

Case Report Article

Spinal tuberculosis with concomitant tuberculosis psoas abscesses in a young male. A rare case of extrapulmonary tuberculosis

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We report a case of spinal tuberculosis with concomitant presence of tuberculosis psoas abscesses. A 27 year-old male patient presented with 10 month history of lower back pain and a recently appeared, increasing in size, gluteal mass. Patient appeared with low-grade fever and mildly elevated inflammation markers. Magnetic resonance imaging (MRI) revealed the two psoas abscesses and spondylitis of T12-L1 vertebrae. Drainage of the largest abscess was performed, samples were cultured and PCR for mycobacterium tuberculosis was performed. After the positive result from PCR and exclusion of concomitant tuberculosis of other organs the patient was treated with isoniazid, rifampicin, ethambutol and pyrazinamide and the use of spinal orthotics for stabilization of the spine. Culture results confirmed the diagnosis of spinal tuberculosis. Patient was followed up during the year he received the treatment and remained asymptomatic with improvement of imaging findings. Pott's disease accounts for a small percentage of all tuberculosis cases, while skeletal tuberculosis accounts for almost half of extra-pulmonary tuberculosis. Among spinal tuberculosis patients only a 5% suffers from concomitant psoas abscesses. Since skeletal tuberculosis has an insidious clinical course and can lead to serious disability if undiagnosed, high clinical suspicion by the physician is essential for early diagnosis and management.

Keywords: Mycobacterium tuberculosis, Tuberculosis, Spondylitis, Psoas abscess, Pott's disease

Introduction

Tuberculosis (TB) can involve almost any organ. While pulmonary tuberculosis is more often diagnosed extra-pulmonary tuberculosis can prove to be a challenge for every physician. Extra-pulmonary tuberculosis usually occurs after hematogenous transfer of mycobacterium tuberculosis from the primary infection site (usually the lungs)^{1,2}. Spinal TB, also referred to as Pott's disease, concerns only up to 1-3% of all TB cases³⁻⁵. However skeletal involvement is higher among HIV patients^{4,5}. Since tuberculosis spondylitis is the most common and dangerous type of tuberculosis occurring in musculoskeletal system and can lead to severe neurological complications and spinal deformity, early diagnosis and management are important⁶⁻⁷. Psoas abscesses from mycobacterium tuberculosis are even more rare than tuberculosis spondylitis⁸. Here we describe a case of extra-pulmonary tuberculosis-with concomitant presence of TB spondylitis and psoas abscesses in a young male patient.

Case report

A 27-year-old unmarried male, Pakistani in origin, residing in Greece in the last 3 years, currently working as a farmer, presented with 10 month history of lower back pain and an increasing in size painless mass on the right gluteal area.

The patient had no prior medical history. He had no history of smoking, alcohol abuse or illicit drug use. He used no medication apart from analgesics like paracetamol. He did not report any history of trauma. Upon examination the patient appeared awake, alert and oriented, body

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Figure 1. Chest x-ray appears no signs of tuberculosis.

