

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

Lidia Chomicz[1], Justyna Izdebska[2], Marcin Padzik[1], Wanda Baltaza[1,3], Krzysztof Pionkowski[1], Emilia Jaśniewska[1], Monika Dybicz[4]

[1]Department of Medical Biology, Medical University of Warsaw, Nowogrodzka 73, 02-018 Warsaw, Poland
[2]Department of Ophthalmology, SPKSO Ophthalmic Hospital, Medical University of Warsaw, Sierakowskiego 13, 03-709 Warsaw, Poland
[3]Department of Disaster Medicine, Medical University of Warsaw, Żwirki i Wigury 81, 02-091 Warsaw, Poland
[4]Chair and Department of General Biology and Parasitology, Medical University of Warsaw, Chałubinskiego 5, 02-004 Warsaw, Poland

Corresponding Author: Lidia Chomicz; e-mail: lidia.chomicz@wum.edu.pl

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.