CASE REPORT

Case Report: Suspicions of metastasis in a patient with transitional cell carcinoma were revealed to be spinal tuberculosis [version 1; peer review: 1 approved with reservations, 1 not approved]

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Abstract

Background: Infection with Mycobacterium tuberculosis (TB) is one of the major causes of mortality in developing countries. TB is primarily a lung disease, but can affect almost every organ of the body. Skeletal TB involves the bones or joints. In this report, we will introduce a patient with a medical history of transitional cell carcinoma (TCC) of the bladder that presented with spinal tuberculosis (Pott’s disease).

Case Report: The patient was a 74-year-old man with medical history of TCC of the bladder who had come to hospital due to severe weakness and sprains of lower extremities. Other symptoms noted by the patient included anorexia, weight loss (of 5 kg), and night sweats, but he did not complain of fever, coughs or respiratory symptoms. The lab data were as follows: WBC, 16/9*10³; ESR, 88 mm/hr; CRP, 78mg/dl. Radiology findings revealed degenerative process in the L2-L3 lumbar vertebrae and disk. PCR and sample tissue culture results showed the presence of Mycobacterium tuberculosis.

Conclusion: In the lesions of the lumbar vertebrae, even if there is another underlying disease, spinal TB should also be considered as a possibility. Furthermore, in patients with any type of cancer, any other organ conflict is not considered as metastasis, and tissue sampling should be provided because a change in the type of disease can influence prognosis.

Keywords

Mycobacterium Tuberculosis, Spondylitis, Potts disease, metastasis, Transitional Cell Carcinoma

Open Peer Review

Reviewer Status

Invited Reviewers

1

2

version 1

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Report

Report

1. Mohsen Moghadami, Shiraz University of Medical Sciences (SUMS), Shiraz, Iran

2. Dilip Singh, Ohio State University Wexner Medical Center, Columbus, USA

Any reports and responses or comments on the article can be found at the end of the article.
Introduction
Infection with *Mycobacterium tuberculosis* (TB) is one of the major causes of mortality in developing countries, affecting millions throughout the world.\(^1\) TB is primarily a lung disease but can affect almost every organ of the body. The term “extrapulmonary TB” is used to describe a clogged infection in places other than the lung. The most common places are extrapulmonary tuberculosis of the lymph nodes, urinary tract, pleura, bones and joints, meninges and central nervous system, peritonea and other abdominal organs. In a study of 483 patients with pulmonary TB infection in Chile, only 2% of all the cases of tuberculosis infection were associated with skeletal tuberculosis.\(^4\) In addition, in the United States, an estimated 10.8% of extrapulmonary tuberculosis cases were considered skeletal tuberculosis, accounting for 2.3% of total tuberculosis statistics.\(^5\) Spinal TB, also known as “Pott’s disease,” accounts for about 50% of cases of skeletal tuberculosis, and is commonly found in children and adolescents.\(^6\).

In this report, we will introduce a patient with a medical history of transitional cell carcinoma (TCC) of the bladder that presented with spinal tuberculosis (Pott’s disease).

Clinical findings
During the clinical examination, tenderness of the lumbar spine was accompanied by a decrease in the range of motion (ROM) from 2 / 5 of right lower extremities and 3 / 5 of right lower extremities, in addition to positive reverse SLR (Straight Leg Raise) test.

Diagnostic assessment
The patient’s test results are presented in Table 1.

In the CT scan, hypo-dense mass of size 140 × 44 × 44 mm in paravertebral space L2 was observed, with destruction of the right and left facet joint and spinous process of L2, and destruction of intervertebral disk of the L2 - L3 (Figure 1). In the MRI, an increase in the signal of the L2 and L3 vertebral bodies was observed, along with the destruction of the anterior plate and the reduction of the articular space. In the same area, a lesion was observed with a moderate signal on the anterior longitudinal ligament and posterior longitudinal ligament, and a complete loss of CSF (Figure 2).

For accurate diagnosis, the patient underwent ultrasound-guided biopsy, and the samples were sent to the lab for PCR, culture and histological examination. In the sampling report, PCR confirmed infection with *Mycobacterium tuberculosis*. Furthermore, the tissue culture was also found to be positive for *Mycobacterium tuberculosis*.

Therapeutic intervention
After diagnosis, treatment was started with isoniazid (300mg daily), rifampin (600mg daily), ethambutol (1.2 gr daily), and pyrazinamide (1.5 gr daily) for 2 months then isoniazid and rifampin for 10 months.

