The confocal microscopy, the tool for rapid in vivo diagnosis of Acanthamoeba keratitis – usefulness and limitations

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Some strains of free-living amoebae are facultative parasites causing Acanthamoeba keratitis (AK), a vision-threatening disease mainly related to improper contact lens hygiene. Early diagnosis is decisive for the treatment efficacy. As the clinical picture of AK is similar to that occurring in viral, fungal or bacterial keratitis, symptoms alone are not sufficient to identify the causative agent of the keratitis. This report assesses the value of in vivo confocal microscopy for the diagnosis of AK.

Ten AK cases were analyzed. The slit-lamp technique and in vivo confocal microscopy were used, as well as examinations of corneal scraping material and in vitro cultures.

In affected eyes, redness, photophobia, excessive tearing, pain and deterioration of visual acuity occurred with different intensities. Apart from the epithelial inflammations and corneal ulcers detected by slit-lamp examination, ring-like stromal infiltration occurred in some cases. The causative agent of the keratitis was identified by in vivo confocal microscopy. Hyper-reflective double-walled spherical objects, Acanthamoeba cysts, with a more reflective outer wall were detected in the epithelium and anterior layers of the corneal stroma, mainly in severe infections with strong viability strains. In vivo confocal microscopy, if available, is a valuable, sensitive tool for the rapid diagnosis and differentiation of AK from other infectious keratitis. However, as trophozoites in confoscan images resemble leukocytes and keratocytes, examiners have to be familiar with amoebic morphology to avoid false results, and confoscan offers limited value at low-intensity amoebic infections.