

Canine Dermatitis Associated with *Malassezia pachydermatis*

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개에 있어서 *Malassezia pachydermatis*에 의한 피부염 1예

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요 약 : 지방친화성 진균인 *M. pachydermatis*가 두 마리의 수캐에서 피부병의 원인균으로 증명되었다. 두 마리의 환측에서 홍반, 인설, 탈모 등이 여러 부위에서 발생하였으며, 광역항생물질과 코르티코스테로이드의 45일간 투여에 대해 아무런 임상적 반응을 나타내지 않았다. 발아를 나타내는 난원형 내지 원주형의 효모균이 KOH 및 PHOL 방법에 의해 환측의 피부 병변으로 부터 다수 증명되었고, 이들은 형태학적으로 *M. pachydermatis*와 일치하였다. 두 환측의 피부 병변부위 시료를 chloramphenicol을 첨가한 37°C의 Saubouraud dextrose agar에 배양하면 이 진균이 반복하여 배양되었다. ketoconazole의 경구투여와 sulphur lime의 국소적용에는 치료반응을 잘 나타내었다.

Key words : *M. pachydermatis*, dermatitis, dog

Introduction

Masassezia pachydermatis (*Pityrosporum canis*, *P. pachydermatis*), a lipophilic yeast, is implicated in the etiology of otitis externa and dermatitis in animals particularly the dogs^{1,4,5,10,11,12,14,18,21}. The fungus has also been cultured from the skin, external auditory canal, anus and vagina of the apparently healthy dogs^{6,5,12,20}. The literature review indicates only two published reports on the role of *P. canis* as a causative agent of otitis externa in dogs from India^{7,17}. The present communication therefore, delineates the occurrence and etiologic significance of *M. pachydermatis* in canine dermatitis from India.

Materials and Methods

The deep skin scrapings obtained on two occas-

ions from the cutaneous lesions of two male dogs aged 4 years (Dachshund) and 10 years (Doberman), respectively constituted the material for this investigation. The details about the breed, location of lesions, type of lesions, duration of illness and drugs received were collected from the practising veterinarian. The lesions were situated on different parts of the body. A small part of the clinical samples were directly examined microscopically in 10% potassium hydroxide solution (KOH) and PHOL stain¹³. The PHOL stain contained 0.3 ml of 3% aqueous solution of methylene blue, 3 ml of glycerol and 5 ml of 4% aqueous solution of 35% formaldehyde. Smears prepared from the cutaneous lesions were examined by haematoxylin and Eosin (H and E) and Grocott methanamine silver (GMS) techniques. Specimens of skin from alopecic dogs were first treated in 1 ml solution of chloramphenicol (0.1 mg/ml) for 3 minutes and then inoculated liberally on to the

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plates of nutrients agar and slants of Sabouraud dextrose agar with chloramphenicol (0.1 mg/ml), incubated at 37°C and examined daily for microbial growth. The suspected colonies were isolated and purified by subculture; and subjected to detailed cultural, microscopical, physiological and biochemical tests⁹.

Treatment in both the dogs was done with ketoconazole which was given orally at the dosage rate of 10 mg per kilogram body weight two times daily for one month. In addition, sulphur lime dips was also given twice weekly for 30 days. Mycological evaluation of the drug was attempted after 7 days of the last medication.

Results

The affected dogs showed erythematous, scaly, alopecic, hyperpigmented and pruritic lesions on the skin. Both canine patients were given antibacterial antibiotics (tetracycline, oxytetracycline, gentamicin, chloramphenicol) and corticosteroids (dexamethasone, prednisone) for about 35 days but the clinical response was very poor. The clinical and mycological details are summarized in Table 1.

Microscopic examination of the specimens in KOH and PHOL failed to reveal the presence of ectoparasite or dermatophyte or *Dermatophilus* but showed oval to cylindrical (bottle-shaped) yeast cell about 2~4 µ in diameter with budding morphologically compatible to *Malassezia spp.* Oval to cylindrical budding yeast cells were also seen in the tissue imprints by H and E and GMS methods.

No bacterial growth was observed on nutrient agar. However, on Sabouraud medium small, round, smooth cream coloured colonies grew in pure cul-

ture at 37°C. The growth of colony in PHOL stain revealed many single or clustered oval to cylindrical budding yeast cells. The isolate did not produce hyphae or pseudohyphae on corn meal agar; and also failed to ferment lactose, glucose, maltose and sucrose. The morphological and physiological characters confirmed the identity of the isolates as *M. pachydermatis*⁹.

