A Case of Afebrile Miliary Tuberculosis That Progressed from Tuberculous Spondylitis with Iliopsoas Abscess

Shun Namisato1,2, Chikara Nakasone1,2, Shoko Okudaira1, Masato Touyama1, Naoki Ishikawa1, Hajime Higa3 and Jiro Fujita2

Abstract

We present a case of a 78-year-old woman who visited our hospital for chronic atrial fibrillation. She consulted an orthopedic surgeon for lumbar pain in August 2009 and has been followed up for osteoporosis. However, her lumbar pain became exacerbated. In December 2009, clinical examination revealed that the pain was caused by tuberculous spondylitis and iliopsoas abscess. Diffuse miliary shadow, which was undetected earlier, was noted on chest roentgenogram; she was diagnosed with miliary tuberculosis. Lumbar pain is common in elderly individuals and should be regarded as one of the tuberculosis symptoms, considering its atypical course in elderly patients.

Key words: miliary tuberculosis, tuberculous spondylitis, afebrile


Introduction

There has been a decrease in the total number of tuberculosis cases in recent years. However, with the increase in the aging population, the percentage of tuberculosis in elderly individuals has been increasing. Miliary tuberculosis is a severe disease that is characterized by the systematic hematogenous dissemination of Mycobacterium tuberculosis in several organs.

We report a case of afebrile miliary tuberculosis in an elderly woman in whom the primary disease was found to be tuberculous spondylitis associated with subsequent iliopsoas abscess. Until the diagnosis of miliary tuberculosis was made, she remained afebrile. Tuberculosis sometimes has an atypical course in elderly patients. Lumbar pain is one of the common complaints in elderly individuals and it should be carefully assessed, considering that it might be an early tuberculosis symptom.

Case Report

A 78-year-old woman visited our hospital for chronic atrial fibrillation, which was stabilized by the treatment with oral drugs such as warfarin potassium, digoxin, and disopyramide. The patient did not have any remarkable medical history. However, she had cared for her cousin with pulmonary tuberculosis several decades previously. In early August 2009, she experienced lumbar pain and consulted an orthopedic surgeon in the same month. The patient underwent magnetic resonance imaging (MRI) of the spine and was diagnosed with osteoporosis and vertebral compression fracture. She was thereafter followed up on an outpatient basis. In September 2009, she underwent a complete medical checkup; her physical examination revealed no abnormalities, and her chest X-ray showed no remarkable findings. Her lumbar pain exacerbated gradually. She also experienced a loss of appetite. Meanwhile, she remained afebrile during the course. In December 2009, she was admitted to the department of orthopedic surgery of our hospital for detailed examination.
Figure 1A. T2-weighted sagittal magnetic resonance imaging (MRI) of the spine on admission (December 2009) revealed an abnormal signal in the second and third lumbar vertebrae. Compression fracture of each vertebra had become further exacerbated compared to that observed in August 2009 (arrow).

Figure 1B. Axial T2-weighted magnetic resonance imaging (MRI) showed abscess in the adjacent left iliopsoas muscle (arrow).

There were no remarkable inflammatory findings. Hypokalemia and hypoalbuminemia were noted. On hospital day 3, her C-reactive protein (CRP) level was 4.19 mg/dL. MRI of the spine was performed again for investigation of the lumbar pain. MRI of the spine performed in August 2009 showed only compression fracture of the third lumbar vertebra, whereas that obtained on admission (Fig. 1A, 1B) revealed severe destruction of the second and third lumbar vertebrae and a lesion suggestive of abscess in the adjacent left iliopsoas muscle. Chest roentgenogram obtained on admission (Fig. 2) revealed diffuse miliary shadow, although that obtained in September 2009 (Fig. 3) showed no diffuse miliary shadow but only pleural thickening on the apical portion of the right lung. Chest computed tomography (CT) (Fig. 4) showed diffuse miliary shadow, small scattered nodules, and pleural thickening on the apical portion of both lungs.

