Microsporidian Eye Infection from Outdoor Recreational Activities

Kian Sing Chan, Tse Hsien Koh
Department of Pathology, Singapore General Hospital, Singapore

The minireview in the Journal of Clinical Microbiology by Ramanan et al. (1) mentions that microsporidia may cause keratitis, particularly in contact lens wearers. We wish to highlight another risk factor that may be less well recognized because of a lack of awareness.

Microsporidia are a major nonbacterial cause of keratoconjunctivitis in Singapore. A retrospective review of 124 cases confirmed in our laboratory between 1 January 2004 and 30 December 2007 revealed a positive history of soil/mud exposure in 50% of subjects, whereas only 21.1% used contact lenses (2). Mud/soil exposure included army field training and outdoor recreational activities, including soccer, golf, polo, and trail biking. The incidence of cases was positively correlated with the seasons with increased rainfall. When PCR sequencing could be performed, the microsporidia were identified as *Vittaforma corneae* (3).

The potential for microsporidia to cause large outbreaks of keratoconjunctivitis was further illustrated during an international rugby tournament held in Singapore in 2012 (4). Heavy rains had made the playing fields extremely muddy. Forty-seven probable and 6 confirmed cases of microsporidial keratoconjunctivitis were reported after the tournament. The majority of players affected (93.9%) reported mud entering the eyes during play. *V. corneae* sequences were obtained from 4 clinical samples and one soil water sample (4, 5).

It is interesting that sequencing of the *V. corneae* genome has revealed the presence of *parC*, coding for topoisomerase IV, an enzyme previously found only in prokaryotes (6). Topical fluoroquinolone monotherapy has been successfully used to treat *V. corneae* keratoconjunctivitis in small case series, but larger comparison trials are needed (2). The ability to identify microsporidia to the species level may be important, as the efficacy of fluoroquinolones against species other than *V. corneae* is uncertain.

The worldwide distribution of *V. corneae* in the environment remains to be defined. It is possible that *V. corneae* keratoconjunctivitis resulting from soil/mud exposure occurs in other countries but may be underrecognized because a combination of experienced ophthalmologists and microbiology laboratories are required to establish the diagnosis.

REFERENCES