



Psoas Abscess with Pott's Spine: A Case Report

Evangeline Gladwin¹ · Rudra Patel¹ · Vaishnavi Patel¹ · Mrudangsinh Rathod²

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Abstract

Psoas abscess is the accumulation of fluid around the iliopsoas muscle. Pott's spine also called spinal tuberculosis occurs due to extra pulmonary tuberculosis. Common clinical manifestations include high grade fever, back pain, weight loss and lump in groin. Condition can be treated by anti-tubercular therapy and sensitive anti-microbials with analgesics for symptomatic relief. Drainage and surgical procedures can be carried out to remove the accumulated fluid based on inter individual severity. In this case study, we report a rare case of psoas abscess with Pott's spine. A 28-year female presented with complaints of lump pain in groin, abdominal pain, flank pain, fever and weight loss. Medical history showed untreated tuberculosis since 5–6 months. MRI pelvis showed right psoas abscess measuring approximately 7 cm × 6.5 cm × 14 cm while MRI Dorso-lumbar spine showed Pott's spine. The drainage clearance procedure was performed, and patient was prescribed with anti-tuberculous and anti-microbial drugs during hospitalization. On discharge, patient's condition was improved. The condition is rare. Pott's spine, if not diagnosed early, may delay the prognosis and cause psoas abscess, so it must be treated in time to reduce morbidity and mortality. Follow-up is essential to prevent the relapse of extra-pulmonary tuberculosis.

Keywords Abscess · Psoas · Spinal deformity · Spinal tuberculosis · Iliopsoas muscle · Case report

Introduction

Psoas abscess (PA) is fluid accumulation in fascia around the psoas muscles which plays a vital role in the flexion of trunk [1]. According to a study, the mean time span between the onset of symptoms and PA diagnosis was found to be 22 days with one-third of patients diagnosed after 42 days [2]. A death rate of 5–15% and relapse rate of 15.8% have been reported with PA [3]. The psoas muscle arises from the transverse processes of the 12th thoracic vertebra, and all of the lumbar vertebrae where lumbar, iliolumbar, obturator, external iliac, and common femoral arteries provide rich blood supply which puts the iliopsoas at risk for hematogenous infection spread [4]. Primary (isolated) tuberculous psoas abscesses are frequently accompanied by concurrent spondylodiscitis (Pott's disease) [5]. Pott's spine also known as spinal tuberculosis is a manifestation secondary

to pulmonary tuberculosis which causes an inflammatory process in the intervertebral joints leading to compression of the spinal cord causing fascial abscesses which arise from bone lesions. Radiological investigations help in better understanding which includes computed tomography (CT) and magnetic resonance imaging (MRI).

Psoas abscess occurring secondary to Pott's spine requires early management to control the spread of infection and decrease morbidity and mortality. As spinal tuberculosis does not have a good prognosis, it is essential to promptly give attention to the complications before they appear as it can significantly reduce the risk of progression of this condition and prevent chronic neurological impairment and persistent spinal deformity [2, 6].

We report a case of a 28-year-old female patient admitted to a tertiary care hospital.

Case Presentation

A 28-year-old female patient came to a tertiary care hospital with the presenting complaints of lump in groin, abdominal pain since 1-year, bilateral flank pain for 10 months, fever and weight loss (approximately 8–9 kg within 9 months).

✉ Evangeline Gladwin
evangelinegladwin@gmail.com

¹ Department of Pharmacy Practice, Parul Institute of Pharmacy, Parul University, Vadodara, Gujarat, India

² Department of Clinical Pharmacy, Parul Sevashram Hospital, Vadodara, Gujarat, India

Patient had a past history of tuberculosis, fall down 5–6 months back and no past medication history was documented. Laboratory investigations are elaborated in Table 1.

Mantoux test was negative. MRI pelvis showed right psoas abscess measuring approximately 7 cm × 6.5 cm × 14 cm (Fig. 1), MRI Dorso-lumbar spine showed Pott's spine (Figs. 2 and 3), X-ray Dorso-lumbar and Lumbo-sacral spine showed kyphotic deformity with mildly reduced vertebral body height and compression wedging with reduced intervertebral disc space noted involving T2-L1 vertebral bodies, USG abdominal and pelvis showed 16 × 5 × 13 cm sized ill-defined liquefied collection involving entire length of right psoas muscle displacing right kidney anteriorly.

