Mycotic keratitis caused by *Curvularia lunata var. aerea*

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Abstract

A mycotic keratitis case which was caused by *Curvularia lunata var. aerea* in a patient with an injury in the eye is described. The diagnosis was based on the mycologic analysis of several samples taken from the ulcer of cornea.

*In vitro* tests of the sensitivity of the isolated species to several antifungal drugs were made. The results were related to the response *in vivo* to the treatment.

Introduction

*Curvularia* is a dematiaceous fungus which is principally found in vegetables, soils and air. Species of the *Curvularia* genera have been isolated as agents of human disease in a variety of situations.

The observed pathologies include: generalized infection (5, 14), mycetomas (7, 10), endocarditis (6) and keratitis (8, 9, 12, 13, 16, 17).

In almost all the cases that are presented in literature, the patients had suffered a previous trauma. As a keratomycosis agent, this genus is important because thirty causes have been registered in the world literature thus far.

We did not find any case of keratitis produced by species of *Curvularia* in our national bibliographical search.

The main predisposing factors of mycotic keratitis are: the mechanical injury, the administration of corticosteroids, and antibiotics. Moreover, it has been observed that tropical climate, poor hygiene, and deficient diets favour this kind of infection (1). The patient's activity is also very important. It has also been observed a greater incidence in rural workers due to the close contact with nature.

Some responsible species of keratomycoses are known pathogens, but the majority of the involved fungi are saprophytes, and *Curvularia* is located among them. These saprophytes fungi are widely situated in nature and they can be found as transitive inhabitants in eyes. According to this, K. Nityamanda *et al.* have proposed some judgements to be taken into account to attribute a definite fungus to an eye pathology in 1962. These judgements include: a show of the fungus in clinical material taken from the eye, repeated isolation of the same organism from the lesion, and co-relation between what has been observed in the direct observation and the isolated fungus.

The aim of this work is to communicate the first isolation of *Curvularia lunata var. aerea*, which has been done in our laboratory, and it has been taken from a patient who suffered keratitis.

Materials and methods

Nicolás Fretes is a 66-year-old man from a rural district of Asunción, Paraguay, who consults for a strange body in his right eye. There is a month of evolution, lacrimation and pain.

Biomicroscopically, a homogeneous quite white lesion is confirmed, friable that stands out over the cornea in the pupilar area, Tyndall effect, iritis, and
hypopyon to 1/8 of the previous camera are presented. It cannot be seen by fundus examination. Mass is extracted and it looses homogeneity and leaves an ulcer, the cornea is completely uncovered with sharp borders and a large defect that includes the corneal epithelium, Bowman membrane, and a 3/4 portion of the corneal stroma.

The treatment was started with chloramphenicol in a topical way, oclusion ampicilin (500 mg) every 6 h and local atropine.

About 15 days later, new colonies had been formed, and they were partially taken out.

The mycology laboratory indicated mycotic keratitis.

So antibiotic therapy was abandoned and miconazole was prescribed in a topical way (10 mg/ml solution), ketoconazole (a pill every 12 h), and topic atropine.

The treatment was applied during 10 days, but there were no substantial advances. Thus, natamycin (Piramicin) 5% in drops is tried, two drops per hour during 48 h at first. Then, the dose is reduced to one drop every 2 h during 20 days. The administration is suspended during the night. However, dosage with ketoconazole and atropine was maintained. During this period of time, the recovering of the hypopyon with rounded borders and with a slow getting over of the defect is obtained. Therefore, the dosis of natamycin is diminished to one drop every 4 h and ketoconazole is suspended.

There is a good advance with a total absence of the Tyndall effect and conjunctival injection. The cornea defect is in favorable evolution and it is forming cicatrizal leucoma.

Results

Four samples that were taken from the same patient were received in the Microbiology and Immunobiology Department (Departamento de Microbiologia y Inmunobiologia). Two of the samples had been obtained by aspersion; the other two had been taken with a needle from the ulcer of the cornea.

Another sample was processed with hematoxylin-eosin to observe the colored histopathology (Fig. 1).

Direct settings were made with KOH 20% from the received materials.

Other portion of the material was inoculated in tubes, with Sabouraud dextrose agar (with and without chloramphenicol).

Plenty of fungal filaments and chlamydospores are observed in the settings with KOH and material colored with hematoxylin-eosin.

Development of a dematiaceous fungus was obtained in the culture of the two samples which were received. That development was called Curvularia lunata var. aeria.

Identification of the isolated strain

Curvularia lunata var. aeria was isolated from air, soil and lots of different plants in the tropics.

Macromorphology: Curvularia lunata produces colonies with a velvety aspect in Sabouraud dextrose agar, and a cottony aspect in the centre that presents a dark brownish color and grows rapidly (5.6 cm in diameter in 5 days).

A great development of dark brown stromas with a peduncular and rounded form, with primary and secondary branches that reach a size of 5 mm length was got in the cultures.

Micromorphology: a septate mycelium is observed. It is brown, with lots of branches.

Conidiophores are stiff, with numerous septas, dark colored and unbranched.

Conidia are originated in the extreme of the conidiophore in an acropleurogenous manner, and the conidiogen cell develops in a sympodial prolifeiral manner.