Changing Protocols: Faster Door to Diagnosis for Osteomyelitis

Increasing clinical certainty, specificity, and patient satisfaction with SPECT/CT imaging from Siemens

Foot infection and/or complications account for the largest number of hospital bed stays for diabetic patients.[1] When patients with suspected osteomyelitis enter the physician's office or the Emergency Department, they can be met by a protocol that could significantly decrease their length of stay and, possibly, improve their outcomes—a protocol that is not, however currently in the American College of Radiology Appropriateness Criteria®.

The last review of the ACR Appropriateness Criteria for suspected osteomyelitis of the foot in patients with diabetes mellitus was in 2012. It includes no mention of SPECT/CT. Yet, physicians are increasingly noting the increased speed and specificity SPECT/CT can provide over other imaging technologies.

The advantage over MRI

As sensitive as MRI is for tissue contrast, its specificity for osteomyelitis can be less than 80%, according to a study published in Diabetes Care.[2] Further, MRI can be particularly inconclusive when Charcot Foot or other noninfectious diseases are present.[3] In contrast, the same study found SPECT/CT correctly differentiated foot osteomyelitis and contiguous soft tissue infection in 97% of cases.[4] Eric M. Goldenberg, DPM, clinical director of Wound Care for Halifax Health, Daytona Beach, FL, knows the advantages of SPECT/CT over MRI first-hand.

"I've seen patients who have had MRIs that were positive for possible osteomyelitis but when we went to do the white blood cell scan, it was negative. And I've also had patients who had early osteomyelitis but their MRIs were inconclusive," he says. "The white blood cell scan with SPECT/CT helps me determine more clearly if those patients have bone infection, and localize the infection for those patients."

Support a faster, more confident diagnosis

A protocol that can lead to faster diagnoses of osteomyelitis can support more efficient care and reduce risk for patients. At Halifax Health, clinicians are able to shorten door-to-diagnosis time from approximately five or six days down to two or three—an up to 50% reduction. "We've been able to show that using a SPECT/CT image offers a faster care pathway than going the route of X-ray and MRI," says Andrea Huffman, RT(N), Nuclear Medicine coordinator at Halifax Health.

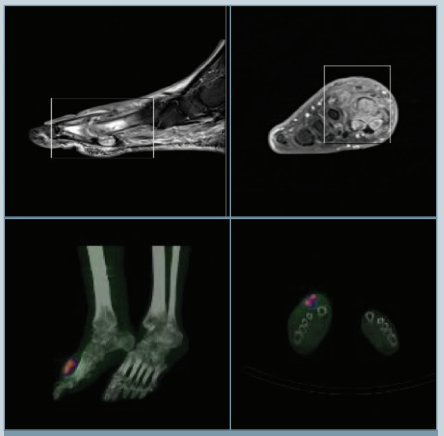
In fact, ordering a SPECT/CT as part of the protocol for suspected osteomyelitis can do more than speed time to diagnosis, it can enable more effective treatment planning—which can, in turn, potentially mean saving limbs for patients.

Planning, efficacy, and length of stay

No matter which type of treatment is utilized, SPECT/CT imaging can also be helpful to assess efficacy. For patients who require surgery, the SPECT/CT image can help physicians better plan their interventions—i.e., if a patient should expect amputation or surgical debridement based on the extent of infection. As a result, this high-quality clinical information enhances pre-surgical planning and patient satisfaction.

Dr. Goldenberg agrees that the localization SPECT/CT provides can support greater clinical confidence for surgical planning. "With a conventional white blood cell scan, you get an uptake on the scan but it doesn't really isolate the exact location of the infection," he says. "The SPECT/CT image helps me identify those patients who would be surgical candidates." And for those patients who are treated with antibiotics, the SPECT/CT can be used to evaluate treatment efficacy.

By supporting earlier, more confident diagnoses, better pre-surgical planning, and improved evaluation of treatment efficacy, SPECT/CT can support a shorter length of stay and help avoid patient readmission.



False positive of osteomyelitis shown with MRI. SPECT/CT with WBC shows no osteomyelitis with infection in soft tissue only. Patient sent to ED for debridement and limb is salvaged.

Images Courtesy of Halifax Health.

References

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Learn more about the role of SPECT/CT in patients with suspected osteomyelitis.

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