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due to Extensive Primary Thoracolumbar  
Tuberculous Spondylodiskitis**

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# A Rare Cause of Flank Mass: Psoas Abscess due to Extensive Primary Thoracolumbar Tuberculous Spondylodiskitis

## CASE REPORT

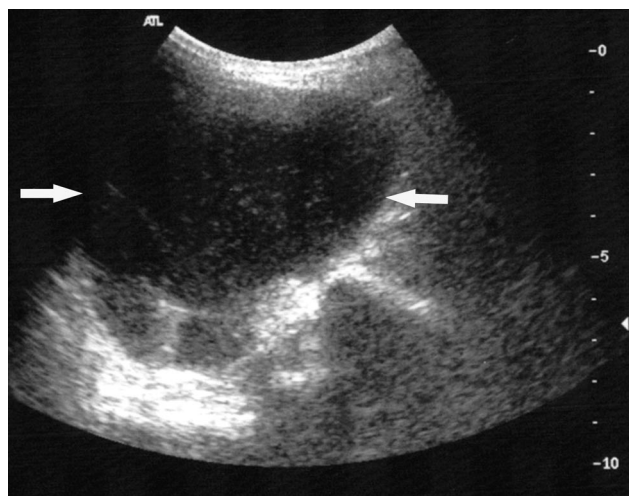
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**SUMMARY:** Psoas abscess secondary to tuberculous spondylodiskitis is usually a complication of thoracolumbar vertebrae disease. The psoas abscess may be difficult clinically to diagnose because of its rarity, insidious onset of the disease, and nonspecific clinical presentation. We report multidetector CT and MR imaging findings of a psoas abscess secondary to primary tuberculous spondylodiskitis of the spine from the T3 to L2 vertebrae, which presented as a flank mass.

Spinal tuberculosis (Pott's disease) is common in endemic regions.<sup>1-3</sup> Vague symptoms and signs make the clinical diagnosis of psoas abscess with tuberculous spondylodiskitis a challenge.<sup>1,3</sup> We report imaging findings of a case with extensive tuberculous spondylodiskitis accompanied by a psoas abscess, which presented as a soft-tissue flank mass beneath the skin.

### Case Report

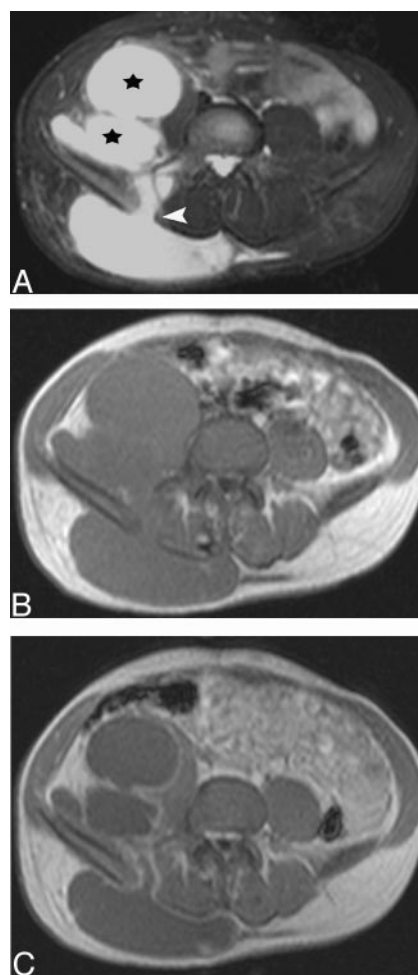
A 21-year-old man was admitted to the hospital with a 1-month history of a right-flank soft-tissue mass. His general condition was good, and he was not febrile. Initial investigations showed nothing remarkable with his blood count but an elevated erythrocyte sedimentation rate of 66. Sonography showed a huge lobulated retroperitoneal cystic mass with subcutaneous extension to the right flank (Fig. 1). To precisely define the borders of this lesion, we performed abdominal MR imaging, which revealed a cystic lesion, expanding and almost replacing the whole of the right psoas muscle, which was well-defined, lobulated, and hypointense on T1-weighted and hyperintense on T2-weighted images, with rim enhancement after paramagnetic contrast



**Fig 1.** Transverse abdominal sonogram, obtained inferior to the right kidney, shows a cystic mass with fine internal echoes involving the right psoas muscle (arrows).

media administration (Fig 2A, -B). The lesion extended to the subcutaneous area in the right lumbar region over the iliac bone.