USG guided pigtail catheter drainage was performed (Fig. 4). Patient consent was obtained and patient was placed in supine position under local anaesthesia. Abscess was located using USG. A small horizontal incision was made, and pigtail catheter was inserted up to 4.5 cm. Drainage of pus was done wherein 20 cc of purulent fluid was collected. Catheter was fixed by silk 2–0 with application of sterile dressing. The procedure was done by a general surgeon. Ziehl–Neelsen (ZN) staining of pus showed occasional pus cells of acid-fast bacilli (AFB) Grade 1 + (1–10 AFB/100 OIF). Biopsy specimen sent for polymerase chain reaction returned as positive for mycobacterium tuberculosis.

Post-operative care included ceftriaxone (1 gm IV twice daily) and metronidazole (500 mg IV thrice daily) to treat infection, diclofenac (75 mg IV thrice daily) for abdominal and flank pain while pantoprazole (40 mg IV twice daily) and ondansetron (4 mg IV thrice daily) were given as preventive treatment. From day two, tablet AKT (combination of isoniazid, ethambutol, pyrazinamide, rifampin) was started (2 tab every morning) to treat the underlying infection. On discharge, patient was given amoxicillin and clavulanic acid (650 mg PO twice daily), pantoprazole (40 mg PO twice daily), diclofenac-paracetamol-serratiopeptidase (twice PO daily) for 5 days and Tablet AKT- 4 for 15 days. Patient was advised to follow up every 15 days.

Discussion

Psoas abscess is a suppurative accumulation in the psoas muscle which is frequently accompanied by Pott's spine, a chronic bacterial manifestation caused secondary to tuberculosis causing spinal deformity. Studies showed 55–96% of paraspinal abscesses with those presented with Pott's spine occur in the thoracic vertebrae and spreads to the iliopsoas compartment or retroperitoneum [7]. The most common etiology is *Staphylococcus aureus*. PA is categorized as primary and secondary. Primary psoas abscesses (PPA) typically occur in young males without an underlying cause. Secondary psoas abscess usually develops

Table 1 Abnormal laboratory parameters on the day of admission

Parameters	Observed value	Normal range
Hematology		
Hemoglobin	10.4 (↓)	12.5–16 g/dl
Neutrophils	76 (↑)	30–70%
Lymphocytes	14 (↓)	20–40%
Monocyte	11 (↑)	0–10%
Platelet count	600000 (↑) Day2-489000 (↑)	150000–450000/μL
Hematocrit	34 (↓)	37–47%
Mean corpuscular volume	34 (↓)	76–90 fl
Mean corpuscular hemoglobin	18.6 (↓)	25–31 pg/cell
Erythrocyte sedimentation rate	53 (↑)	3–12 mm/h
C-reactive protein	15 (↑)	Up to 6 mg/l
Random blood sugar	177 (↑)	70–140 mg/dl
Liver function tests		
Alkaline aminotransferase	14	Up to 45 U/L
Aspartate aminotransferase	25	Men: up to 35 U/L Women: up to 31 U/L
Alkaline phosphatase	78	Men: 53–128 U/L Women: 42–98 U/L
Total bilirubin	0.2	0–2 mg/dl
Direct bilirubin	0.1	0–0.4 mg/dl
Indirect bilirubin	0.1	0–0.6 mg/dl
Total protein	6.7	6–8.3 g/dl
Serum albumin	3.1 (↓)	3.5–5.2 g/dl
Serum globulin	3.6 (↑)	2–3.5 g/dl
Albumin to globulin ratio	0.86	0.8–2
Renal function tests		
Serum creatinine	0.5	0.5–1 mg/dl
Blood urea	23	18–40 mg/dl
S. uric acid	4.3	3.5–7.2 mg/dl
Urinalysis		
Physical examination		
Colour	Pale yellow	Pale yellow
Appearance	Clear	Clear
Specific gravity	1.005	1.005–1.030
pH	6.5	4.6–8
Chemical examination		
Protein	Negative	Negative
Glucose	Negative	Negative
Urobilinogen	Normal	Negative
Bilirubin	Negative	Negative
Ketone	Negative	
Blood	Negative	
Nitrite	Negative	
Microscopic examination		
Pus cells	Occasional	0–10/hpf
RBC	Absent	0–10/hpf
Epithelial cells	Occasional	Absent

