

Case report

Cutaneous tuberculosis simultaneously presenting as a subcutaneous nodule and mass: A case report

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ABSTRACT

Although the incidence of tuberculosis (TB) is decreasing globally, it remains an endemic disease in Taiwan. The etiology of cutaneous TB can be endogenous or exogenous. The mechanism of infection could be direct inoculation, contiguity, or hematogenous dissemination. The clinical manifestations are diverse, ranging from scrofuloderma, acute miliary TB, tuberculous chancre, tuberculosis verrucosa cutis, and lupus vulgaris to tuberculid. Basis the bacterial load, cutaneous TB is classified as multibacillary or paucibacillary. We present a case of cutaneous TB that initially presented as a subcutaneous nodule and a mass. The cutaneous TB likely originated from underlying TB lymphadenitis and TB spine and presented as scrofuloderma.

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Introduction

Tuberculosis (TB) is an infectious disease that remains a worldwide concern and is the leading cause of death from a single infectious pathogen [1]. In Taiwan, the incidence of TB per 100,000 persons declined from 72.5 cases in 2005 to 37 cases in 2019. Most cases of TB are pulmonary TB, and extra-pulmonary TB accounts for 8.4%–13.7% of all TB cases [2]. Cutaneous TB is rare. It accounts for only 1%–1.5% of all extra-pulmonary TB cases across several countries [2]. The pathogenesis of cutaneous TB includes hematogenous, contiguous dissemination, or direct inoculation. Clinical manifestations include tuberculid, lupus vulgaris, acute miliary TB, scrofuloderma, and tuberculosis verrucosa cutis [3,4]. Of these, scrofuloderma is the most reported manifestation. We present a case of TB scrofuloderma arising from both the lymph node and bone.

Case report

A 72-year-old woman without any underlying disease presented to our surgical outpatient department (OPD) with a 5-month history of a nodule in the left supraclavicular area and a 1-month history of a mass in the left para-spinal area of the upper back. The patient did not report fever, night sweating, cough, or weight loss. Physical examination revealed a suspicious soft tissue

swelling in the left supraclavicular and thoracic spine region. Chest computed tomography and serum tumor marker (CEA; CA-125; CA-153; CA-199) assessments revealed a hypodensity lesion with ring enhancement in the left supraclavicular area and multiple small nodules in bilateral lungs with bilateral mild pleural effusion (Fig. 1A). Tumor markers were all within normal limits. Fine needle aspiration of the supraclavicular and thoracic spine lesions was performed for bacterial culture. Empirical antibiotic therapy was prescribed to the patient. The bacterial culture revealed no growth after 1 week. Because the swelling persisted, incision and drainage of both lesions was performed, and notable volume of pus was seen at both sites (Figs. 1B, 2A). Although we continued the wound care and antibiotic therapy, the swelling persisted, and the wound did not heal. The patient was referred to the infectious diseases OPD for a second opinion. On reviewing the patient's medical history and data, *Mycobacterium tuberculosis* (MTB) lymphadenitis was suspected, and a swab sample was collected from the deep supraclavicular wound for TB culture, acid-fast staining, and TB polymerase chain reaction (PCR) testing. Acid-fast staining revealed the presence of acid-fast bacilli on the subsequent day, and TB PCR test returned positive 2 days later. A combination anti-TB regimen was started immediately. Thoracic spine wound and sputum TB survey were conducted simultaneously. The sputum and wound swab tested positive on TB PCR, and the patient was placed in airborne isolation. Although pulmonary TB was confirmed, no respiratory symptoms were noted during the disease course. The patient denied any possibility of HIV infection and refused HIV screening. No exposure history or risk factors of MTB infection were noted. The patient reported a persistent back

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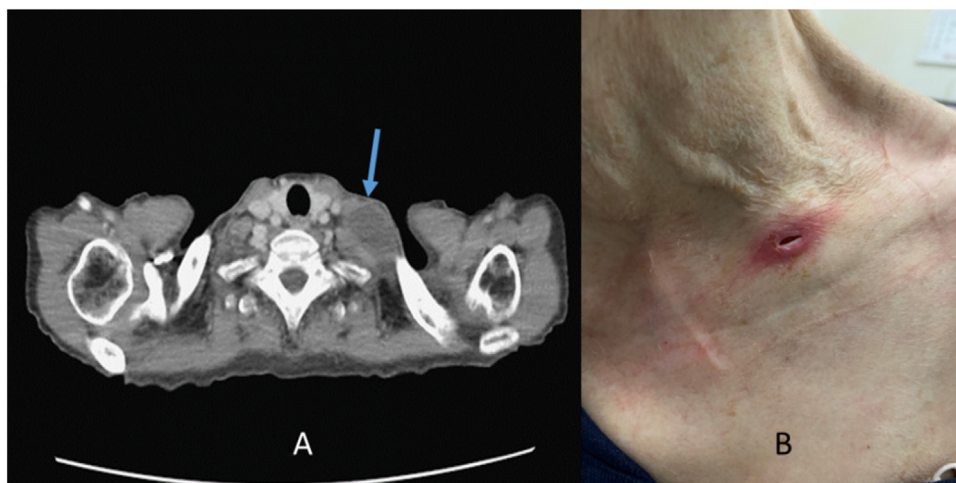


Fig. 1. Chest computed tomography revealed an enlarged homogenous lesion with ring enhancement in the left supraclavicular area indicated by the arrow (1A). The patient presented a bulging incisional wound with local redness in the left supraclavicular area (1B).

