Improving Diagnostic Accuracy of Dermoscopically Equivocal Pink Cutaneous Lesions with Reflectance Confocal Microscopy in Telemedicine Settings: Double Reader Concordance Evaluation of 316 Cases.


ABSTRACT

BACKGROUND: Solitary pink lesions in differential diagnosis with hypopigmented/amelanotic melanoma present a diagnostic challenge in daily practice and are regularly referred for second expert opinion. Reflectance confocal microscopy (RCM) has been shown to improve diagnostic accuracy of dermoscopically equivocal pink lesions. No studies have been performed to evaluate the effect of adding a second expert reader and automatic removal of lesions with discordant management recommendations and its potential effect on diagnostic sensitivity and final management of these lesions in retrospective or telemedicine settings. OBJECTIVE: To improve diagnostic accuracy and reduce potential mismanagement of dermoscopically equivocal pink cutaneous lesions by implementing double reader concordance evaluation of RCM images. METHODS: 316 dermoscopically equivocal pink lesions with dermoscopy-RCM image sets were evaluated retrospectively. Accuracy of three readers was evaluated by single reader evaluation of dermoscopy only and dermoscopy-RCM image sets and finally by double reader evaluation of dermoscopy-RCM image sets. Lesions with discordant diagnosis between two readers were automatically recommended for excision. RESULTS: Dermoscopy only evaluation resulted in an overall sensitivity of 95.9% and specificity of 33.6%, with 1 of 12 amelanotic melanomas mismanaged. Dermoscopy-RCM image set single reader evaluation resulted in an overall sensitivity of 93.9% and overall specificity of 54.2%, with 1 of 12 melanomas mismanaged. Dermoscopy-RCM image set double reader concordance evaluation resulted in an overall sensitivity of 98.3% and specificity of 42.7%, with no amelanotic melanoma mismanagement. CONCLUSION: Evaluation of dermoscopy-RCM image sets of equivocal pink lesions by a single reader in telemedicine settings is limited by the potential for misdiagnosis of dangerous malignant lesions. Double reader concordance evaluation with automatic referral of lesions for removal in the case of discordant diagnosis improves the diagnostic sensitivity in this subset of lesions and reduce potential misdiagnosis in settings where a second expert opinion may be employed. PMID:27606812 DOI:10.1371/journal.pone.0162495