Automated algorithm for actinic cheilitis diagnosis by wide-field fluorescence imaging

Abstract
Actinic cheilitis (AC) is a disease caused by prolonged and cumulative sun exposure that mostly affects the lower lip, which can progress to a lip squamous cell carcinoma. Routine diagnosis relies on clinician experience and training. We investigated the diagnostic efficacy of wide-field fluorescence imaging coupled to an automated algorithm for AC recognition. Fluorescence images were acquired from 57 patients with confirmed AC and 46 normal volunteers. Three different algorithms were employed: two based on the emission characteristics of local heterogeneity, entropy and intensity range, and one based on the number of objects after K-mean clustering. A classification model was obtained using a fivefold cross correlation algorithm. Sensitivity and specificity rates were 86% and 89.1%, respectively. (C) 2016 Society of Photo-Optical Instrumentation Engineers (SPIE) (AU)