

LESS IS MORE

Follow-up Imaging for Vertebral Osteomyelitis A Teachable Moment

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Mr X was unexcited about repeat neck surgery on his 55th birthday, especially when, all things considered, he was feeling fine. He came to our hospital for a routine follow-up magnetic resonance imaging study. He had experienced long-standing severe cervical stenosis. After a curative laminectomy 5 months ago, he developed cervical osteomyelitis with a prevertebral abscess. The follow-up magnetic resonance imaging study had been ordered to determine whether the abscess had resolved after 6 weeks of targeted antibiotic therapy. He was feeling well and so was particularly nonplussed when he was suddenly rushed from the scanner to the emergency department, admitted, and scheduled for an urgent surgical washout procedure. Although the follow-up scan showed resolution of the prevertebral abscess, it also revealed increased bony destruction of his cervical vertebrae. The conclusion was that his antibiotic treatment must have failed and the osteomyelitis had progressed.

Our infectious diseases team was asked to recommend appropriate antibiotic management in light of the new radiographic findings. We evaluated Mr X a few hours before his scheduled neck and spine surgery. Although he was limited by upper and lower limb weakness that he had developed years ago from the cervical stenosis, he was afebrile and had no fatigue or neck pain. Dysphagia that occurred in the setting of the abscess had long since resolved, and he had no new focal neurologic deficits. Levels of his white blood cell count and inflammatory markers (erythrocyte sedimentation rate and C-reactive protein level) had normalized. Although the scan appeared to be concerning, it starkly contrasted with his overall good clinical appearance.

Magnetic resonance imaging scans have high sensitivity and specificity for diagnosing vertebral osteomyelitis and reliably identifying abscesses,¹ but data supporting follow-up surveillance imaging are scarce. Because radiographic findings often do not correlate with clinical improvement, the usefulness of surveillance imaging for vertebral osteomyelitis is uncertain.² Paradoxically, follow-up imaging among vertebral osteomyelitis cases with clear clinical improvement more likely

show stability or worsening bony changes rather than improvement.^{3,4} Furthermore, disk space and vertebral body enhancement do not correlate with either clinical status or overall treatment success.² Although follow-up imaging can sometimes show useful information, such as unresolved epidural abscess or worsening soft-tissue inflammation indicative of treatment failure, some⁵ suggest that risk-stratifying patients clinically by pain, fever, focal neurologic signs, and inflammatory markers (erythrocyte sedimentation rate and C-reactive protein level) is a more reliable way to identify cases for which repeat imaging or further surgical management may be indicated.

Considering Mr X's clinical appearance and the available literature,²⁻⁵ we recommended against surgical intervention, and he was discharged from the hospital that afternoon. He spent his birthday at home. To date, he continues to recover well.

This case highlights the adage that one should treat the patient, not the scan. As physicians, it is essential for us to be aware of the limitations of each diagnostic test. By disregarding a patient's clinical appearance, we may undertake interventions of marginal to no clinical benefit. In Mr X's case, although the order for the follow-up magnetic resonance imaging may have seemed the most risk-averse way of monitoring the resolution of the prevertebral abscess, it carried with it the hidden hazard of diagnostic uncertainty because we do not know how to appropriately interpret follow-up imaging for vertebral osteomyelitis. It is essential that we incorporate all available evidence when deciding for or against invasive treatments. Imaging can provide important information, but its immediacy and tangibility can also at times carry too much weight in clinical decision making. Given our inclination for defensive intervention, it falls to the provider to safely steer the patient through our specialized health care system by being clear about the limitations of the findings. For patients with osteomyelitis who have received appropriate treatment and who appear clinically well, the best thing we could do is refrain from ordering obfuscating follow-up imaging.

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