(↓), decreased than normal value; (↑), increased than normal value

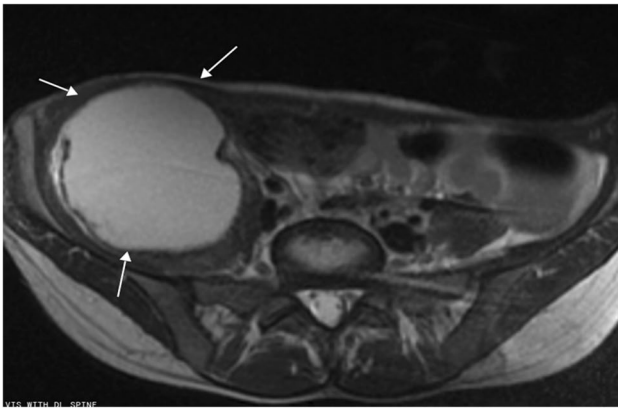


Fig. 1 MRI pelvis showed ill-defined, altered signal collection seen along right psoas and right iliacus muscle measuring $27 \times 59 \times 59$ mm suggests residual psoas abscess. Arrows indicate residual psoas abscess

because of spread of infections from surrounding organs, especially vertebral infections. Patient had a history of tuberculosis which is a primary risk factor of developing PA and Pott's spine. On enquiring, the patient had tuberculosis few months ago. It was confirmed using Mantoux test (diameter > 10 mm), affected left upper lobe with nodular opacities and consolidation in the chest X-ray. AKT was started but patient stopped the medication after 3 months. As a result, there was spread of *Mycobacterium tuberculosis* to the spine through hematogenous route. Patient was on a proper diet. The patient was considered for a neurosurgeon opinion. The classic triad of symptoms—fever, weight loss and lump in the groin—was presented by the patient on admission. Neutrophilia and high erythrocyte sedimentation rate indicate the presence of infection and inflammation in the patient. Patient had high RBS which is suggestive of diabetes mellitus, a risk factor of Pott's spine and subsequent PA. Additionally, no history of diabetes was documented.

USG and MRI reports showed residual PA and Pott's spine. Upon admission, the drainage from PA site was performed using pigtail catheter. ZN staining of pus drainage revealed AFB while biopsy specimen showed *Mycobacterium tuberculosis*. Thus, it was confirmed that PA was associated with Pott's spine. Literatures suggest that the treatment of Pott's spine and pulmonary tuberculosis is similar [4]. Anti-tuberculous drug regimen included isoniazid (300 mg), rifampicin (450 mg), ethambutol (800 mg) and pyrazinamide (750 mg) with a frequency of (2–0–0). Along with this, symptomatic relief was provided by administration of analgesics such as diclofenac (75 mg thrice daily). Additional antimicrobial treatment which included ciprofloxacin and metronidazole was given to control infection. Anti-tubercular treatment and drainage

