Reflectance confocal microscopy: non-invasive distinction between actinic keratosis and squamous cell carcinoma.


**ABSTRACT**

**BACKGROUND:** Early recognition of squamous cell carcinoma (SCC) is difficult. Non-invasive reflectance confocal microscopic (RCM) imaging of the skin is a promising diagnostic technique. Although several RCM features for SCC and AK have been described, it is not determined whether RCM has the ability to distinguish between SCC and actinic keratosis (AK). **OBJECTIVE:** To determine in vivo reflectance confocal microscopic features that are specific for making a distinction between AK and SCC. **METHODS:** In 24 patients, 30 lesions clinically suspicious for AK or SCC were selected for RCM imaging. Following the imaging procedure, a 3 mm skin biopsy was obtained for confirmation of the histopathological diagnosis. Two observers evaluated the RCM images according to a literature based list of RCM features. The obtained data were evaluated by an univariate and forward multivariate logistic regression analysis, kappa analysis and independent T-test. **RESULTS:** The univariate logistic regression showed statistically significant odds ratios for several RCM features, including architectural disarray in the stratum granulosum, architectural disarray in the spinous layer and nest-like structures in the dermis. The forward multivariate logistic regression analysis showed that the combination of these features increased the ability to make the correct diagnosis AK and SCC non-invasively. The interobserver agreement between a starting and an experienced RCM observer ranged from poor to no agreement. **CONCLUSION:** This study revealed specific RCM features that can distinguish between AK and SCC, stimulating further prospective, large cohort research in this field. This will result in correct, efficient and adequate diagnosis and treatment of clinically difficult to distinguish AK and SCC lesions.