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]

Owran Eilami¹, Shahla Jahanbin², Gordafarin Nikbakht¹, Faezeh Azarifar³, Saeid Jokar^{id}⁴

¹Department of Infectious Diseases, Yasuj University of Medical Sciences, Yasuj, Iran

²Department of Radiology, School of Medicine, Yasuj University of Medical Sciences, Yasuj, Iran

³Student Research Committee, Yasuj University of Medical Sciences, Yasuj, Iran

⁴Department of Internal Medicine, Yasuj University of Medical Sciences, Yasuj, Iran

V1 First published: 11 Apr 2018, 7:444
<https://doi.org/10.12688/f1000research.14371.1>

Latest published: 11 Apr 2018, 7:444
<https://doi.org/10.12688/f1000research.14371.1>

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

Approval Status ? X

	1	2
version 1 11 Apr 2018	? view	X view

1. **Mohsen Moghadami**, Shiraz University of Medical Sciences (SUMS), Shiraz, Iran
2. **Dilip Singh** ^{id}, 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.

This article is included in the **World TB Day** collection.

Corresponding author: Saeid Jokar (jokar4132@gmail.com)

Author roles: Eilami O: Conceptualization, Project Administration; Jahanbin S: Visualization; Nikbakht G: Resources; Azarifar F: Writing – Review & Editing; Jokar S: Data Curation, Writing – Original Draft Preparation

Competing interests: No competing interests were disclosed.

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

Copyright: © 2018 Eilami O *et al.* This is an open access article distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

How to cite this article: Eilami O, Jahanbin S, Nikbakht G *et al.* **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]** F1000Research 2018, 7:444 <https://doi.org/10.12688/f1000research.14371.1>

First published: 11 Apr 2018, 7:444 <https://doi.org/10.12688/f1000research.14371.1>

Introduction

Infection with *Mycobacterium tuberculosis* (TB) is one of the major causes of mortality in developing countries, affecting millions throughout the world^{1,2}. 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 organs³. 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 tuberculosis⁴. In addition, in the United States, an estimated 10.8% of extrapulmonary tuberculosis cases were considered skeletal tuberculosis in general, accounting for 2.3% of total tuberculosis statistics⁵. Spinal TB, also known as “Pott’s disease,” accounts for about 50% of cases of skeletal tuberculosis, and is commonly found in children and adolescents⁶.

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

Patient information

The patient was a 74-year-old man from Yasouj city (South-west of Iran) with a medical history of chronic kidney disease, TCC of the bladder, who was on BCG (Bacille Calmette-Guérin) chemotherapy, and deep vein thrombosis, who had come to hospital due to severe weakness and sprains of lower extremities. The patient noted that the weakness and numbness of the lower extremities were progressive and became worse at night. During this period, the patient had not undergone any further diagnosis, and controlled his pain with acetaminophen. Other symptoms that the patient noted was anorexia, weight loss of 5 kg, and night sweats, but he did not complain of fever, cough and respiratory symptoms.

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.

		Normal range
White blood cell	16/8 *10 ³ cells/mcl	5–10 *10 ³ cells/mcl
Hemoglobin	9/5 gm/dl	14–16 gm/dl
Mean cell volume	77 F/L	75–92 F/L
Platelet	324 *10 ³ cell/mcl	150–450 cell/mcl
Erythrocyte Sedimentation Rate	88 mm/hr	<20 mm/hr
C-reactive protein 3-Human immunodeficiency virus	78 mg/dl	<10 mg/dl
Creatinine	1.7 mg/dl	0.6–1.2 mg/dl
Anti-HIV ³ antibody	Negative	NA

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

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 joints⁷. 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 diagnosis⁸⁻¹⁰. 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 tissue¹³. 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 surfaces¹². In our case, because of the seriousness of decreased range of motion of lower extremities, and high clinical susceptibility to

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 prognosis¹⁷. 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 bladder¹⁸, 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.

