

# Contact lenses are home to pathogenic amoebae

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Contact lenses increase the risk of infection with pathogenic protozoa that can cause blindness. New research, published in the November issue of the *Journal of Medical Microbiology*, shows that a high percentage of contact lens cases in Tenerife are contaminated with *Acanthamoeba* that cannot be killed by normal contact lens solution.

*Acanthamoeba* is one of the most common types of protozoa in soil and is often found in fresh water. Most species eat bacteria and some can cause infections in humans. One of the diseases caused by *Acanthamoeba* is called amoebic keratitis, which is an infection of the eye. Around 85% of all amoebic keratitis cases occur in people who wear contact lenses. The infection is very painful and can cause blindness. As the amoeba can be found in chlorinated swimming pools and domestic tap water, people who wear lenses while swimming or use tap water to rinse their lenses have an increased risk of infection.

"The prevalence of this infection has risen in the past twenty years worldwide, mainly because more people are wearing contact lenses," said Dr Basilio Valladares from the University Institute of Tropical Diseases and Public Health of the Canary Islands, University of La Laguna. "When people rinse their contact lens cases in tap water, they become contaminated with amoebae that feed on bacteria. They are then transferred onto the lenses and can live between the contact lens and the eye. This is particularly worrying because commercial contact lens solutions do not kill the amoebae."

The scientists looked at 153 contact lens cases, 90 containing lenses, from people in Tenerife who were showing no symptoms of infection. 65.9 % of the cases and lenses were contaminated with pathogenic *Acanthamoeba* and 30% of the amoebae identified were highly pathogenic. No pathogenic strains were found in daily contact lenses but several pathogenic amoebae were isolated from monthly and bi-monthly lenses. The two year use lenses that were analysed contained a high percentage of pathogenic amoebae due to a lack of hygiene and poor care of the lenses.

"We tested the effect of two standard drugs on the amoebae. We found that the antibiotic ciprofloxacin and the antiseptic chlorhexidine both kill *Acanthamoeba*. However, the concentrations of chlorhexidine found in contact lens maintenance solutions are not high enough to kill pathogenic strains, so most lens solutions do not protect against amoebic keratitis," said Dr Valladares.

"At the moment, we are developing a contact lens maintenance solution that can kill pathogenic *Acanthamoeba* species," said Dr Valladares.

"Studies have shown that these amoebae are more common among contact lens users in Tenerife than in Scotland, perhaps because of the warmer climate. Contact lens users are at greater risk of infection here and we hope we will be able to prevent and treat the diseases caused by these amoebae more effectively in the near future."

Source: Society for General Microbiology

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