with relatively thick walls, irregular borders, and air content (Figure 2). Purulent-caseous material was obtained from aspiration of the lesion, which was positive for acid-fast bacilli (AFB) with Ziehl-Neelsen staining (Figure 3). Since the result was positive, a biopsy was no longer necessary. Treatment was initiated with rifampicin (150 mg), pyrazinamide (75 mg), ethambutol (400 mg), and isoniazid (300 mg). After two weeks of treatment, a decrease in the size of the lesion was observed, and the patient was discharged to continue outpatient follow-up for six months. The hospital administration and the patient signed the respective consent forms for the publication of this case, anonymizing the patient's identifying data.

Figure 1. *Painful mobile lesion on the right with a soft consistency showing signs of inflammation, measuring approximately 3 x 3 cm*

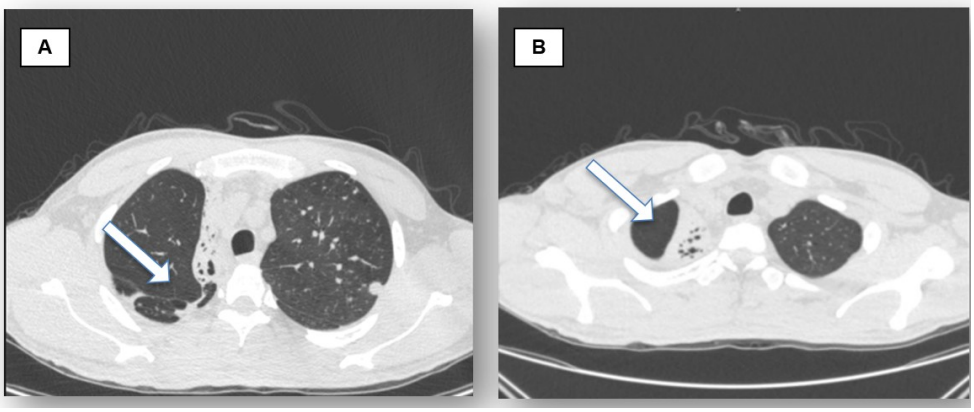

Figure 2. Simple chest CT scan, lung window in axial view. *Image A, the arrow shows a cavitated lesion in the right upper lobe with relatively thick walls, irregular contours, and air content. Image B shows areas of bilateral alveolar opacification with air bronchograms in the lower and middle lobes of the lung parenchyma. Hypodense images suggestive of pulmonary cavitation are visible in the periphery.*

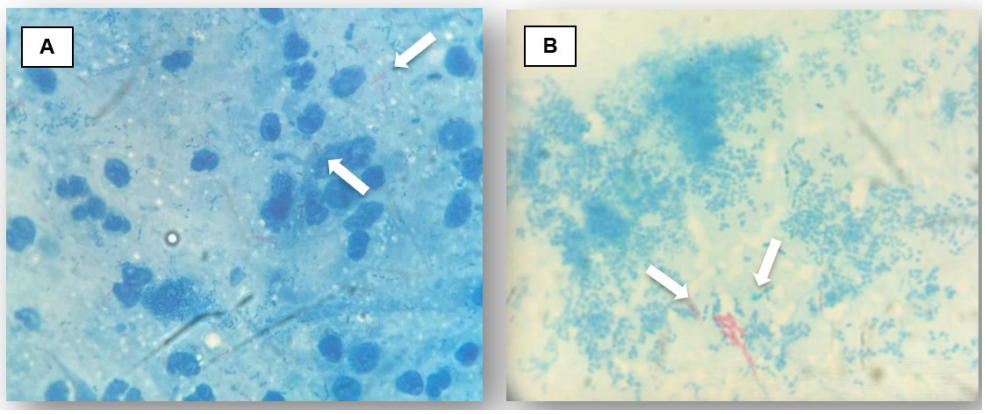

Figure 3. Ziehl - Neelsen staining , *in image A, a histological section at high magnification of a tuberculous lesion is observed, the arrows highlight the red and pink acid-fast bacilli against the pale background , in image B the arrows show the red and pink acid-fast bacilli.*

Discussion

Tuberculosis mainly affects the lungs, but extrapulmonary tuberculosis can also occur, with scrofula or cytotoxic T lymphocytes (CTL) being the most common form. Scrofula usually presents as a painless, growing cervical mass, averaging 3 cm in size, over a period of three to four weeks [8].

To the best of our knowledge, extrapulmonary tuberculosis in our state is very rare. Extrapulmonary forms caused by *M. tuberculosis* result from the dissemination of the bacillus via the lymphatic or hematogenous routes from the primary pulmonary focus and are generally spread due to malnutrition, treatment abandonment, and immunosuppression [9]. Our patient resides in Campeche. In 2024, a total of 20,207 cases were reported in Mexico, with a rate of 152 cases of pulmonary tuberculosis in Campeche, of which there are no records of extrapulmonary tuberculosis because diagnosis can be difficult and may delay the start of appropriate treatment [10].

Contributing factors include low public awareness and knowledge of tuberculosis symptoms, leading to delays in seeking medical attention; socioeconomic barriers such as low income, unemployment, rural residence, and limited access to healthcare facilities; delays in referrals to specialists and in diagnostic procedures; and a low index of clinical suspicion among healthcare professionals. Scrofula or pulmonary lymphadenopathy (PLA) typically presents with fever, chills, malaise, and weight loss. However, in our case, the patient did not present any of these systemic symptoms. Similar cases have been reported previously [11].