Because of a high index of suspected tuberculosis, radiologic examination was extended, including high-resolution chest CT and spinal MR imaging. On chest CT, there was no lung lesion suggesting tuberculous infection except a pre- and paravertebral soft-tissue attenuation (Fig 3). Between the levels of the third thoracic and second



**Fig 2.** Abdominal MR imaging.

A, Fat-saturated T2-weighted (TR/TE, 2100/90) axial MR image obtained through the iliac fossa shows a multilobulated cystic lesion (star) involving almost the whole of the right psoas muscle, extending to the right flank over the sacroiliac notch (arrowhead).

B, Noncontrast T1-weighted (TR/TE, 614/16) and (C) contrast-enhanced T1-weighted axial images. The cystic lesion is low in signal intensity and shows rim enhancement after contrast media injection.

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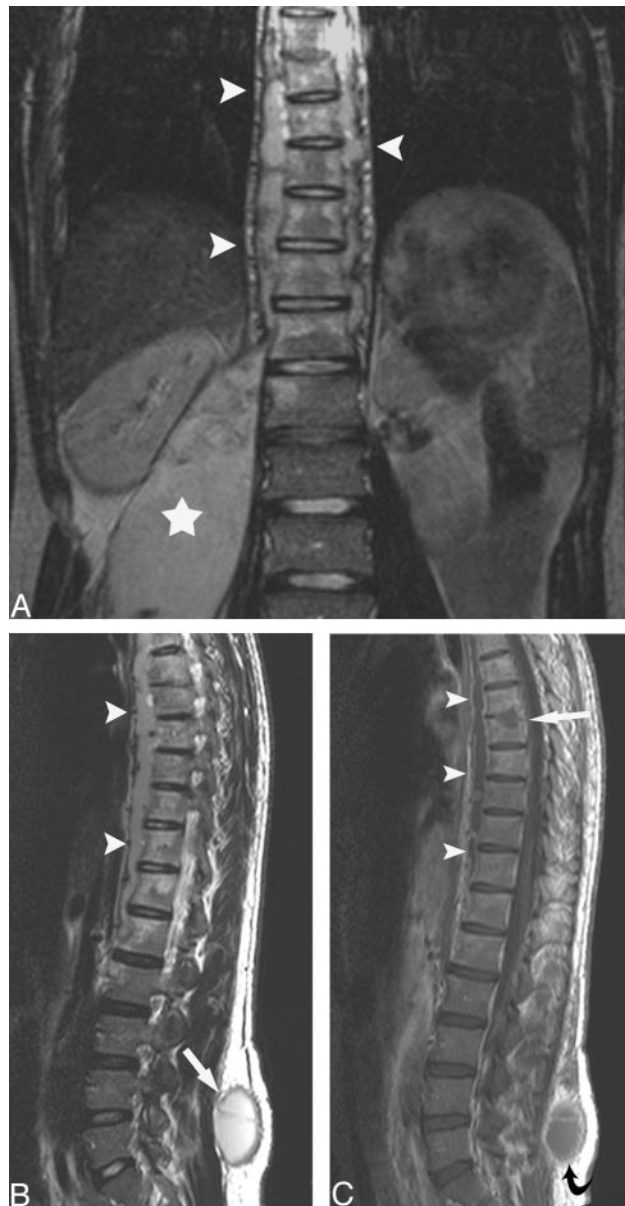
lumbar vertebrae, a paravertebral abscess formation, hypointense on T1-weighted and hyperintense on T2-weighted sequences with rim enhancement after contrast media injection, was seen. There was no MR imaging evidence of extension of the infection into the spinal canal. Signal intensity changes within the thoracic and upper lumbar vertebral body, such as low T1-weighted and high T2-weighted patchy areas with intravenous contrast enhancement, were compatible with osteomyelitis. The T6–7 disk space was narrowed, and bone destruction was also noted at adjacent endplates (Fig 4A-C). On the right side, the paravertebral abscess formation was in continuity with the right psoas muscle, causing psoas abscess, which was visualized in the first MR imaging. The abscess was drained at surgery; then, anti-tuberculous therapy was started. The patient was discharged and asked to come for follow-up 1 month later.

