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DERMATOPHYTOSIS IN INDIAN DROMEDARY (*Camelus dromedarius*) CAUSED BY *Trichophyton verrucosum*

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ABSTRACT

The prevalence of dermatophytosis was studied in Indian dromedary (*Camelus dromedarius*) belonging to an organised farm located in Kutch area of Gujarat. In all 18 camels of both sexes and different age groups, showing skin lesions on several body sites were investigated mycologically by employing direct microscopy and cultural isolation techniques. Out of these, only two camels showed the presence of *Trichophyton verrucosum* in the cutaneous lesions. No epidemiological investigation was conducted to establish the source of infection. It is suggested that *T. verrucosum* infection should be considered in the differential diagnosis of dermatitis.

Key words: Dermatophytosis, dromedary, *Trichophyton verrucosum*

Dermatophytosis also known as ringworm or tinea is the most common superficial mycosis of man and animals including birds (Pal, 1997). The disease is caused by members of three genera of dermatophytes namely *Epidermophyton*, *Microsporum* and *Trichophyton* which have the characteristics to attack the keratinised layers of the skin, hair, nail and hoof (Jungerman and Schwartzman, 1972, Blood and Radostits, 1989 and Pal *et al*, 1990). The infection is world wide in distribution and can occur in sporadic and epidemic forms (Dawson, 1968 and Pal, 1987). The perusal of available literature revealed scarcity of information on dermatophytosis in camel from India, though the disease has been recorded in a few countries (Khamiev, 1981; Kuttin *et al*, 1986; Alhendi *et al*, 1998). The present investigation records the prevalence of *Trichophyton verrucosum* in dermatitis of Indian camel. In addition, the efficacy of Narayana stain for morphological studies of dermatophytes cultures and D.T.M. for the recovery of dermatophytic fungi from the cutaneous lesions are also reported.

Materials and Methods

The camels were housed in an organised farm situated in Kutch region of North Gujarat, India. In all, 18 animals showing dermatological disorders were examined for the prevalence of ringworm infection. The skin scrapings along with hairs were collected after sterilising the sites with 70% alcohol from the periphery of the actively growing cutaneous lesions of 18 camels of both sexes and different age groups. A portion of each clinical specimen was digested in 15% potassium hydroxide for 20 minutes and later examined on a clean glass slide under light microscope for the presence of fungal elements, if any. A heavy loopful of clinical material was plated on the nutrient agar, brain heart infusion (BHI) medium and Sabouraud's dextrose agar supplemented with chloramphenicol, actidione and thiamine (Pal, 1997). The inoculated media were incubated at 37° C and examined daily for microbial growth for up to 3 weeks. The suspected colony was subcultured on sabouraud medium. The microscopic morphology of the isolates was made in Narayana stain which contained 0.5 ml of 3% methelene blue, 4 ml of glycerin and 7 ml of dimethyl sulphoxide (Pal, 1998).

Regarding chemotherapy, the owner of the camel was advised to apply 2% solution of tincture of iodine on the lesions after the removal of crusts with disposable wooden spatula. The topical application of drug was done for 21 days. The crusty materials and wooden spatula were properly disposed off by burning.

Results

Out of the 18 camels investigated, *T. verrucosum* could be identified in the cutaneous lesions of 2 young camels of both sexes. Both the affected camels were young, aged 9 months and 12 months, respectively.

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The crusty lesions were observed on different parts of the body particularly on the neck region. The bleeding was noticed in actively growing lesions following the removal of greyish white crusts. The ringworm affected animals did not exhibit any systemic involvement, as their respiration, body temperature, pulse rate, urination and defecation were normal. There was no evidence of any ectoparasite.

The direct microscopical examination of the skin scraping in 15% KOH showed arthrospores and hyaline, branched, septate hyphae morphologically similar to dermatophytes. The affected hair had ectothrix spores. None of the specimens revealed the presence of ectoparasites. On Sabouraud dextrose agar, the dermatophyte grew as a small white to grey, heaped, folded colony at 37°C after 14 days of incubation. The growth of dermatophyte changed the colour of DTM from yellow to red due to alkaline reaction. The culture from enriched medium in Narayana stain revealed delicate, small microconidia and thin smooth walled macroconidia. The isolates were identified as *T. verrucosum* (Baxter and Rush-Munro, 1980).

The topical application of 2% tincture of iodine solution showed good clinical response. The owner did not report any adverse effects of the drug. However, we could not follow the patient after 3 weeks to see further efficacy of the drug.

Discussion

Among the animals, dermatophytosis is frequently encountered in the cats, dogs and cattle. However, the infection is also recorded in other species of mammals and avians (Ainsworth and Austwick, 1973 and Pal, 1997). In the present study, the absence of other organisms and detection of *T. verrucosum* in clinical specimens by direct microscopy and isolation established an unequivocal diagnosis of dermatophytosis in two young camels. The observations of our study are in accordance with Kuttin *et al* (1986), Pal (1987), Mahmoud (1993) and Alhendi *et al* (1998) who recorded dermatophytosis in young animals. The prevalence of disease in both sexes corroborate with the findings of Fadlemula *et al* (1994).

Dermatophytosis in camel is chiefly caused by *T. verrucosum* (Kuttin *et al*, 1986 and Alhendi *et al*, 1998). However, sporadic reports also described the role of *Microsporum canis* (Langner, 1995) and *M. gypseum* (Mancianti *et al*, 1988). In this study, *T. verrucosum* was the prime pathogen responsible for dermatitis in camels. Though epidemiological investigation could not be conducted to know the source of infection, it is believed that camel would have contracted the infection from cattle, which are considered as the natural host of *T. verrucosum.* The infection due to *T. verrucosum* in cattle is reported from many regions of India (Pal, 1987).

It is suggested that the use of KOH for direct microscopy, DTM for cultural isolation and Narayan stain for morphological study of dermatophytic fungi will certainly aid in the diagnosis of dermatophytosis, which is a highly infectious, contagious and common fungal disease of public health and economic significance.

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