The chemotherapy with ketoconazole and lime sulphur bath was found effective as the skin lesions in both canine patients started regressing in 10~16 days and resolved in 31~34 days. The drugs were well tolerated as none of the dogs showed any side effects. Skin scrapings examined after one week of the last medication failed to reveal the presence of *M. pachydermatis* both by direct microscopy as well as culture. No follow up was made after 45 days to see the recurrence of the lesions if any.

Discussion

The first report on the isolation of *P. pachydermatis* from an inflamed area on the skin of an Indian rhinoceros (*Rhinoceros unicornis*) was published in 1952 by Weidman²². Since then the yeast has been cultured from the healthy as well as diseased conditions of the bear, cat, dog, elephant and pig^{2,6,8,12,15,16}. The association of *P. pachydermatis* in man with mycosis fungoides or psoriasis has also been recorded¹⁹. The repeated isolation of *M. pachydermatis* from the infected skin, its direct demonstration in the clinical material, absence of other organisms, failure of conventional therapy and good response with antimycotic drug (ketoconazole) therapy conclusively prove the etiologic role for *M. pachydermatis* in the dermatitis of dogs.

Table 1. Clinical and mycological findings in canine dermatitis due to *M. pachydermatis*

Case No.	Breed of dog	Age in years	Sex	Site of lesions	Duration of illness	Diagnosis by	
						Direct microscopy	Cultural isolation
19	Dachshund	4	M	Axilla, abdomen and groin	28 days	+	++
43	Doberman	10	M	Neck, abdomen, groin and feet	37 days	+	+

*: Yeast was detected in infected skin scrapings in KOH, PHOL, H&E and GMS techniques.

** : *M. pachydermatis* was recovered in pure growth from the cutaneous lesions on Sabouraud medium at 37°C.

P. pachydermatis acts as a primary agent in canine otitis externa and can invade the normal healthy skin of the ear canal¹⁷. The yeast can also become an opportunistic pathogen under certain conditions²¹. In the present study both canine patients had received a prolonged course of antibacterial antibiotics and corticosteroids but there was no clinical response. Therefore, one can only presume if this treatment regime would have predisposed the dogs to the fungal infection. However, the role of these drugs in the initiation of mycotic infection is well established²¹.

Very recently, DNA typing method is applied to study the epidemiology of malasseziosis². This technique was not existing in our laboratory. The isolation of the yeast can only be attempted in a well equipped microbiology laboratory. The direct demonstration of oval to cylindrical budding yeast cell in the clinical specimen by 'PHOL' staining technique emphasize its greater significance in the field areas where laboratory facilities are either meagre or not available. This will help the veterinarian to start the chemotherapy to alleviate the suffering of the sick animals. Since *M. pachydermatis* is emerging as one of the important causes of dermatitis in canine^{12,14}, it is therefore suggested that malasseziosis should be considered in the differential diagnosis of canine dermatitis.

Conclusion

M. pachydermatis, a lipophilic yeast, was found to be incriminated with dermatological disorder to two male dogs. Both canine patients had erythematous, scaly and alopecic lesions on different parts of the body. They had received broad spectrum antibacterial antibiotics and corticosteroids for about 45 days without any clinical response. Many small, oval to cylindrical yeast cells with budding, morphologically consistent with *M. pachydermatis* were detected in the cutaneous lesions by KOH and 'PHOL' techniques. Similar fungal elements were also observed in Grocott methanamine silver stained skin smears. The fungus was repeatedly cultured on two occasions from the infected skin specimens on Sabouraud

medium at 37°C. The detailed morphology of the yeast isolates were studied in 'PHOL' stain. Chemotherapy was done with oral ketaconazole and topical sulphur lime. Wider application of 'PHOL' staining technique for an early presumptive diagnosis in remote areas with a view to start immediate treatment is suggested. It is emphasized that *M. pachydermatis* may be considered in the differential diagnosis of canine dermatitis.

Acknowledgements

We wish to thank to the veterinary practitioners for the submission of samples and detailed clinical histories of the animals; and Dr. I.V. Mogha, Senior Scientist, Indian Veterinary Research Institute, Izatnagar, India for sending some of the relevant literature on the subject.

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