Case Report

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Mediastinal tuberculous lymphadenitis presenting with insidious back pain in a male adult: a case report and review of the literature

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Abstract

Mediastinal tuberculous lymphadenitis (MTL) is mostly observed in primary tuberculosis in infants, children and adolescents, and is not found commonly in adults. Mediastinal tuberculous lymphadenitis cases may present with an insidious progression of tuberculous symptoms, including gradual deterioration in the lungs and a variety of clinical characteristics; however, initial symptoms are rarely only chronic back pain. We present the case of a 33-year-old man with mediastinal tuberculous lymphadenitis misdiagnosed as myofascitis. Since such individuals do not develop respiratory symptoms in the initial stages, they often go undiagnosed and can potentially spread tuberculosis.

Keywords

Lymphadenitis, mediastinum, pain, tuberculosis, imaging, hilum, extrapulmonary tuberculosis

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Introduction

Occasionally, tuberculosis has an insidious progression, including a nonspecific clinical presentation and slow radiographic and symptomatic development. Tuberculosis can cause several atypical symptoms and injuries, with devastatingly high mortality, if left untreated.[1] Mediastinal tuberculous

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lymphadenitis (MTL), a phase of primary tuberculosis, occurs almost exclusively in infants, children and adolescents.[2,3] MTL without lung involvement is rare in adults, especially if it presents exclusively with back pain and if the systemic symptoms of tuberculosis are absent. Herein, we report our experience of a delayed diagnosis of MTL during the treatment of a patient with a chronic history of intermittent dull pain in the upper back.

Case presentation

A 33-year-old man presented with a history of progressive fatigue and worsening upper spinal pain (Figure 1a). Previous chest radiography showed enlargement of the right hilar lymph nodes, without parenchymal lesions in either lung (Figure 1b). Thoracic computed tomography (CT) revealed clear enlargement of the right hilar lymph nodes in the paratracheal and prevascular regions (Figure 2), which had not changed compared with imaging results from 3 years prior. There was no history of trauma and no significant medical history. Spinal magnetic resonance imaging and HLA-B27 haplotype testing were also performed to exclude spinal diseases. Considering the patient's previous examination results, and unchanged symptoms and imaging results for more than 3 years, the presumed origin for his back pain was musculoskeletal.

On the latest visit, the patient reported worsening of his pain, with a choking sensation in his chest, fatigue and night sweats. Physical examination revealed a body temperature of 37.2°C. The patient had no cough, expectoration, joint pain, haemoptysis or dyspnoea. Repeat thoracic CT revealed clear changes in the pulmonary interstitial tissue along with consolidation in the right upper pulmonary lobe, pleural parenchymal thickening and bronchial erosion and compression near the enlarged lymph nodes (Figure 3). These changes suggested a likely diagnosis of tuberculosis; therefore, he was admitted to the tuberculosis hospital for further diagnosis and treatment. The tuberculin skin test result was strongly positive (50 mm with blister formation). Laboratory examinations revealed a high erythrocyte sedimentation rate (ESR) of 35 mL/hour (reference range < 15 mL/hour) and a high ratio of mononuclear leucocytes. A diagnosis of pulmonary tuberculosis, likely secondary to mediastinal tuberculosis, was made. Fine-needle aspiration was suggested, but the patient refused. A subsequent sputum test was positive for *Tuberculosis* bacilli, which were sensitive to anti-tuberculous drugs (rifampin, isoniazid, ethambutol, pyrazinamide and levofloxacin). Treatment with daily adjusted doses (weight: 70 kg) of rifampin (0.6 g), isoniazid (0.4 g), ethambutol (1 g) and pyrazinamide (1.5 g), were initiated. All investigations, including complete blood counts and liver and renal function tests, were within acceptable limits during treatment, and he was followed-up routinely throughout the treatment period. His vaccination history did not reveal a scar that indicated Bacillus Calmette–Guérin (BCG) vaccination. His medical history, as well as that of his family, was unremarkable regarding exposure to tuberculosis.

