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Ex vivo Confocal Laser Scanning Microscopy: A Potential New Diagnostic Imaging Tool in Onychomycosis Comparable With Gold Standard Techniques

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ABSTRACT

Ex vivo confocal laser scanning microscopy (CLSM) is an innovative imaging tool that enables real-time examination of specimens and may be used in evaluating fungal infections. We aimed to assess the applicability of ex vivo CLSM in the diagnosis of onychomycosis by comparing results to those obtained by histopathology, potassium hydroxide (KOH) examination, and fungal culture. In this prospective study, 57 patients with the clinical diagnosis of distal nail fungal infection were examined and compared using all four of the above-mentioned diagnostic tools in terms of sensitivity, positive and negative predictive value. Ex vivo CLSM showed the highest sensitivity, followed by KOH examination, histopathology and fungal culture. Regarding positive and negative predictive values, ex vivo CLSM was superior and showed even higher sensitivity than the combined gold standard comprised of KOH examination, fungal culture or histopathology. Keywords: KOH examination; PAS staining; ex vivo; fluorescence confocal microscopy; fungal culture; mycological examination; onychomycosis. Copyright © 2020 Krammer, Krammer, Vladimirova, Salzer, Ruini, Sattler, French and Hartmann. PMID: 33240908 PMCID: PMC7677524 DOI: 10.3389/fmed.2020.586648 Free PMC article