

Gross Photos: Do They Help Radiologists' Diagnosis of Acute Pedal Osteomyelitis?

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Received Aug. 21, 2024; Accepted for publication Aug. 26, 2024; Published online Aug. 27, 2024

<https://doi.org/10.17161/kjmvoll7.22678>

Introduction. Imaging plays a critical role in the evaluation of acute osteomyelitis. Magnetic resonance imaging (MRI) is the most accurate imaging test with meta-analysis demonstrating a 90% sensitivity and 79% specificity for this diagnosis. At our institution, clinical photographs of wounds are routinely viewed with imaging at the time of interpretation. The purpose of this study is to determine the value of clinical photography as an adjunct to MRI in the radiologists' assessment of acute pedal osteomyelitis.

Methods. A single-center, retrospective analysis was conducted using an internal database of patients with suspected acute pedal osteomyelitis between November 2019 and August 2023, who underwent gold standard histopathologic analysis. A pre-procedural MRI within two months of biopsy/tissue sampling and clinical photos taken within three weeks of imaging were required for inclusion. Blinded to history and diagnosis, seven readers (three fellowship trained musculoskeletal (MSK) radiologists, three MSK radiology fellows, and two infectious disease fellows) reviewed clinical photographs of foot wounds. Each reader predicted the presence or absence of osteomyelitis. Diagnostic accuracy using clinical photos alone was determined.

Results. 96 images from 93 patients were included. The sensitivity was 78% (95% confidence interval, 0.68-0.87) and specificity was 44% (0.19-0.68) for the diagnosis of acute osteomyelitis based on clinical photos alone. Inter-reader agreement was fair (Fleiss' $\kappa = 0.24, 0.18-0.32$).

Conclusions. Clinical photos are a useful tool for radiologists in their assessment of acute pedal osteomyelitis. While sensitivity of clinical photography alone to diagnose acute osteomyelitis rivals that of MRI, MRI remains the superior technique.