

Genotypic diversity of *Acanthamoeba* strains isolated from Chilean patients with *Acanthamoeba* keratitis

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Background: *Acanthamoeba* spp. are the causative agents of a severe keratitis occurring mainly in contact lens wearers. The genus comprises more than 24 species that are currently divided into 20 different genotypes (T1-T20) according to sequence variations in the 18S rRNA gene. The objective of this study was to identify the genotypes and sub-genotypes of *Acanthamoeba* isolates collected at the Parasitology Laboratory of the Public Health Institute of Chile, the only laboratory in the country where *Acanthamoeba* screening is performed. This is the first report of genotypic identification of clinical isolates of *Acanthamoeba* in Chile and one of the few in South America.

Results: In this study, 114 *Acanthamoeba* isolates from 76 *Acanthamoeba* keratitis patients, obtained between 2005-2016, were genotyped. T4 was the predominant genotype; T2 and T11 genotypes, which are scarcely reported worldwide, were also identified in Chilean patients (one and two patients, respectively). This is the first report of T2 and T11 genotypes isolated from *Acanthamoeba* keratitis patients in South America. It is also the first report of the T2 genotype circulating in this continent. Analysis of the diagnostic fragment 3 region of the 18S rRNA gene showed 24 T4 variants, with a predominance of the sub-genotype T4/A, followed by T4/B, T4/G, T4/C and T4/D. Bayesian analysis revealed three groups among the T4 variants: two well supported groups that included 12 and 7 sub-genotypes, respectively, and a weakly supported group that

included 5 sub-genotypes. Most of the predominant T4 sub-genotypes belonged to the same group, which included 71.3% of the patients, while some minority variants lied mainly in the other two clusters. Conclusions: T2, T4 and T11 genotypes were predominantly isolated from the *Acanthamoeba keratitis* patients in Chile. Chilean predominant T4 sub-genotypes, which have also been reported worldwide, formed a separate cluster of the minority T4 variants. This study provides useful information about the predominant genotypes and subgenotypes that would be useful in selecting suitable strains to develop immunological and/or molecular diagnostic assays in Chile. © 2019 The Author(s).

Acanthamoeba keratitis

ASA.S1

DF3

T11 genotype

T2 genotype

T4 genotype

RNA 18S

Acanthamoeba

Acanthamoeba keratitis

Article

Bayes theorem

Chile

Chilean

female

genetic strain

genetic variability

genotype

human

isolation procedure

major clinical study

male

microbial diversity

microbial identification

nonhuman

nucleotide sequence

phylogeny

RNA gene

South America

unindexed sequence

Acanthamoeba keratitis

classification

genetic variation

genetics

genotype

isolation and purification

parasitology

Acanthamoeba

Acanthamoeba Keratitis

Chile

Female

Genetic Variation

Genotype

Humans

Male