Follow-up and outcomes
Currently, after 4 months, the patient receives anti-TB drugs under the supervision of the Yasouj Health Center, and has not

### Table 1. Laboratory results for the patient on admission.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Normal range</th>
</tr>
</thead>
<tbody>
<tr>
<td>White blood cell</td>
<td>16/8 *10^3 cells/mcl</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>9/5 gm/dl</td>
</tr>
<tr>
<td>Mean cell volume</td>
<td>77 F/L</td>
</tr>
<tr>
<td>Platelet</td>
<td>324 *10^3 cell/mcl</td>
</tr>
<tr>
<td>Erythrocyte Sedimentation Rate</td>
<td>88 mm/hr</td>
</tr>
<tr>
<td>C-reactive protein 3-Human immunodeficiency virus</td>
<td>78 mg/dl</td>
</tr>
<tr>
<td>Creatinine</td>
<td>1.7 mg/dl</td>
</tr>
<tr>
<td>Anti-HIV 3 antibody</td>
<td>Negative</td>
</tr>
</tbody>
</table>

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noted any evidences of weakness or night sweating. ROM of both lower extremities is 4/5. After completion of treatment, the patient will undergo a follow-up period under the supervision of the Neurosurgery Department.

Discussion
Skeletal TB refers to the involvement of the bones or joints\(^7\). Forms of skeletal TB include osteomyelitis, spondylitis, and arthritis. The literature on spinal TB shows a wide variation in reported rates of active concomitant pulmonary TB at the time of spinal TB diagnosis\(^8\)–\(^10\). In our case, however, pulmonary involvement was absent.

TB spondylitis or Pott’s disease most commonly affects the lower thoracic and upper lumbar vertebrae, and less frequently cervical and upper thoracic vertebrae\(^10\),\(^11\). The most common symptom is focal pain, which increases in severity over time, and is sometimes accompanied by muscle spasm. The muscle spasm can extend to other parts of the body. In some cases, it can cause difficulty in gait\(^12\).

The diagnosis of skeletal TB is often delayed and may be difficult. It is made based on culture of tissue\(^13\). But computerized tomography, magnetic resonance imaging, and myelography are all useful diagnostic tools\(^10\),\(^14\)–\(^16\). Radiographic findings can be nonspecific; early features may include soft tissue swelling (especially of the anterior portions of the vertebral body) with bone demineralization and preservation of joint surfaces\(^12\). In our case, because of the seriousness of decreased range of motion of lower extremities, and high clinical susceptibility to

Figure 1. CT scan of spine showed a hypo-dense mass of size 140 x 44 x 44 mm in paravertebral space L2, and destruction vertebral body of L2 and destruction of intervertebral disk of the L2 - L3.

Figure 2. MRI of the spine revealed an increase in the signal of the L2 and L3 vertebral bodies, along with the destruction of the anterior plate and the reduction of the articular space. In the same area, complete loss of CSF can be seen.
Mycobacterium infection, and given that radiological findings were similar to those for patients with TB spondylitis, the process of diagnosis was rapid.

Patients with metastatic TCC of bladder in the bone and liver have poor prognosis\(^7\). For this reason, it was important to rule out metastasis in the case of this patient.

Given that vertebrae osteomyelitis has been seen in patients receiving intravesical BCG for the treatment of TCC of the bladder\(^1\), the presence of Mycobacterium bovis was expected in the culture sample, but Mycobacterium tuberculosis was confirmed.

**Conclusion**

In the lesions of the lumbar vertebrae, even if there is another underlying disease, spinal TB should also be considered as a possibility.

**Consent**

Written informed consent was obtained from the patient for the publication of the patient’s clinical details and accompanying images.

**Data availability**

All data underlying the results are available as part of the article and no additional source data are required.

**Competing interests**

No competing interests were disclosed.

**Grant information**

The author(s) declared that no grants were involved in supporting this work.

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**References**

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This is the report describing a patient with Pott's spine who also had cancer of bladder. Patient presented with a picture of compressive myelopathy along with constitutional symptoms. Authors did the typical work up and confirmed the diagnosis of Pott's spine based on microbiological data.

In the case description, duration and progression of symptoms are not clear.

In the endemic areas with TB it is not uncommon for patients to present with extra pulmonary TB. Given the typical presentation described in this case, Pott's spine still remains an important differential, despite the known diagnosis of cancer.

It is well known to scientific community to consider the diagnosis of Pott's spine in such cases in endemic areas hence this case doesn't add anything in the existing literature.

**Is the background of the case's history and progression described in sufficient detail?**
Partly

**Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?**
No

**Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?**
No

**Is the case presented with sufficient detail to be useful for other practitioners?**
No
**Competing Interests:** No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

**Mohsen Moghadami**
Non-Communicable Disease Research Center, Shiraz University of Medical Sciences (SUMS), Shiraz, Iran

1. What is the result of PPD skin test or Quantiferon assay of the patient?

2. The author must determine the exact method of Diagnostic PCR and the type of primer. Many types of MTB PCR exist around the world with variable sensitivity and specificity.

3. The author must determine the exact method and type of MTB culture.

4. Rewriting of case presentation with more detail about examination and history and correction of English writing errors by a native English editor.

5. Need for the chest x-ray of the patient.

6. The author has noted the sample was sent for histopathology. What was the result? The figure of histopathology with specialized staining should be added.

Is the background of the case's history and progression described in sufficient detail?
Yes

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?
Partly

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?
Partly

Is the case presented with sufficient detail to be useful for other practitioners?
Partly

**Competing Interests:** No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

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