Despite treatment, his back pain worsened significantly and was accompanied by painful dysphagia from the first month of the anti-tuberculous treatment. Thoracic CT revealed newly increased inflammation owing to MTL (Figure 4). The continuation phase of his anti-tubercular treatment was maintained, and he was followed-up closely. Three months later, he visited the hospital and reported symptom improvement. Significant shrinkage and improvement with calcification were observed in the hilar and mediastinal nodes and less lung and bronchial compression were seen after 12 months of anti-tuberculous treatment

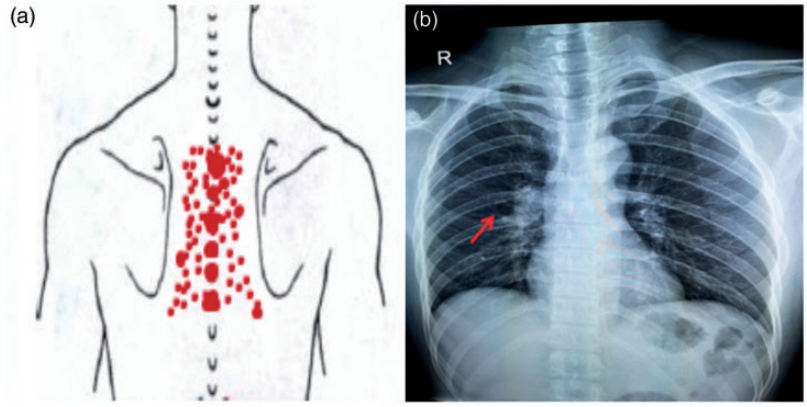

Figure 1. (a) Interscapular and spinous process region tenderness. (b) Chest radiograph clearly showing enlarged right hilar and paratracheal lymph nodes (red arrow).

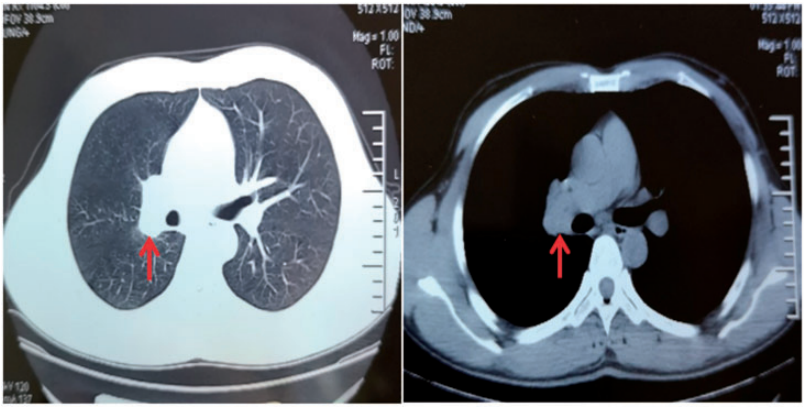

Figure 2. Thoracic computed tomography, which was performed at a local hospital, showing enlarged lymph nodes in the right hilar, paratracheal and prevascular regions (arrows) with no obvious compression or erosion of the trachea. There were no prominent changes in the imaging signs of the pulmonary interstitial tissue at this point in the patient's progression.

(Figure 5). Because this case involved pleura, hilar and mediastinal tuberculosis, the patient was advised to maintain the continuation phase treatment for 18 months, which consisted of three drugs (isoniazid, rifampicin and ethambutol) with frequent follow-ups. These lesions heal with fibrosis and calcification. His back pain gradually resolved and did not recur, and he is currently in follow-up and is at risk of relapse.

Discussion

Mediastinal lymph node involvement usually occurs as a complication of primary tuberculosis, almost exclusively in infants, children and adolescents.[4] Isolated MTL without a parenchymal lung lesion in adults is unusual, with an incidence of 0.25% to 5.8%. MTL occurs most commonly in Asian and Black people from