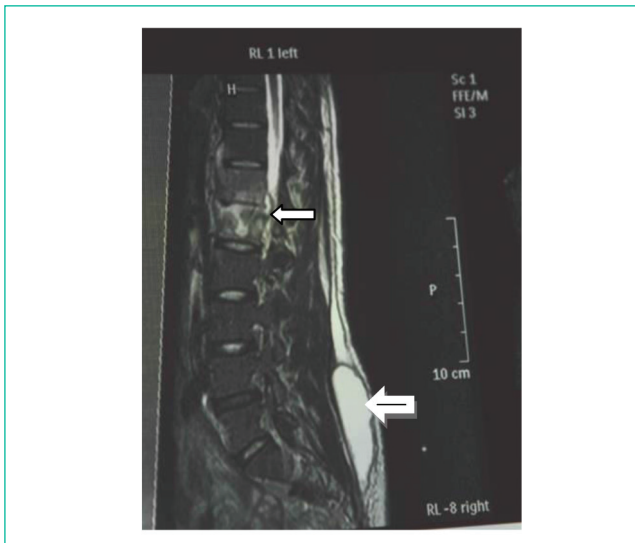
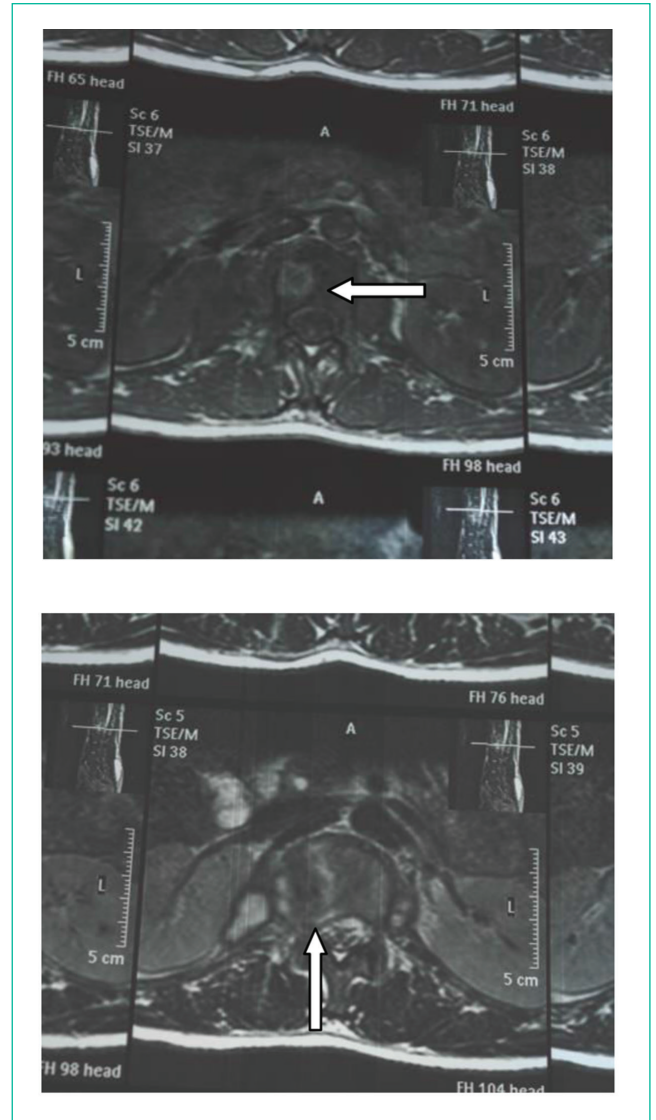


Figure 2. Thoracolumbar spine MRI. Sagittal T2 (coronal view) weighted image showing spondylitis at the T12 and L1 level and gluteal abscess.



Figures 3, 4. Axial view demonstrated distractive osteolytic lesion at the T12 and L1 vertebral body.

temperature was 37.5°C, blood pressure 130/85, pulse rate 82 beats per minute and respiratory rate 17 breaths per-minute. Tenderness upon palpation was noted over the lower thoracic and lumbar spine. In the right upper gluteal area a palpated fluctuant mass was noted. The straight leg raise (Lasegue test) and contralateral straight caused pain in lower back in both extremities. Neurological examination, including deep tendon reflexes and sensation was normal. Power grade was 5/5 in both lower limbs. No bladder or bowel dysfunction was reported by the patient. The rest of clinical examination had no significant findings.

Initial laboratory examination revealed mild leukocytosis [white blood cell count 13100/ μ l (normal range: 4600-

10200/ μ l)], elevated C-reactive protein [CRP: 7.15 (normal range: <0.3 mg/dl)], normal procalcitonin test: 0.32 (normal range: <0.5), normal renal function, elevated alkaline phosphatase [ALP: 266 U/l (normal range: 34-120 U/l)], gamma glutamyl tranferase [γ GT: 309 U/l (normal range: 9-35 U/l)], erythrocyte sedimentation rate was elevated (ESR:90). Chest radiography was clear (Figure 1). The patient was admitted for further evaluation.

MRI imaging was performed in the thoracic and lumbar spine as well as the lower abdomen and gluteal area. Imaging revealed two abscesses in the right psoas and destructed vertebral bodies in T12-L1 (Figures 2-4). Paracentesis was performed in the largest of the abscesses and cultures for

common bacteria and mycobacteria were performed. A PCR test for mycobacterium tuberculosis was performed in the pus as well because of the high level of suspicion for tuberculosis. PCR test was positive for mycobacterium tuberculosis and negative for resistance in isoniazid and rifampicin. Imaging of the thorax showed only a calcified lung nodule in the left upper lung with no signs of active pulmonary tuberculosis. However sputum, gastric fluid and urine samples were examined with microscopy and culture to exclude tuberculosis in other sites. HIV testing was negative.

