

NEAR-INFRARED AND SHORT-WAVE AUTOF

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Near-infrared and short-wave autofluorescence in ocular specimens.

Oguchi Y¹, Sekiryu T², Takasumi M³, Hashimoto Y⁴, Furuta M².

Author information

Abstract

PURPOSE: To determine histopathologic characteristics of **near-infrared autofluorescence** (NIR-AF) and **short-wave autofluorescence** (SW-AF) in **ocular** tissue.

STUDY DESIGN: Retrospective study.

METHODS: Unstained **specimens** from four enucleated eyes with uveal melanoma were prepared for evaluation by fluorescence microscopy. The filter settings for SW-AF were 450-490 nm for excitation, 500-550 nm for emission and for NIR-AF 672.5-747.5 nm and 765-855 nm respectively.

RESULTS: Hyper-SW-AF was detected in the cornea, crystalline lens, anterior border layer of the iris, basement membrane of the iris posterior epithelium, retinal pigment epithelium (RPE), Bruch's membrane, and sclera. Hyper-NIR-AF was detected in pigmented tissues, i.e., iris anterior border layer, iris posterior epithelium, ciliary pigmented epithelium, RPE, pigmented cells in the choroid and pigmented cells in the melanoma tumoral masses. The iris anterior border layer had hyper-SW-AF and hyper-NIR-AF with low magnification. The cells on the iris surface were with hyper-SW-AF; under the iris surface cells with hyper-NIR-AF were detected with high magnification. Both hyper-SW-AF and hyper-NIR-AF were in RPE cells. Pigmented cells with hyper-NIR-AF in other uveal tissues did not have hyper-SW-AF. The pigmented cells in the melanoma tumoral masses had very weak NIR-AF.

CONCLUSIONS: NIR-AF was seen in the **ocular** pigmented tissues. The only pigmented tissue with both hyper-SW-AF and hyper-NIR-AF was RPE, the combination of which might help interpret the cellular components of fundus lesions.

KEYWORDS: lipofuscin; melanin; melanoma; **near-infrared autofluorescence**; **short-wave autofluorescence**