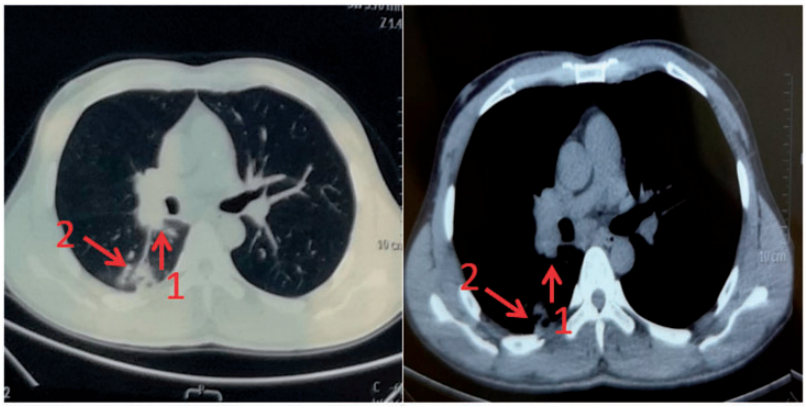

Figure 3. Enlarged lymph nodes causing extrinsic bronchial compression and erosion through the bronchial wall into the bronchial airway (arrow 1). There are obvious changes in the images of the pulmonary interstitial tissue (arrow 2).

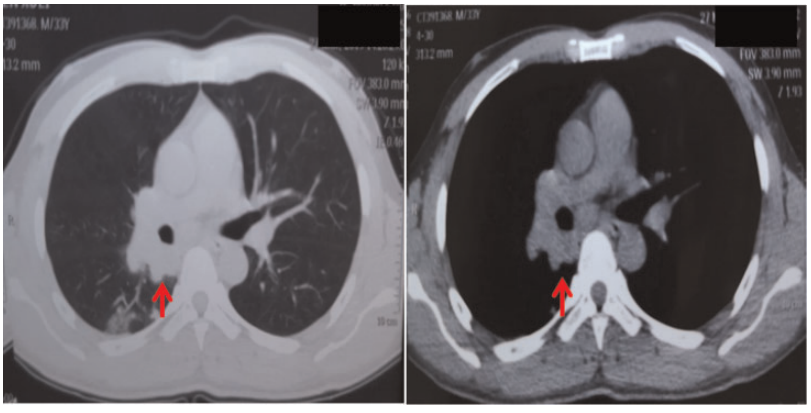

Figure 4. Thoracic computed tomography showing newly increased inflammation owing to mediastinal lymphadenitis after 2 months of antituberculosis treatment (arrows). The patient's back pain worsened significantly, accompanied by painful dysphagia.

developing countries, and presents a diagnostic problem.[5] *Mycobacterium tuberculosis* enters the lymphatic system from lung lesions and causes hilar and mediastinal lymphadenopathy owing to inflammatory granulomatous tissue. Tuberculous mediastinal lymph nodes can erode adjacent structures, including pleural tissues, thoracic vertebrae, paravertebral muscles, airways, the oesophagus, pericardium, heart, aorta and vena cava through inflammation and necrosis, occasionally with fatal consequences.[3,6–8] Most of these adjacent structures are located in or near the posterior mediastinum, and their damage may contribute to back pain. This finding also indicates that MTL is a cause of fibrosing mediastinitis or constrictive pericarditis, which may cause respiratory insufficiency owing to compression of intrathoracic vascular structures,

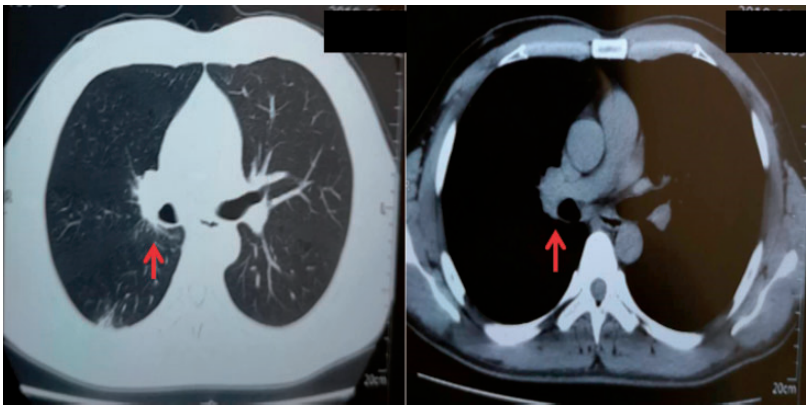

Figure 5. Obvious shrinkage is visible in the images regarding the lung and bronchial compression, along with a significant improvement in hilar lymphadenitis after 12 months of antituberculosis treatment (arrows). The patient experienced considerable relief from his back pain.

