

A Case of Advanced Degenerative Changes Mimicking Spinal Infection on Imaging

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Introduction

- Spinal imaging is correlated with history and physical to formulate diagnosis and treatment.
- However, features and imaging patterns of some diseases may be difficult to discern.
- Modic 1 changes are signs of inflammation-mediated disc degeneration that can mimic infections on MRI (1).

Goal

- We present a case of advanced and severe degenerative changes on non-contrast imaging that were mistaken for spinal bone infection, leading to hospitalization and extensive work-up.

Methodology

- Information was gathered via direct patient interaction, review of imaging, and chart review of hospital course. As the case report is devoid of patient identifiable information, it is exempt from IRB review requirements as per University of Texas Southwestern Medical Center policy.

Case Report

- 81-year-old female with history of chronic lymphocytic leukemia in remission, DVT on apixaban, CKD3b was seen in clinic for lumbar pain with right-sided radiculopathy after failing conservative management.
- Previous MRI (10 months prior) showing degenerative changes in the bone and the disc at L4/5 was reviewed (Figure 1).
- She was scheduled for right L4-L5 transforaminal epidural steroid injection. Oncology approved holding anticoagulation for procedure.

Case Report

- On procedure day, patient reported worsening pain, but no change in character of pain. Due to stability of her exam, decision made to proceed with ESI, but new MRI LSPINE was ordered for completion prior to her follow-up.
- Patient underwent Lumbar MRI without contrast, which was read by radiologist as notable for Modic changes, L4-L5 osteomyelitis and discitis (Figure2).



Figure 1: Sagittal STIR cut from previous MRI (10 months prior) showing degenerative changes in the bone and the disc at L4/5



Figure 2: Sagittal STIR cut from current MRI showing more extensive and advanced degenerative changes in the bone and the disc at L4/5 with concern for infection

- Patient immediately admitted for evaluation. She had no new or worsening symptoms, was hemodynamically stable and afebrile. Neurosurgery recommended obtaining MRI Lumbar Spine with contrast and consulting IR for biopsy of affected bone.

Case Report

- Labs notable for stable leukocytosis, negative blood cultures, normal ESR/CRP. Antibiotics were deferred to increase biopsy yield.
- MRI with contrast significant for L4-5 intervertebral disc vacuum phenomenon and lack of intervertebral disc inflammatory enhancement of epidural and paraspinal soft tissues, arguing against infection.
- Infectious Disease was consulted and ordered tagged white blood cell scan, which was also negative.
- Per multidisciplinary discussion, case consistent with advanced degenerative findings rather than infection. Bone biopsy was cancelled. Patient was discharged within 3 days with outpatient follow-up.

Conclusions

- Spinal infections can be life-threatening, and suspicion often prompts quick mobilization of resources.
- While rare, MRI may have limitations in differentiating early spinal infection from Modic I degenerative changes due to overlapping features like bone marrow edema near endplates (2).
- One could argue that patients with multiple comorbidities should have more recent advanced imaging prior to proceeding with invasive therapies, and an updated MRI could have aided in evaluation and ruling out any infection prior to the ESI.
- In our case, contrast MRI allowed for more detailed information to distinguish between infection and very advanced degeneration.
- This is a unique case in which advanced degenerative changes mimicked infection on imaging, requiring extensive workup.

References

- [1] Boudabbous, S., Paulin, E. N., Delattre, B. M. A., Hamard, M., & Vargas, M. I. (2021). Spinal disorders mimicking infection. Insights Into Imaging, 12(1). <https://doi.org/10.1186/s13244-021-01103-5>
- [2] Zhang, C., & Liu, S. (2023). The advancement of MRI in differentiating Modic type I degenerative changes from early spinal infections. British Journal of Radiology, 96(1152). <https://doi.org/10.1259/bjr.20230551>