Patient management included anti tuberculosis medication; a combination of Isoniazid (INH) 300 mg plus Rifampicin (RMP) 600mg daily for nine months, Ethambutol (ETB) 1600 mg daily, Pyrazinamide (PZN) 2000 mg daily for 2 months; as well as orthopedic assessment concerning the stability of the spine and a spinal orthosis was prescribed for the patient. The large abscess was completely drained under CT guidance because of its size and patient's discomfort. Pain was managed with common analgesics. The patient was discharged after two weeks of treatment.

The culture results in six weeks were positive for mycobacterium tuberculosis, confirming PCR findings, and susceptibility testing showed no resistance to commonly used anti-tuberculosis drugs. The patient had no complications from anti-tuberculosis treatment through the whole year he received the treatment and remained asymptomatic through this year. In follow-up imaging the psoas abscesses were absent and no further damage of the vertebrae was noted.

Discussion

Tuberculosis spondylitis affects mostly the lumbar and thoracic spine. It usually starts in vertebral body and infects adjacent tissue along the anterior longitudinal ligament. Symptoms include low back pain usually of gradual onset and gradually increasing, with or without neurologic deficits⁸. Fatigue, low fever and weight loss are also frequently described⁹. No symptom however, can be considered diagnostic, and high clinical suspicion is essential for the diagnosis. Spinal TB and pyogenic spondylitis are similar in clinical presentation and should be distinguished⁹. TB spondylitis can mimic in appearance metastatic malignancies in the spine as well⁹. History of prior TB, positive tuberculin test and positive PCR for mycobacterium tuberculosis are important for the diagnosis prior to culture results that can be delayed for months¹⁰. However culture samples from bone tissue and abscesses remain essential for diagnosis and susceptibility testing¹⁰. Magnetic resonance imaging (MRI) provides useful information at an earlier stage of the disease and should be preferred if available^{1,2,10}.

Only a small portion of spinal TB patients, up to 5%, will develop psoas abscesses during the course of the disease¹¹. A psoas abscess can be formed secondarily to spinal TB after an accumulated abscess also mentioned as "abscessus frigidus" forms around the lesion. Then the abscess descends to the greater psoas⁸. Multiple sites of extrapulmonary

tuberculosis are more often described in elderly patients and immunosuppression.

The case presented here concerns a patient with concomitant presence of spinal TB and psoas tubercular psoas abscesses. The symptomatic disease had commenced 10 months prior with back pain probably due to the damage of the vertebrae by tuberculosis while the abscesses formed later in the course of the disease and were the ones that resulted in the patient's referral to the hospital.

As previously mentioned, although imaging techniques can provide useful information and can provide suspicion of tuberculosis^{1,2,10} samples for culturing mycobacterium tuberculosis and differentiating from other diseases-infectious or not- should be obtained¹⁰. Sometimes spondylitis lesions are not easily and safely accessible for sampling. Presence of easily accessible psoas abscesses in our patient provided fast and sufficient sampling for culture and PCR providing an accurate diagnosis in less than 48 hours since the patient's admission. Drainage of abscesses is not essential in the therapy of tubercular abscesses^{8,12}. However drainage of large abscesses, as in this case, can offer symptomatic relief for the patient and provides large pus samples for testing. Considering that even cultures can be negative in a large percentage of cases, obtaining larger samples can increase culture sensitivity¹³.

If undiagnosed, spinal tuberculosis leads to destruction of vertebral bodies and intravertebral space resulting in severe and progressive kyphosis⁹. The presence of psoas abscesses can lead to reflex spasm of paraspinal muscles and vertebral deformities¹³. In this case, although the spine was affected and the patient had two large psoas abscesses, no severe spinal deformation was noted and early management probably prevented further damage. Spinal tuberculosis should be treated in collaboration among multiple specialists-orthopedics, neurologists, and infection specialists. Use of orthotics is usually essential for protection of further spinal damage. Surgical treatment of spinal tuberculosis remains an issue of dispute among clinicians¹⁴. Routine surgical intervention probably does not improve outcomes¹⁴.