### Discussion

The skeletal system, which is involved in 1%–10% of patients with tuberculosis, is the most common extrapulmonary site for tuberculous infection. Approximately half of those cases manifest as spinal disease, and 75% are accompanied by paraspinal abscess.<sup>2,4</sup> Psoas abscesses of tuberculous origin are infrequently caused by digestive, urologic, or genital tuberculosis.<sup>5</sup> Generally, in tuberculous spondylodiskitis, a paraspinal abscess forms secondary to destruction of the cortical bone and elevation of the periosteum. In case of periosteum penetration with the inflammatory mass, a psoas abscess may form and may extend inferiorly as far as the groin and thigh under the psoas sheath on the muscle course.<sup>3</sup> Subacute presentation along with nonspecific symptoms and signs makes the diagnosis of psoas abscess difficult.<sup>1</sup> Patients may be referred to the department of rheumatology for back pain.<sup>4</sup> Limping, a posi-



**Fig 3.** Coronal reconstructed noncontrast multidetector CT image of the chest demonstrates an extensive paravertebral soft-tissue mass and bone destruction at the adjacent endplates of the thoracic sixth and seventh vertebrae.



**Fig 4.** Spinal MR imaging.

A, Coronal T2-weighted (TR/TE, 2500/120) thoracolumbar image shows widespread paravertebral soft tissue (*arrowheads*) and enlarged right psoas muscle (*star*) displacing the right kidney. The abscess has almost completely replaced the psoas muscle, though a small portion of it can still be noticed between the abscess and vertebral colon. High-signal-intensity patchy areas on vertebral bodies are consistent with osteomyelitis.

B, T2-weighted and C) contrast-enhanced T1-weighted (TR/TE, 580/14) sagittal scans. Enhancing prevertebral soft-tissue lesions (*arrowheads*) and osteomyelitis with high signal intensity on the T2-weighted scan, with patchy contrast enhancement on the T1-weighted scan, are seen. Subcutaneous flank mass reveals high T2 and low T1 signal intensity with rim enhancement (*curved arrow*). Midthoracic disk space narrowing suggesting diskitis and adjacent endplate bony destruction are also evident.

tive psoas sign, flexion deformity of the hip joint, fatigue, fever, night sweating, and weight loss also may be seen.<sup>6</sup>

Psoas abscess can be associated with disseminated tuberculous infection; however, in our patient, there was no accompanying lung lesion. Al-Shaikhi et al<sup>7</sup> reported the CT findings of a 4-month-old girl who presented with a multiloculated cystic iliopsoas muscle mass extending through the flank muscle and diagnosed as primary psoas abscess; however, *Staphy-*

*lococcus aureus* was confirmed as the causative microorganism.

Abscess formations occur more frequently in cases of tuberculosis infections than in cases of pyogenic infections. The chronic and insidious nature of tuberculous spondylitis causes late diagnosis of this disease; therefore, enough time passes for mass presentation of abscesses, which may be huge as in the present patient. On the other hand, early clinical presentation of pyogenic abscesses allows timely diagnosis and treatment, which decrease the incidence of mass formation secondary to pyogenic abscesses.<sup>1,3</sup>

In conclusion, in endemic regions, diagnosis of psoas abscess should not be simply put aside in patients with flank mass, but its possible associations with the thoracic cavity, as in our patient, must be investigated. Multiplanar imaging, especially MR imaging, is a useful diagnostic procedure in de-

fining subtle diskovertebral lesions and in detecting unsuspected paravertebral soft-tissue extension.

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