including the pulmonary arteries, veins and the superior vena cava.[9] Nerves affected by granulation tissue and caseation necrosis are responsible for tubercular neuritis.[10] A complication in our case was bronchial compression or lymph node erosion through the bronchial wall owing to the pressure of nodal enlargement on the main bronchus. This phenomenon is sometimes called epituberculosis in primary tuberculosis.[11]

Tuberculosis can often exhibit rheumatoid symptoms, including spinal and joint pain. As the disease progresses, inflammation and necrosis can dissect along the tissue planes, increasing the degree and area of pain. Localised back pain may be one of the first symptoms of MTL tuberculosis. In our case, MTL presented as isolated pain prior to the development of pulmonary lesions. In the early stage, exclusively back pain or stiffness is present, which is often misdiagnosed as myofascitis, including supraspinous ligamentitis and ankylosing spondylitis.[12] Thus, many patients with back pain owing to tuberculous spondylitis were referred to rheumatology outpatient departments or other departments for diagnosis and treatment.[13,14] Spinal tuberculosis, an extrapulmonary form of tuberculosis, is also known as Pott's disease, tuberculous spondylitis or tuberculous vertebral osteomyelitis.[15,16] A similar case of a 35-year-old woman involved misdiagnosis of ankylosing spondylitis.[17] Kim et al. reported that a case of post-traumatic back pain was eventually diagnosed as early-phase tuberculous spondylitis.[18] Fortunately, our patient did not develop tuberculous spondylitis.

An unusual finding in this case was that the patient developed painful dysphagia, and the back pain worsened significantly after the first month of antituberculosis therapy. Although not verified through gastroscopy, this was easily visualised by thoracic CT imaging after antituberculosis treatment. Thoracic CT revealed that new enlargement of the mediastinal lymph nodes eroded the oesophagus. MTL can present with oesophageal erosion, dysphagia and vocal cord paralysis owing to adjacent oesophageal and laryngeal nerve involvement. The paradoxical occurrence of these signs after antituberculosis treatment has been defined as tuberculosis–immune reconstitution inflammatory

syndrome, an excessive immune response to *Mycobacterium tuberculosis*.[19] Such paradoxical reactions generally do not indicate treatment failure. In addition, peripheral neuropathy with tuberculosis contributes to patients' pain. A number of factors can lead to peripheral nerve damage and the development of neuropathy, namely the tuberculosis itself, anti-tuberculosis bacterial drugs and other comorbid conditions.[20]

Notably, the majority of patients with MTL have no radiographic evidence of pulmonary tuberculosis or common symptoms of tuberculosis. The signs and symptoms are sometimes nonspecific, and disease progression can be insidious; therefore, MTL is a challenging diagnosis. Because patients who suffer only mediastinal tuberculosis do not excrete bacteria, sputum cultures and GeneXpert analyses are not well-recognised modalities in the diagnosis. Laboratory examination findings can provide partial information, such as an increase in C-reactive protein and prolonged ESR. Tuberculin skin testing as a traditional method continues to be a useful diagnostic procedure for tuberculosis. The T-SPOT test has also been recommended for the diagnosis of tuberculosis in clinical practice. Thoracic CT has a disadvantage in that it can provide tuberculous information usually only after considerable progression of lung tissue destruction. Lymphadenectomy or biopsy are alternative methods for objective and accurate diagnosis of tuberculous lymphadenitis, which should be considered carefully because these methods can cause spread the infection.

A decline in the incidence of tuberculosis has led to fewer reports of MTL in adults in the recent literature. MTL is occasionally insidious, with nonspecific clinical presentation and slow radiographic and symptomatic development. Fever and other general symptoms may be absent in the early phase of tuberculosis, and the decline in the incidence of tuberculosis has led to decreased vigilance for MTL. This case report aimed to highlight the importance of considering MTL in adult patients without lung involvement in populations with a high prevalence of tuberculosis, such as the general population in developing countries and the immunocompromised population in the developed world.

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Ethics statement

We have read the journal's ethics policies, and we believe that neither the manuscript nor the study violates any of these policies. The patient's informed consent was obtained throughout the treatment process. We have de-identified all patient details.

Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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