Because of abnormal shadows on chest roentgenogram and CT, the patient was referred to the department of internal medicine of our hospital. A differential diagnosis between metastatic pulmonary tumors and miliary tuberculosis was initially required; however, a diagnosis of miliary tuberculosis...
Culosis was highly likely based on MRI findings of the spine and a lesion that was suspected to be an abscess in the adjacent left iliopsoas muscle. In addition, tuberculin skin test was negative. QuantiFERON-TB test yielded positive result; the levels of the 6-kDa early secreted antigenic target protein (ESAT-6) and the 10-kDa culture filtrate protein (CFP-10) were 2.42 IU/mL and 0.05 IU/mL, respectively. The results of acid fast bacteria staining of sputum and gastric fluid were negative. Therefore, we performed bronchoscopy, and only bronchial lavage fluid, and not transbronchial lung biopsy sample, was collected because the patient had been treated with warfarin potassium. However, acid-fast bacteria staining of the bronchial lavage fluid was negative, and polymerase chain reaction (PCR) of the DNA isolated from the fluid was negative for \textit{M. tuberculosis}. Thus, repeated bronchoscopy was required for a definitive diagnosis; however, it was impossible to perform bronchoscopy because the patient complained of nausea and her general condition worsened. Instead, we performed helical CT-guided aspiration for the iliopsoas abscess. No pus was aspirated from the lesion that was suspected to be an abscess. After irrigation with a small amount of saline, the lavage fluid was collected. The acid-fast bacteria staining of the lavage fluid was also negative, but PCR analysis of the fluid was positive for \textit{M. tuberculosis}. Therefore, definitive diagnoses of tuberculous spondylitis and tuberculous iliopsoas abscess were made, and the patient was started on treatment with isoniazid (INH), rifampicin (RFP), and ethambutol hydrochloride (EB). At about the same time, the patient developed shingles in her right shoulder and upper limb. Therefore, she was also given valaciclovir hydrochloride. Later, \textit{M. tuberculosis} was cultured from the sputum, gastric fluid, bronchial lavage fluid, and aspiration lavage fluid of the iliopsoas abscess by using the Mycobacteria Growth Indicator Tube method. Finally, the patient was diagnosed as having miliary tuberculosis. As for the involvement of the other organs, there were no tuberculous lesions in her eyes or in the intraabdominal organs, such as the liver, kidneys, and spleen. In addition, drug susceptibility testing showed that the \textit{M. tuberculosis} isolates were sensitive to all antituberculous drugs.

**Discussion**

There has been a decrease in the total number of tuberculosis cases in recent years. However, with the increase in the aging population, the percentage of tuberculosis in more than 70-year-old individuals has been increasing. Such patients account for nearly half of all the newly registered tuberculosis cases. Of the newly registered 24,760 cases of tu-
berculosis in 2008, 570 had miliary tuberculosis, of which 408 (71%) were more than 70 years old. Tuberculous spondylitis was recorded in 273 cases, of which 162 (59%) were more than 70 years old (1). This shows that the percentage of elderly patients with each type of tuberculosis is high.

Our hospital is a small municipal hospital with less than 200 beds; the number of ambulant patients with common disease is extremely high, and the consultation rate of elderly patients is also high.

In the present case, the patient visited our hospital for lumbar pain, which is a common complaint in elderly individuals. Lumbar pain is the major symptom of tuberculous spondylitis. Furthermore, tuberculous spondylitis is associated with nonspecific symptoms such as fatigue, loss of appetite, and weight loss. A previous study reported that 70% of elderly patients with tuberculous spondylitis remained afebrile, and 26% of them showed a CRP level of less than 1.0 mg/dL (2). Some reports have indicated that it took about 5 to 8 months on average to make a definitive diagnosis of tuberculous spondylitis in elderly patients (3, 4). This suggests that tuberculous spondylitis may be difficult to diagnose only on the basis of symptoms and clinical examination results. In the present patient, tuberculous spondylitis was not considered in the differential diagnosis of her condition at the initial examination. Four months after the first presentation, the condition progressed to miliary tuberculosis associated with iliopsoas abscess. Thus, a differential diagnosis can be difficult based on X-ray findings of the lumbar region in elderly patients because many of them have suffered common diseases such as compressed fractures (5).

MRI might have the ability to detect lesions at earlier stage as compared with X-ray examination; vertebral lesions at acute stage of tuberculosis are shown as low signal intensities on the T1-weighted image and as high signal intensities on the T2-weighted image (6). Although we also performed lumbar MRI in our patient at the first examination, the above characteristic MRI findings were not shown. Tuberculous spondylitis at the early stage may be difficult to diagnose even based on MRI.