Medical treatment of spinal tuberculosis and tuberculosis psoas abscesses is based on the classic regimen used for the treatment of tuberculosis consisting of isoniazid, rifampicin, ethambutol and pyrazinamide, but can be reassessed based on susceptibility testing and clinical response¹². Early chemotherapy can minimize sequelae¹². Optimal duration of treatment also remains under dispute, while the majority of researchers support a regimen of 12 month duration, although 9-18 months are also proposed¹². Drug resistant TB should usually be treated with longer regimens including second line anti-tubercular agents¹².

Response monitoring is another field of dispute^{12,13}. Response is usually assessed based on symptom relief, clinical non-progression and radiographic findings. Monitoring of inflammation markers is often used yet cannot provide sufficient proof of response. Certain researchers

have proposed the use of PET CT as a tool for monitoring extra-pulmonary tuberculosis patients^{13,15}. However due to cost limitations this has not been used in general practice. In our case, symptom relief and imaging improvement was assessed as good response.

Conclusion

This is a rare case of a young, otherwise healthy individual, presenting with concomitant spinal tuberculosis and psoas abscesses. Such cases are mostly described in elderly and in patients with compromised immune system. Insidious course of the disease and non-specific symptoms often lead to late diagnosis and treatment, sometimes after severe disability is irreversible.

References

1. Ansari S, Amanullah MF, Ahmad K, Rauniyar RK. Pott's spine: Diagnostic imaging modalities and technology advancements. *N Am J Med Sci* 2013;5(7):404-411.
2. Dahnert W, editor. *Radiology Review Manual*. 6th ed. Philadelphia: Lippincott Williams and Wilkins; 2007.
3. Rasouli MR, Mirkoochi M, Vaccaro AR, Yarandi KK, Rahimi-Movaghar V. Spinal tuberculosis: Diagnosis and management. *Asian Spine Journal* 2012;6(4):294-308.
4. Moon MS. Managing tuberculosis of spine. *Med Progr (Hong Kong)* 2004;31:593-602.
5. Moon MS. Tuberculosis of spine: contemporary thoughts on current issues and perspective views. *Curr Orthop* 2007;21:364-379.
6. Chauhan A, Gupta BB. Spinal tuberculosis. *Indian Acad Clin Med* 2007;8:110-4.
7. Gautam MP, Karki P, Rijal S, Singh R. Pott's spine and paraplegia. *JNMA J Nepal Med Assoc* 2005;44:106-115.
8. Harrigan RA, Kauffman FH, Love MB. Tuberculous psoas abscess. *J Emerg Med* 1995;13:493-498.
9. Kim J-H, Kim S-H, Choi J-I, Lim D-J. Atypical Noncontiguous Multiple Spinal Tuberculosis: A Case Report. *Korean Journal of Spine* 2014;11(2):77-80.
10. Osmanagic Azra, et al. A Rare Case of Pott's Disease (Spinal Tuberculosis) Mimicking Metastatic Disease in the Southern Region of Denmark. *Am J Case Rep* 2016;17:384-8.
11. Ingole K, Pawar S, Pathak S, Sharma A. Psoas Abscess Secondary To Pott's Spine: A Case Report. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)* 2016;15(5):118-121.
12. Moon, Myung-Sang. Tuberculosis of Spine: Current Views in Diagnosis and Management. *Asian Spine Journal* 2014;8(1):97-111.
13. Kimizuka Y, Ishii M, Murakami K, et al. A case of skeletal tuberculosis and psoas abscess: disease activity evaluated using 18F-fluorodeoxyglucose positron emission tomography-computed tomography. *BMC Medical Imaging* 2013;13:37.
14. Zhang X, Ji J, Liu B. Management of spinal tuberculosis: a systematic review and meta-analysis. *J Int Med Res* 2013;41(5):1395-407.
15. Tian G, Xiao Y, Chen B, Xia J, Guan H, Deng Q. FDG PET/CT for therapeutic response monitoring in multi-site non-respiratory tuberculosis. *Acta Radiol* 2010;51:1002-1006.