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Confocal laser scanning microscopy as a new valuable tool in the diagnosis of onychomycosis - comparison of six diagnostic methods.

Rothmund G, Sattler EC, Kaestle R, Fischer C, Haas CJ, Starz H, Welzel J.; Mycoses. 2012 Apr 23. doi: 10.1111/j.1439-0507.2012.02198.x.

ABSTRACT

Onychomycosis is common and can mimic several different nail disorders. Accurate diagnosis is essential to choose the optimum antifungal therapy. The aim of this study was to evaluate the use of confocal laser scanning microscopy (CLSM) and optical coherence tomography (OCT) as new non-invasive diagnostic tools in onychomycosis and to compare them with the established techniques. In a prospective trial, 50 patients with suspected onychomycosis and 10 controls were examined by CLSM and OCT. Parallel KOH preparation, culture, PAS-staining and PCR were performed. PCR showed the highest sensitivity, followed by CLSM, PAS and KOH preparation. OCT offered the second best sensitivity but displayed the lowest specificity. CLSM and KOH preparation showed a high specificity and CLSM offered the best positive predictive value, similar to KOH preparation and OCT. Fungal culture showed the lowest sensitivity and the worst negative predictive value, yet culture and PCR are the only techniques able to identify genus and species. In summary, CLSM was comparable to PAS staining and superior to KOH preparation. Due to the low specificity we assess OCT not as appropriate. In the differentiation of species PCR outplays the fungal culture in terms of time and sensitivity.