References

1. Dye C, Scheele S, Dolin P, *et al.*: **Consensus statement. Global burden of tuberculosis: estimated incidence, prevalence, and mortality by country.** WHO Global Surveillance and Monitoring Project. *JAMA*. 1999; **282**(7): 677–686.
[PubMed Abstract](#) | [Publisher Full Text](#)
2. Moon MS, Moon YW, Moon JL, *et al.*: **Conservative treatment of tuberculosis of the lumbar and lumbosacral spine.** *Clin Orthop Relat Res*. 2002; (398): 40–49.
[PubMed Abstract](#) | [Publisher Full Text](#)
3. Sandgren A, Hollo V, Huitric E, *et al.*: **Epidemiology of tuberculosis in the EU/EEA in 2010: monitoring the progress towards tuberculosis elimination.** *Euro Surveill*. 2012; **17**(12): pii: 20124.
[PubMed Abstract](#)
4. Arriaza BT, Salo W, Aufderheide AC, *et al.*: **Pre-Columbian tuberculosis in northern Chile: molecular and skeletal evidence.** *Am J Phys Anthropol*. 1995; **98**(1): 37–45.
[PubMed Abstract](#) | [Publisher Full Text](#)
5. Peto HM, Pratt RH, Harrington TA, *et al.*: **Epidemiology of extrapulmonary tuberculosis in the United States, 1993–2006.** *Clin Infect Dis*. 2009; **49**(9): 1350–7.
[PubMed Abstract](#) | [Publisher Full Text](#)
6. Garg RK, Somvanshi DS: **Spinal tuberculosis: a review.** *J Spinal Cord Med*. 2011; **34**(5): 440–454.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
7. Daniel TM, Bates JH, Downes KA: **History of tuberculosis.** In: *Tuberculosis: Pathogenesis, Protection, and Control*. Bloom BR (Ed), American Society for Microbiology, Washington. 1994.
[Publisher Full Text](#)
8. Hershkovitz I, Donoghue HD, Minnikin DE, *et al.*: **Detection and molecular characterization of 9,000-year-old *Mycobacterium tuberculosis* from a Neolithic settlement in the Eastern Mediterranean.** *PLoS One*. 2008; **3**(10): e3426.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
9. Pertuiset E, Beaudreuil J, Lioté F, *et al.*: **Spinal tuberculosis in adults. A study of 103 cases in a developed country, 1980–1994.** *Medicine (Baltimore)*. 1999; **78**(5): 309–20.
[PubMed Abstract](#) | [Publisher Full Text](#)
10. Turgut M: **Spinal tuberculosis (Pott's disease): its clinical presentation, surgical management, and outcome. A survey study on 694 patients.** *Neurosurg Rev*. 2001; **24**(1): 8–13.
[PubMed Abstract](#) | [Publisher Full Text](#)
11. Weaver P, Lifeso RM: **The radiological diagnosis of tuberculosis of the adult spine.** *Skeletal Radiol*. 1984; **12**(3): 178–86.
[PubMed Abstract](#) | [Publisher Full Text](#)
12. Lifeso RM, Weaver P, Harder EH: **Tuberculous spondylitis in adults.** *J Bone Joint Surg Am*. 1985; **67**(9): 1405–13.
[PubMed Abstract](#)
13. Versfeld GA, Solomon A: **A diagnostic approach to tuberculosis of bones and joints.** *J Bone Joint Surg Br*. 1982; **64**(4): 446–9.
[PubMed Abstract](#) | [Publisher Full Text](#)
14. Colmenero JD, Ruiz-Mesa JD, Sanjuan-Jimenez R, *et al.*: **Establishing the diagnosis of tuberculous vertebral osteomyelitis.** *Eur Spine J*. 2013; **22** Suppl 4: 579–86.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
15. Shanley DJ: **Tuberculosis of the spine: imaging features.** *AJR Am J Roentgenol*. 1995; **164**(3): 659–64.
[PubMed Abstract](#) | [Publisher Full Text](#)
16. Desai SS: **Early diagnosis of spinal tuberculosis by MRI.** *J Bone Joint Surg Br*. 1994; **76**(6): 863–9.
[PubMed Abstract](#) | [Publisher Full Text](#)
17. Loehrer PJ Sr, Einhorn LH, Elson PJ, *et al.*: **A randomized comparison of cisplatin alone or in combination with methotrexate, vinblastine, and doxorubicin in patients with metastatic urothelial carcinoma: a cooperative group study.** *J Clin Oncol*. 1992; **10**(7): 1066–73.
[PubMed Abstract](#) | [Publisher Full Text](#)
18. Miyazaki M, Yoshiiwa T, Ishihara T, *et al.*: **Tuberculous Spondylitis following Intravesical *Bacillus Calmette-Guerin* for Bladder Cancer.** *Case Rep Orthop*. 2016; **2016**: 6741284.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)

Open Peer Review

Current Peer Review Status: ? X

Version 1

Reviewer Report 13 June 2018

<https://doi.org/10.5256/f1000research.15636.r33125>

© 2018 Singh D. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Dilip Singh

Ohio State University Wexner Medical Center, Columbus, OH, USA

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.

Reviewer Report 11 May 2018

<https://doi.org/10.5256/f1000research.15636.r33631>

© 2018 Moghadami M. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

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.

The benefits of publishing with F1000Research:

- Your article is published within days, with no editorial bias
- You can publish traditional articles, null/negative results, case reports, data notes and more
- The peer review process is transparent and collaborative
- Your article is indexed in PubMed after passing peer review
- Dedicated customer support at every stage

For pre-submission enquiries, contact research@f1000.com

F1000Research