

Fundus Autofluorescence Imaging for Non-Invasive Imaging and Diagnosis of Retinal Diseases

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Purpose: To describe the technique and results associated with fundus autofluorescence (FAF) imaging a non-invasive photographic method of documenting pathological findings and processes in the retina. Hyper- or hypofluorescent patterns generated by different areas and conditions in the retinal pigment epithelium (RPE) were evaluated.

Materials and Methods: As the amount of fluorescent light (at approx. 500 nm) emitted by the RPE is extremely low, an SLO (HRA 2) was used with both exciter illumination and barrier filters in place. Patients were dilated prior to photography. For correlation purposes, color photos, and an OCT exam were performed as well, prior to the fluorescein angiography (FA). A built-in option of the software was used in order to average multiple images, which were compared to the single images, as well as to the FA, OCT and color images. Pathologies imaged included AMD in all stages, BDR, CSR, CME and atrophic entities.

Results: Using the FAF technique, distinct patterns of RPE changes were noted, depending on the amount of light emitted by the lipofuscin accumulated in the RPE, adding important information to findings seen in the other imaging modalities. It was possible to obtain informative images from a variety of patients / diagnoses without the need for angiography.

Conclusions: FAF poses to be a promising ophthalmic imaging modality, complementing others already in use. It is especially helpful in outlining changes to the RPE before they become evident clinically or even angiographically, potentially opening the way for a follow-up modality for patients at risk of developing AMD.