Grading keratinocyte atypia in actinic keratosis: a correlation of reflectance confocal microscopy and histopathology.


**ABSTRACT**

**BACKGROUND:** Actinic Keratosis (AK) is the clinical manifestation of cutaneous dysplasia of epidermal keratinocytes, with progressive trend towards squamous cell carcinoma. **OBJECTIVE:** To evaluate the strength of the correlation between keratinocyte atypia, as detected by Reflectance Confocal Microscopy (RCM) and histopathology, and to develop a more objective atypia grading scale for RCM quantification, through a discrete ranking. **METHODS:** A total of 48 AKs and two control areas (photodamaged and non-photodamaged skin) were selected for this study. All these areas were documented by RCM and biopsied for histopathology. One representative image of the epidermis was selected for RCM and for histopathology and used for side-by-side comparison with purpose written software. The assessor chose which of two images displayed more keratinocyte atypia, and an ordered list from the image showing the least to the most keratinocyte atypia was generated. Three evaluations were obtained for RCM and two for histopathology. **RESULTS:** Good interobserver correlation was obtained for RCM and histopathology grading, with high concordance between RCM and histopathology grading. **CONCLUSIONS:** Expert rater scan consistently distinguish different grades of cytological atypia. Non-invasive RCM data from in vivo imaging can be graded for keratinocyte atypia, comparable to histopathological grading.