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Fluctuation in species diversity and antifungal susceptibility

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It is a frequently reported fact that the resistance to conventional antifungal agents is spreading rapidly among human pathogenic *Fusarium* species. Our aim was to compare the antifungal susceptibility of the *Fusarium* strains isolated at the Aravind Eye Hospital and Postgraduate Institute of Ophthalmology (Coimbatore, Tamilnadu, India) in the years 2004-2005 and 2010-2011 to conventional antifungal drugs. We also examined the species (complex) diversity between the two sample groups.

Owing to the fact that clinical breakpoints are not available for Fusaria, sensitive, intermediate or resistant strains cannot be distinguishable. This makes the susceptibility results hard to interpret objectively. However, a shift of the obtained MIC value range towards higher or lower values could suggest that the isolated Fusaria from human keratomycosis become resistant to a certain antifungal agent or not. Based on our observations the *in vitro* susceptibility to azoles, such as clotrimazole, econazole and itraconazole is unambiguously decreased up to 2011. Most part of the isolates from the years 2010-2011 showed high MIC values (≥64 μg/ml) to these drugs. Changes in the MICs of natamycin and terbinafine were not observable between the isolates derived from the two sampling periods.

The most frequently isolated species complex was the *F. solani* species complex (FSSC). However, a basic difference was revealed between the species diversity from the years 2004-2005 and 2010-2011: the isolates from 2004-2005 belong to three different species complexes; in contrast to this isolates from 2010-2011 represent five different species complexes. From the both sampling periods isolates representing FSSC, *F. incarnatum-equiseti* species complex and *F. fujikuroi* species complex (FFSC) were identified. In addition to these, representatives of the *F. dimerum* and the *F. oxysporum* species complexes were isolated. *F. napiforme* (FFSC) as a new emerging causative agent of keratomycosis was also identified in the years 2010-2011.

Our results indicate that the members of the FSSC are still the main causative agents of *Fusarium* keratitis in South India. However, the incidence of the less frequent human pathogenic *Fusarium* species seems to be increasing. In consequence of the decreased *in vitro* susceptibility of the isolates to theazole compounds, the application of natamycin as a first-line therapeutic agent for the treatment of keratomycosis caused by Fusaria is still suggested.

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