

CANINE DERMATOPHYTOSIS IN MOROGORO, TANZANIA

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SUMMARY

A survey done on 48 dogs with apparently normal haircoats at Sokoine University of Agriculture showed that, 22 (45.8%) had dermatophytes on their haircoats; eleven (50%) of which were *Microsporum canis*, seven (31.8%) *Microsporum gypseum* and four (18.2%) were *Trichophyton mentagrophyte*. The incidence in dogs below 1 year was 63.7% and for those above 1 year was 36.3%. Female had higher incidence (54.5%) than males (45.5%).

INTRODUCTION

Dermatophytosis (ringworm) is an infection of the keratin - bearing tissues caused by a group of fungi called dermatophytes (Jungerman and Schwartzman, 1972). The disease is of worldwide distribution (Muller and Kirk 1976). Outbreaks of the disease in kennels and catteries may cause economic losses, but the main importance is on public health point of view (Gentles, 1966).

Dermatophytosis presents an important problem to man because it is zoonotic. Transmission between species occurs readily and in rural areas 80% of human infection may be derived from animals (Georg, 1954 and Kushida, 1984). Man may get the disease by direct contact with the infected animals. The dog being man's pet and companion is considered to be a common source of human infection. Therefore, because of their close association, the possibility of fungal transmission to man cannot be ignored (Gentles, 1966).

The classical ring-like lesions of the disease occur rather infrequently and spores of dermatophytes can exist in the skin

without causing overt lesions and carrier animals of this type may act as important source of infection (Gentles, 1966; Blood *et al*, 1983). This study was therefore undertaken to determine the presence of dermatophytes in dogs presented with apparently normal haircoats to the Sokoine University of Agriculture, Veterinary Clinic, Morogoro

MATERIALS AND METHODS

Forty eight dogs with apparently normal haircoats brought to the University Veterinary Clinic were randomly selected. The skin site to be sampled was cleaned using 70% alcohol solution to reduce bacterial surface contaminants. Hair and skin scrapings were then collected from the site using scalpel blade and forceps and put in dry sterile tightly stoppered bottles. The bottles were labelled showing age and sex of the dog.

The sample for inoculation was deposited carefully and firmly at the centre of the surface of Sabouraud's dextrose agar medium. The petri dishes were labelled and incubated at room temperature (25 -30° C). The plates were examined once daily for

typical fungal growth characteristics from the third day up to the fourth week. Identification of the dermatophytes was done using colony colour, texture, pigment produced, rate of growth and diameter. The colony growth changes were recorded after every two days. For final identification of the dermatophytes, the adhesive side of a cellotape was placed against the fungal growth and gently transferred to a microscopic slide with the fungus bearing side facing downward. The cellotape preparation was stained with lactophenol cotton blue and examined under the microscope using X40 objective to identify the different macroconidia and microconidia.

RESULTS

Of the 48 dogs examined in this study, 22 (45.8%) had dermatophytes on their haircoats. *Microsporum canis* was isolated from 11 (50%) dogs, *Microsporum gypseum* from 7 (31.8%) dogs and *Trichophyton mentagrophytes* from 4 (18.2%) dogs. The colony of *Microsporum canis* was first observed 3 to 4 days after inoculation of Sabouraud's dextrose agar. The culture appeared as a white cottony growth with a centrally depressed area. The colony attained a diameter of 6 cm within two weeks of growth. Later on the surface became powdery with a yellowish colour at the periphery. The underside of the colony was pale yellow becoming orange-brown as the culture aged. Microscopically, the picture of the colony mount of *Microsporum canis* was dominated by numerous spindle-shaped, rough, thick walled macroconidia containing 6 to 12 cells. Very few clavate sessile microconidia were observed.

The growth of *Microsporum gypseum* became visible in 3 days after inoculation as

a white cottony colony with powdery flat surface and irregular edges. It slowly changed into a flat colony and attained a diameter of 5 cm within 2 weeks of growth. Microscopically the picture of *Microsporum gypseum* was dominated by numerous ellipsoid, rough, thin-walled macroconidia with 3 to 6 cells. A few single-celled, club-shaped microconidia were also observed.

The colony of *Trichophyton mentagrophytes* became visible in 4 to 5 days after inoculation. The colony was flat with a white to cream powdery surface particularly at the periphery. The reverse of the colony was yellow which turned to reddish-brown with age. Microscopically, macroconidia were few, club-shaped, smooth, thin-walled and consisted of 3 to 5 cells. Numerous small, round microconidia in clusters were observed.

The occurrence of dermatophytes according to age revealed that out of 25 dogs aged between 1-12 months, 14 (63.7%) were positive compared to 8 (36.3%) dogs of over one year old. In addition, out of the 22 isolates, 10 (45.5%) were from males and 12 (54.5%) were from the females.

DISCUSSION

This study indicates that about half of dogs examined had dermatophytes in their haircoats (45.8%). This suggests that the incidence among dogs in this area is high compared to the study carried out by Kushida in 1984 in Japan who reported that very few were affected. In this study, *Microsporum canis* was the most common fungus isolated from dogs. The occurrence of *Microsporum gypseum* and *Trichophyton mentagrophytes* also appears to be of significance as together form half of the isolates. *Microsporum canis*, *M. gypseum*

and *Trichophyton mentagrophytes* were also among the important fungi isolated from samples sent to the Animal Disease Research Institute, Dar es Salaam, and they were mainly from cattle (Minga and Kikopa, 1983).

Microsporum gypseum is geophilic in nature, thus higher incidence in this study may be attributed to the way these animals are managed by their owners in the area of study. Most dogs move freely and have no proper sleeping places as it was gathered from their owners at the clinic.

The incidence (63.7%) in young dogs might be due to lack of adequate immunologic competence as compared to the high immunity acquired by older dogs (Jungerman and Schwartzman, 1972). It may be attributed to the pH of the skin which varies according to age. This change is likely due to the excretion of fatty acids in the sebum which are highly fungistatic in mature dogs (Blood et.al., 1983). Statistically there was no significant difference on the age occurrence ($p=0.742$). The difference in the occurrence of dermatophytes between the sexes was not shown to be statistically significant either ($p=0.96$).

Despite the fact the animals studied had normal haircoats, many (45.8%) had dermatophytes isolated from them. This shows that many animals are carrying the fungus without showing any lesions, and that the high prevalence of dermatophytes reported here indicates that apparently healthy dogs can be important sources of fungal infection to their owners and animal handlers.

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