In our case, the patient reported having respiratory symptoms with confirmation of pulmonary tuberculosis, but with abandonment of treatment. However, the chest CT scan showed a cavitary lesion with relatively thick walls and irregular contours, probably due to a primary infection given the time of diagnosis. Because of the abandonment of treatment and immunosuppression, we believe that the infection reactivated and the bacillus spread to the lymph nodes of the neck, manifesting the described symptoms of scrofula, which is diagnosed by detecting M. tuberculosis after performing a puncture of the lymph nodes . The histological findings observed in the histopathology may be nonspecific, since they are similar to those of subcutaneous mycoses and syphilis. Definitive diagnosis requires observation of the microorganism. Histopathological examination typically reveals an ulcerated epidermis accompanied by a mixed inflammatory infiltrate composed of neutrophils, lymphocytes, and histiocytes, as well as small epithelioid granulomas with central necrosis and multinucleated giant cells in the dermis. Acid-fast bacilli (AFB) staining is positive in only a minority of histological samples; therefore, clinical, microbiological, and radiological correlation is crucial to ensure early and accurate diagnosis. Rapid tests for the diagnosis of tuberculosis are accurate, cost-effective, and allow for prompt initiation of treatment. The tuberculin skin test (TST) and the interferon-gamma release assay (IGRA) are used to detect latent tuberculosis. The latter is more specific and is not affected by BCG vaccination; however, it is more expensive. For active tuberculosis, smear microscopy is commonly used, but cultures are more sensitive and allow for susceptibility testing. The TB-LAM test, with limited sensitivity, is useful in people with HIV and low CD4 counts. Molecular tests based on real-time PCR are rapid, sensitive, and specific, and are recommended as the initial test for both pulmonary and extrapulmonary tuberculosis. The reported case showed positive results in both smear microscopy and culture. [12]

Scrofula is treated similarly to tuberculosis in immunocompetent individuals. Treatment includes an initial two-month phase with four antibiotics: rifampicin (10 mg/kg/day) + isoniazid (5 mg/kg/day) + pyrazinamide (20–30 mg/kg/day) + ethambutol (15–20 mg/kg/day), followed by a second phase with dual therapy using rifampicin and isoniazid. In HIV-positive patients, the duration of treatment is usually six months; however, longer courses are sometimes recommended [13]. Special attention must be paid to the presence of drug resistance, as this necessitates modifying and extending the treatment, particularly in cases of extrapulmonary tuberculosis. Drug dosages are calculated based on the patient's weight, following various protocols [14]. Empirical antituberculosis treatment may also be initiated based on the clinical presentation. The treatment of extensive scrofula sometimes requires surgical intervention [15]. Finally, the WHO has developed an operational manual on tuberculosis to provide practical guidance that complements its most recent guidelines on the treatment of

Drug-resistant tuberculosis. The document explains how to select and design treatment regimens for different types of drug-resistant tuberculosis, including multidrug-resistant tuberculosis.

or resistant to rifampicin (MDR/RR-TB) and isoniazid-resistant but rifampicin-sensitive tuberculosis (HR-TB) [16].

This case of tuberculous scrofula manifested with ulcerated lymphadenopathy and an erythematous lesion, as described in other cases with firm, painless lymphadenopathy that occasionally suppurated. Treatment was successful with a four-drug regimen for six months, as recommended by the Mexican clinical practice guideline [8]. At the end of treatment, the lymph nodes healed and closed without the need for repeat treatment or increased dosage, as is described in cases of bacterial resistance.

Conclusion

Scrofula is currently rare worldwide. While it is known that pulmonary tuberculosis is prevalent in our state of Campeche, extrapulmonary tuberculosis, especially scrofula, is uncommon. It presents with typical lesions and locations, is diagnosed using Ziehl-Neelsen staining, and is typically treated successfully with nationally recommended antituberculosis drugs. Therefore, a high index of clinical suspicion, along with an appropriate microbiological diagnostic strategy or molecular biology techniques, is essential for timely treatment of this form of extrapulmonary tuberculosis—an old but persistent clinical entity capable of causing serious sequelae and even death. In this clinical case, early diagnosis and timely treatment resulted in rapid resolution of the lesion. Close monitoring is required to detect drug resistance or adverse events. Routine screening using the tuberculin skin test (TST) or the interferon-gamma release assay (IGRA), along with clinical assessment, allows for the identification of candidates for preventive therapy, even in the presence of immunosuppression. Coordinating these strategies, supported by public policies and strengthening the health system, is essential to reducing the burden of disease in this vulnerable population and advancing toward global tuberculosis control goals.

Author Contributions

EDDG, CEMA, ECVM, CTHB, GPJA, UKJA Writing—review and editing, Validation, Supervision, Conceptualization. JPCH: Writing—review and editing, Validation, All authors have read and agreed to the published version of the manuscript.

Dr. Edward Darielle Dominguez González: https://orcid.org/0009-0000-9462-134X

Dr. Víctor Manuel Euan Cervera: https://orcid.org/0009-0002-3748-5577

Dr. Manuel Alejandro Coyoc Euan: https://orcid.org/0009-0007-7275-2753

Dr. José Alfredo Uicab Ku: https://orcid.org/0009-0008-6080-8526

Dr. Heydi Beatriz Cabrera Tamayo: https://orcid.org/0009-0003-3951-2636

Dr. Jesús Augusto González Panti: https://orcid.org/0009-0003-0299-1178

Dr. Juan Pablo Colli Heredia: https://orcid.org/0000-0002-1789-6769

Informed Consent Statement

Written informed consent has been obtained from the patient to publish this paper.

Data Availability Statement

The original contributions presented in the study are included in the article, and further inquiries can be directed to the corresponding author/s.

Conflicts of Interest

The authors declare no conflicts of interest.

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