Miliary tuberculosis is also characterized by producing nonspecific symptoms such as fever, loss of appetite, and weight loss. Among these symptoms, fever is noted more frequently. Some studies suggested that more than 95% of patients with miliary tuberculosis present with fever (7, 8). Miliary tuberculosis is characterized by fever of unknown origin. However, our patient did not have fever as one of the symptoms characteristic to miliary tuberculosis. The reason for this discrepancy is unknown, but we speculate that our patient may be immunocompromised due to aging. Yamaguchi et al reported that the incidence of fever of 38°C or more was higher in patients aged 75 years and older than in those aged less than 75 years (9).

In the present case, chest roentgenogram obtained at first presentation showed pleural thickening on the apical portion of the right lung, and chest CT also showed pleural thickening on the apical portion of both lungs. In addition, her family history revealed that the patient had been exposed to M. tuberculosis. Thus, it can be inferred that after the patient had been previously infected with M. tuberculosis and cured, she developed secondary tuberculosis at this episode. On the basis of the finding of progression from tuberculous spondylitis to iliopsoas abscess and finally miliary tuberculosis, we consider this case of miliary tuberculosis to be of the late disseminated type (10), in which M. tuberculosis disseminates throughout the body from a solitary tuberculous organ via the intralesional vascular flow.

In the present patient, tuberculin skin test was negative, whereas QuantiFERON-TB test yielded a positive result. Elderly individuals have a decreased tuberculin response, and the false-negative rate in elderly individuals is reported to be 32.4% (11). QuantiFERON-TB test also yields false-negative results in elderly individuals, but its sensitivity is similar to or higher than that of the tuberculin skin test and its specificity is 98% (12). Therefore, QuantiFERON-TB test should be of some help for the differential diagnosis. In addition, acid-fast bacteria staining of the bronchial lavage fluid and PCR of the DNA isolated from the fluid, which was used for rapid diagnosis, were negative for M. tuberculosis. The rate of positive culture results is reported to be 48%-53% (13), even though the results for PCR of the DNA isolated from sputum are negative in patients who carry a limited number of pathogenic microbes, as was observed in our case. Culture examination is critical to make a definitive diagnosis and choose adequate antibiotics.

With regard to the treatment of tuberculosis patients, the American Thoracic Society recommended 6-9 months of antibiotic treatment for bone and joint tuberculosis, and 6 months of treatment for other tuberculosis, including miliary tuberculosis (14). The Japanese Society for Tuberculosis has recommended that the period of treatment can be extended for up to 3 months in critical tuberculosis cases such as miliary tuberculosis (15). Many types of extrapulmonary tuberculosis including miliary tuberculosis, as in our patient, can be treated with pharmacotherapy alone, as well as in the case of pulmonary tuberculosis, in which the recurrence rate is reported to be 1% or less when treated with INH and RFP for 9 month (16). In our case, by the time a definitive diagnosis was made, the condition of our patient had become exacerbated because of severe nausea and vomiting, and she was elderly. Thus, to avoid adverse effects of pyrazinamide (PZA) on the liver, the patient was started on treatment with INH, RFP, and EB. Pharmacotherapy with antituberculous drugs is the primary treatment of choice for tuberculous spondylitis. Operation can be indicated when the patients’ condition progresses to spinal instability due to the occurrence of spinal paralysis and vertebral destruction, or when patients do not respond to pharmacotherapy (17). The present patient was carefully followed up to avoid deterioration of the spine. At present, her pain and numbness have ameliorated, and she is doing well without any adverse effects. The duration of therapy is considered to be 12 months that is extended by 3 months because of miliary tuberculo-
sis, according to the guideline of the Japanese Society for Tuberculosis.

In the present patient, miliary tuberculosis developed after a 4-month history of tuberculous spondylitis. There is no report on the progression time from tuberculous spondylitis to miliary tuberculosis. The present case highlights the need to be wary of the fact that the condition of elderly individuals might sometimes progress to miliary tuberculosis even if they are not in an immunocompromised state.

Henceforth, tuberculosis should be considered as a more important disease in elderly patients, and it should be considered in the differential diagnosis, especially at municipal hospitals. In elderly patients with tuberculous spondylitis, one should recognize that many of the patients visit hospitals with complaints of seemingly common diseases. If such patients complain of intractable lumbar pain, they should be followed up carefully by using chest X-ray or MRI during the course of treatment.

In summary, we report a case of afebrile miliary tuberculosis in an elderly woman who had tuberculous spondylitis as the primary disease and subsequently developed iliopsoas abscess. Lumbar pain is common complaint in elderly individuals. Elderly patients must be carefully examined, considering lumbar pain as a tuberculosis symptom.

References


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