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Accuracy of tele-consultation on management decisions of lesions suspect for melanoma using reflectance confocal microscopy as a stand-alone diagnostic tool.

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ABSTRACT

BACKGROUND:Diagnostic accuracy of reflectance confocal microscopy (RCM) as a stand-alone diagnostic tool for suspect skin lesions has not been extensively studied. **OBJECTIVE:**Primary aim was to measure experts' accuracy in RCM-based management decisions. Secondary aim was to identify melanoma-specific RCM features. **METHODS:**The study enrolled patients ≥ 18 years that underwent biopsy of skin lesions clinically suspected to be melanoma. One hundred lesions imaged by RCM were randomly selected from 439 lesions prospectively collected at four pigmented lesion clinics. The study data set included 23 melanomas, three basal cell and two squamous cell carcinomas, 11 indeterminate melanocytic lesions and 61 benign lesions including 50 nevi. Three expert RCM evaluators were blinded to clinical or dermoscopic images, and to the final histopathological diagnosis. Evaluators independently issued a binary RCM-based management decision, 'biopsy' vs. 'observation'; these decisions were scored against histopathological diagnosis, with 'biopsy' as the correct management decision for malignant and indeterminate lesions. A subset analysis of 23 melanomas and 50 nevi with unequivocal histopathological diagnosis was performed to identify melanoma-specific RCM features. **RESULTS:**Sensitivity, specificity and diagnostic accuracy were 74%, 67% and 70% for reader 1, 46%, 84% and 69% for reader 2, and 72%, 46% and 56% for reader 3, respectively. The overall kappa for management decisions was 0.34. Readers had unanimous agreement on management for 50 of the 100 lesions. Non-specific architecture, non-visible papillae, streaming of nuclei, coarse collagen fibres and abnormal vasculature showed a significant association with melanoma in the evaluation of at least two readers.

CONCLUSIONS:Reflectance confocal microscopy tele-consultation of especially challenging lesions, based on image review without benefit of clinical or dermoscopy images, may be associated with limited diagnostic accuracy and interobserver agreement. Architectural and stromal criteria may emerge as potentially useful and reproducible criteria for melanoma diagnosis. © 2018 European Academy of Dermatology and Venereology. PMID: 30242916 DOI: 10.1111/jdv.15257