

# Effectiveness of sampling methods employed for *Acanthamoeba keratitis* diagnosis by culture

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**Purpose:** This retrospective, observational study was designed to evaluate the effectiveness of the sampling methods commonly used for the collection of corneal scrapes for the diagnosis of *Acanthamoeba keratitis* (AK) by culture, in terms of their ability to provide a positive result. **Methods:** A total of 553 samples from 380 patients with suspected AK received at the Parasitology Section of the Public Health Institute of Chile, between January 2005 and December 2015, were evaluated. A logistic regression model was used to determine the correlation between the culture outcome (positive or negative) and the method for sample collection. The year of sample collection was also included in the analysis as a confounding variable. **Results:** Three hundred and sixty-five samples (27%) from 122 patients (32.1%) were positive by culture. The distribution of sample types was as follows: 142 corneal scrapes collected using a modified bezel needle (a novel method developed by a team of Chilean corneologists), 176 corneal scrapes obtained using a scalpel, 50 corneal biopsies, 30 corneal swabs, and 155 non-biological materials including contact lens and its paraphernalia. Biopsy provided the highest likelihood ratio for a positive result by culture (1.89), followed by non-biological materials (1.10) and corneal scrapes obtained using a modified needle (1.00). The lowest likelihood ratio was estimated for corneal scrapes obtained using a scalpel (0.88) and cotton

swabs (0.78). Conclusion: Apart from biopsy, optimum corneal samples for the improved diagnosis of AK can be obtained using a modified bezel needle instead of a scalpel, while cotton swabs are not recommended. © 2018, Springer Nature B.V.

Acanthamoeba

Contact lens

Eye pathogens

Keratitis diagnosis

Acanthamoeba keratitis

Article

Chile

clinical effectiveness

corneal biopsy

correlational study

female

human

human tissue

major clinical study

male

observational study

parasite examination

retrospective study

sampling

validation process

Acanthamoeba

Acanthamoeba keratitis

clinical trial

confocal microscopy

cornea

genetics

isolation and purification

multicenter study

parasitic eye infection

parasitology

pathology

polymerase chain reaction

procedures

protozoal DNA

Acanthamoeba

Acanthamoeba Keratitis

Cornea

DNA, Protozoan

Eye Infections, Parasitic

Female

Humans

Male

Microscopy, Confocal

Polymerase Chain Reaction

Retrospective Studies