Histopathology and reflectance confocal microscopy features of photodamaged skin and actinic keratosis.


ABSTRACT
BACKGROUND: Actinic keratosis (AK) usually co-exists in areas of severe photodamage, but the clinical applicability of reflectance confocal microscopy (RCM) in diagnosing AK currently depends on a set of parameters yet to be defined in comparison to photodamaged skin (PD). OBJECTIVE: To correlate the RCM features of PD and AK with histopathology. METHODS: Twenty participants with a mean age of 64 years and skin phototype I and II were studied. RCM was performed on two PD and one AK within a field of 25 cm² on the left dorsal forearm, followed by shave biopsies. Blinded evaluation of the histopathological and RCM images using established parameters in AK were performed retrospectively in consensus with an expert confocalist, correlated with the histopathological diagnosis by a board-certified dermatopathologist. RESULTS: A total of 57/60 areas were included. There were 43/57 (75%) and 14/57 (25%) histopathologically confirmed PD and AK respectively. Individual corneocytes, stratum corneum disruption, dermal inflammatory cells, increased vascularity/dilated vessels and solar elastosis were detected in PD and AK upon histopathology and RCM. The features in favour of AK were parakeratosis, hyperkeratosis, more severe keratinocyte pleomorphism and architectural disruption, and the presence of epidermal inflammatory cells. PD also demonstrated keratinocyte pleomorphism and architectural disruption though this was generally less severe than AK. A small subset of PD exhibited a comparable degree of keratinocyte pleomorphism and architectural disruption to the AKs in the cohort. CONCLUSIONS: The viable epidermis demonstrates PD and AK to be part of a disease continuum corresponding to field cancerization. Individual corneocytes, stratum corneum disruption, dermal inflammatory cells, increased vascularity/dilated vessels and solar elastosis may be present in PD; whereas, parakeratosis and hyperkeratosis may represent the key to distinguishing AK from PD using RCM. The significance of epidermal inflammatory cells in the RCM diagnosis of AK remains to be elucidated. © 2016 European Academy of Dermatology and Venereology. PMID:27298142