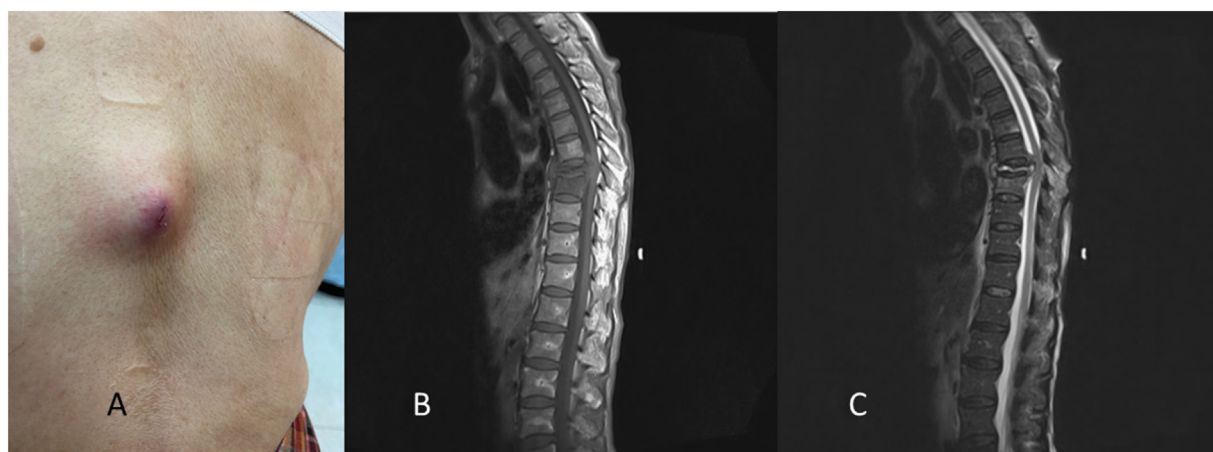


Fig. 2. A mass lesion located in the left para-spinal area of the thoracic spine (T9) with an incisional wound and erythematous change at the top of mass (2A). Magnetic resonance imaging revealed a hypointensity signal at T8/T9 levels of the thoracic spine on T1-weighted imaging (2B) and a hyperintensity signal at the same levels on T2-weighted imaging (2C).

pain and developed bilateral lower extremity numbness and weakness gradually. Magnetic resonance imaging of the spine revealed a hypointensity signal at the T8-T9 level on T1-weighted imaging and a hyperintensity signal at the same level on T2-weighted imaging with spinal cord compression (Fig. 2B, C). A laminectomy of the thoracic spine was performed with spinal fixation. The tissue sample from the spine was positive on acid-fast staining and TB PCR. Spinal TB was confirmed. After combination therapy with isoniazid/rifampin/ethambutol/pyrazinamide, the swelling in supraclavicular and thoracic lesions disappeared gradually, and the incision wound healed finally. After the surgical intervention, back pain resolved, and the patient regained muscle strength of bilateral lower extremities gradually. Before discharge, TB cultures from the supraclavicular and thoracic wounds, sputum, and spine tissue were all positive and identified as TB complex. The final diagnosis was confirmed as disseminated TB, including pulmonary TB, TB lymphadenitis (supraclavicular), TB spine (T8-T9), and cutaneous TB. Cutaneous TB presented as scrofuloderma, extending from the contiguous lesions, the underlying TB lymphadenitis, and TB spine. After 50 days of hospitalization,

the patient was discharged from the hospital and was prescribed a rehabilitation program and an anti-TB regimen at OPD.

Discussion

The reported case is of disseminated TB with multiple cutaneous involvements. Owing to the diverse clinical presentations of cutaneous TB, a high degree of suspicion is required for early diagnosis.

The pathogenesis of cutaneous TB includes primary inoculation, hematogenous dissemination, and contiguous dissemination. Primary inoculation has been reported to occur through acupuncture, lumbar puncture needle-stick injury, and insulin injections [5-7]. Hematogenous dissemination has been reported in immunocompromised hosts, such as those with acquired immunodeficiency syndrome and chronic kidney disease [8,9]. Scrofuloderma is the most common form of cutaneous TB; it is associated with contiguous dissemination. The most frequently reported underlying structures are lymph nodes, bones, and joints (spine, rib, acromioclavicular joint) [10,11]. In our case, cutaneous TB

extended from both lymph nodes and spine simultaneously, which has rarely been reported in the literature. When cutaneous TB presents as scrofuloderma, it presents as a late manifestation of underlying TB. Systemic and multifocal TB survey are needed in such cases for a definitive diagnosis. In our patient, thorough TB survey helped make the diagnosis of TB spine from cutaneous TB, and consequently, the treatment plan was extended to 9 months.

The treatment regimen and duration for pure cutaneous TB are the same as those for pulmonary TB (isoniazid/ethambutol/rifampin/pyrazinamide for 2 months and isoniazid/rifampin for 4 months). Skeletal system involvement requires extending the course to 9 months (isoniazid/ethambutol/rifampin/pyrazinamide for 2 months and isoniazid/rifampin for 7 months).

In conclusion, cutaneous TB has varying presentations. Clinicians must consider cutaneous TB when a skin lesion is refractory to treatment. Systemic TB survey is needed on confirmation of cutaneous TB to decide the appropriate treatment duration.

Declaration of Competing Interest

The authors report no declarations of interest.

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Consent

Ethical approval: oral informed consent.

Consent: oral consent due to debilitating status of the patient.

Authors contribution

Tsung-Chia Chen: study design, data collection, writing.

Chin-Hung Tsai: Operator, contribution on diagnosis confirmation.

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