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Reflectance confocal microscopy diagnostic accuracy for malignant melanoma in different clinical settings: systematic review and meta-analysis.

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ABSTRACT

BACKGROUND:The diagnostic accuracy of reflectance confocal microscopy (RCM) of cutaneous malignant melanoma (MM) seems promising. However, clinical scenarios in which RCM is most useful are still to be established. **OBJECTIVES:**To assess the diagnostic accuracy of RCM for MM diagnosis according to study design, lesion type and diagnostic modality. Secondary outcomes include a comparison with dermoscopy. **METHODS:**A systematic literature search was conducted on PubMed, Embase, Scopus and Cochrane Public Library Databases for English articles published prior to January 2019. Statistical analyses were conducted with Meta-Disc v. 1.4, STATA 14.0 software and the QUADAS-2 tool. **RESULTS:**A total of 32 studies (7352 lesions) were included in the meta-analysis. Pooled sensitivity and specificity resulted 92% (95% CI: 0.91-0.93) and 70% (95% CI: 0.69-0.71), respectively. According to study design, diagnostic sensitivity was high for all study types, confirming a lower specificity for prospective interventional studies. Diagnostic accuracy remained high for all lesion types, with the highest specificity obtained for consecutive lesions of 77% (95% CI: 0.75-0.78) vs. 65% (95% CI: 0.63-0.66) for lesions highly suspicious for MM. RCM diagnostic accuracy was superior to dermoscopy, most notably in terms of specificity of 56% (95% CI: 0.52-0.60) vs. 38% (95% CI: 0.34-0.42), respectively. Studies were generally assessed across all domains as low or unclear risk of bias with a mainly low concern regarding applicability of evidence. Publication bias was asymmetrical (11.2 ± 4.0 ; 95% CI 2.97-19.43; $P < 0.01$). **CONCLUSIONS:**Independent of study design, RCM has a high diagnostic power for MM detection, and unnecessary excisions are reduced compared to dermoscopy. This reduction is most evident in non-decisional RCM scenarios and for lesions analysed at RCM consecutively compared to those selected highly suspicious for MM. However, the scarcity, heterogeneity and bias associated with the data in literature should be considered when interpreting present conclusions. © 2020 European Academy of Dermatology and Venereology. PMID: 31997465 DOI: 10.1111/jdv.16248