

Keratomycosis in a Pet Rabbit Due to *Curvularia lunata*

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애완용 토끼에 있어서 *Curvularia lunata*에 의한 각막진균증 1예

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요 약

데마습과 사상균의 일종인 *Curvularia lunata*가 식물파편으로 오염된 흙에 의해 눈에 외상을 입은 젊은 수토끼(*Orytolagus cuniculis*)에서 각막궤양을 일으킨 것으로 밝혀졌다. 이 토끼는 직경 1.5 mm의 각막궤양, 각막부종, 전방축농, 눈물 등을 나타내었다. 각막 소파시료의 KOH 표본과 진균배지에서 분리된 것을 통해 진균이 확인되었다. 눈의 외상은 진균성각막염의 발생소인이었다. 토끼장의 흙은 *Curvularia lunata*의 집락을 많이 형성하였으며, 이것이 감염원으로 추정되었다. 이것은 애완용 토끼에서 *Curvularia lunata*에 의한 안진균증의 최초의 보고인 것으로 판단된다. 외상의 병력이 있는 동물임상의 다양한 상황에서 *Curvularia lunata*의 병인론적 역할이 연구되어야 함을 강조하였다.

Key words : Keratomycosis, Rabbit, *Curvularia lunata*, plant debris

Introduction

Oculomycosis, primarily caused by opportunistic fungi², is increasingly reported in hu-

man medicine but is of infrequent occurrence in animals⁴. Literature scan on keratomycosis due to *C. lunata* failed to reveal any information in animals including rabbit⁴. The present paper,

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however, describes the etiological significance of *C. lunata* in keratitis of a previously damaged cornea in a young male pet rabbit.

Materials and Methods

A young male rabbit (*Orytolagus cuniculus*) was brought to a local veterinary hospital by a landless labourer with complaints of watering, redness and pain in the left eye for the last 15 days. The animal was treated with topical application of gentamicin and betamethasone eye drops for about a week but the clinical response was very poor. Later, the field veterinarian submitted the corneal scrapings to the laboratory for culture and drug sensitivity. A part of the sample was examined microscopically in 10 % potassium hydroxide (KOH) solution for fungal elements, if any and remaining was inoculated onto the duplicate plates of nutrient agar and Sabouraud dextrose agar supplemented with chloramphenicol (1 mg/ml). These were incubated at 25 and 37 °C, and observed daily for microbial growth. The detailed morphology of the isolate was studied in a recently discovered 'PHOL' stain which contained 5 ml of 4 % aqueous solution of formaldehyde (35 %), 0.3 ml of 3 % aqueous solution of methylene blue and 3 ml of glycerol⁹. Two soil samples collected from the immediate environment of the rabbit were examined by dilution technique for the fungus¹⁰.

Results

On clinical examination, the rabbit showed corneal ulcer of about 1.5 mm diameter, oedema and hypopyon in the left eye. The right eye appeared to be normal. The respiration and rectal temperature were in normal range. There was no

other sign of pulmonary or systemic involvement. As mentioned by the owner, the rabbit had received a traumatic injury to the left eye with a soil contaminated by plant debris while being handled by his 6-yr-old male child.

Microscopically, KOH preparations revealed few dematiaceous fungal bodies. The colonies on Sabouraud medium appeared as dark brown, flat and cottony. The growth from one week old culture in 'PHOL' stain showed many dark conidia with 3 septa morphologically resembling *C. lunata*¹².

No bacterial growth was noticed on nutrient agar medium. Both the soil samples yielded many colonies of *C. lunata* on Sabouraud medium at 25 °C.

Discussion

Theodor Leber⁶ is credited to publish the first report of mycotic keratitis in an agricultural farmer due to *Aspergillus glaucus*. Since then, a number of fungi such as *Allescheria boydii*, *Alternaria* spp., *Bipolaris hawaiiensis*, *Candida albicans*, *C. guilliermondii*, *C. parapsilosis*, *C. pseudotuberculosis*, *Cephalosporium* spp., *Curvularia geniculata*, *C. lunata*, *C. pallescens*, *C. senegalensis*, *C. verrucosa*, *Drechslera spicifera*, *Exophiala* spp., *Fonsecaea* spp., *Fusarium dimerum*, *F. episphaeria*, *F. moniliforme*, *F. oxysporum*, *F. nivale*, *F. solani*, *Gibberella fujikuroi*, *Glenospora graphii*, *Hormodendrum* spp., *Neurospora* spp., *Paecilomyces* spp., *Penicillium citrinum*, *P. expansum*, *P. spinulosum*, *Phialophora verrucosa*, *Rhizoctonia* spp., *Rhizopus* spp., *Rhodotorula mucilaginosa*, *Sepedonium* spp., *Sporotrichum* spp., *Trichosporon beigeli*, *Ustilago* spp. and *Volutella cinerescens* have been isolated from the ocular disorder of man and very rarely from animals^{3,5-8,11,13,14}.

Recovery of *C. lunata* in pure culture, its direct demonstration in the diseased corneal tissue, absence of bacteria on nutrient medium and unresponsiveness with antibiotics indicated that the fungus was perhaps incriminated in the keratitis of a pet rabbit. The role of antibiotics, corticosteroids in the management of ocular diseases and trauma to the eye are known as predisposing factors in the initiation of keratomycosis^{6,8,11,13}. The same was true in our present case.

The chemotherapy of mycotic keratitis depends upon the causative organism. The infection due to *F. solani* responds well to 5 % ophthalmic suspension of pimaricin⁵. The topical application of amphotericin B(1 %), clotrimazole(1 %), ketoconazole(2 %) and miconazole(2 %) is found useful in the management of keratitis due to *Candida spp.* and other filamentous fungi^{13,14}. Unfortunately, no antifungal treatment could be attempted in the present case as the animal was reported to be killed by a stray dog.

C. lunata is implicated in the etiology of endocarditis, sinusitis, keratitis and cutaneous lesions^{1,2,12,15,16}. The isolation of this dematiaceous fungus from the infected specimen of cornea of a pet rabbit constitutes a new host record. However, further studies seem imperative to understand the causative role of *C. lunata* in various clinical disorders of animals.

As the majority of fungi associated with keratomycosis are widely distributed as saprobe in nature^{3,13}, a history of trauma of ocular tissues with environmental material such as dust, thorn, wood, metal, wire, nail, glass, plant debris, dung, vegetable matter, splinter and other foreign objects should be prudently investigated for mycotic infection. This may perhaps reveal more cases of keratomycosis in animals than reported in the current literature.

Conclusion

Curvularia lunata, a dematiaceous mould, was found to be implicated with corneal ulcer in a young male rabbit(*Orytolagus cuniculus*) following a trauma to the eye with a soil contaminated by plant debris. The animal had corneal ulcer of about 1.5 mm diameter, corneal oedema, hypopyon and lacrymation. The fungus was demonstrated in the corneal scrapings by potassium hydroxide technique and its isolation in the pure growth on mycological medium. The traumatic injury and the application of antibiotic and corticosteroid to the eye were the predisposing factor for the initiation of mycotic keratitis. The source of infection was presumed to be the soil of the rabbit pen which yielded many colonies of *C. lunata*. To the authors' knowledge, this seems to be the first documented report of oculomycosis in a pet rabbit due to *C. lunata*. It is emphasized that etiologic role of *C. lunata* should be studied in various clinical conditions of animals particularly having the history of traumatic injury.

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