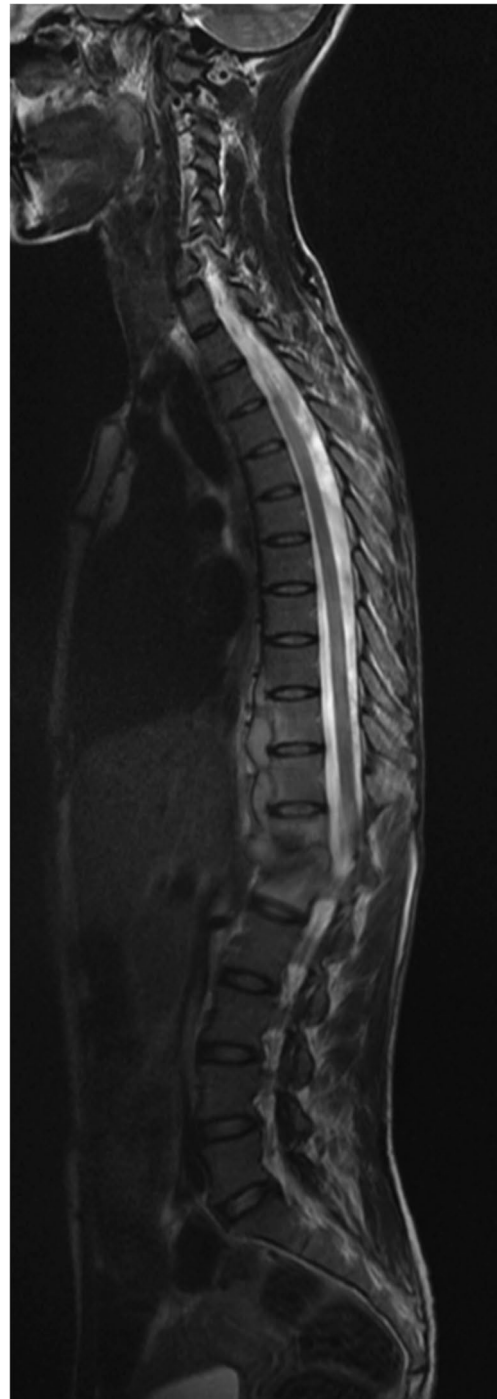


Fig. 2 MRI Dorso-lumbar spine showed erosion of adjoining end plate with pre-vertebral and para-vertebral collection extending from D9 to L1 levels. Features suggestive of Pott's spine

were proven efficacious. Patient's condition was improved symptomatically and patient was vitally stable; therefore, discharge was advised and on discharge, patient was prescribed with combination of amoxicillin (500 mg) and clavulanic acid (12.5 mg) along with aceclofenac (100 mg)



Fig. 3 MRI Dorso-lumbar spine. Arrows indicate anterior epidural collection seen at D12 and L1 levels

tablet. Amoxicillin-clavulanate was given to manage any potential residual bacterial infections as this is a broad-spectrum antibiotic, whereas aceclofenac was given to manage pain.

Fig. 4 USG-guided pigtail catheter drainage of psoas abscess. The figure depicts the image of psoas abscess with arrows pointing the location of the abscess



The patient was severely distressed due to the pain on admission. After the drainage, the patient felt relieved as the abscess has been treated. The patient took the 6-month AKT regimen which resulted in the complete resolution of abdominal and flank pain in the last month.

Conclusion

Untreated tuberculosis resulted in the progression of Pott's spine. Psoas abscess is a very rare complication of Pott's spine. Morbidity and mortality rates of psoas abscess are very high and thereby early recognition and treatment of the condition is necessary. The chances of relapse of abscesses are high. So, in future, if any abscess occurs, then patient should immediately seek help from the medical practitioner without any delay.

Abbreviations PA: Psoas abscess; ESR: Erythrocyte sedimentation rate; RBS: Random blood sugar; MRI: Magnetic resonance imaging; USG: Ultrasonography; IV: Intravenous; PO: Per oral; AKT: Combination of isoniazid, ethambutol, pyrazinamide, rifampin; AIDS: Acquired immunodeficiency deficiency syndrome; CT: Computed tomography; AFB: Acid-fast bacilli; OIF: Oil immersion field

Author Contribution All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by EG, RP and VP. The first draft of the manuscript was written by EG, RP and VP, and all authors commented on previous versions of the manuscript. MR critically revised the manuscript. All authors read and approved the final manuscript.

Data Availability Not applicable.

Code Availability Not applicable.

Declarations

Ethics Approval The case study is waived off for approval.

Consent to Participate Not applicable.

Consent for Publication Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Conflict of Interest The authors declare no competing interests.

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