

PREVALENCE OF CANINE DERMATOPHYTOSIS IN SEMI-ARID JAIPUR, RAJASTHAN

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Received: 31.10.2013; Accepted: 04.05.2014

ABSTRACT

A total of 109 dogs of 6 months of age to breedable adults suffering from alopecia, erythema and itching were thoroughly investigated for dermatophytes using standard techniques and *in vitro* cultural characteristics of the pathogens. Overall prevalence of dermatophytosis in dogs was 41.28%. Interestingly, infection with *Microsporum* spp. was predominant in 41 of 45 positive samples (91.11%), whereas infection with *Trichophyton* spp. was observed in three of 45 positive samples (6.67%). Higher prevalence (51.1%) of the dermatophytosis was recorded during pre-monsoon and/or monsoon months extending from June-October. Further role of epidemiological determinants vis-à-vis prevalence of the disease have also been discussed.

Key words: Dermatophytosis, canine, *Microsporum* spp., *Trichophyton* spp.

Dermatophytosis is a contagious disease of keratinized tissues of livestock including dogs. It has been attributed to various genera of non-inflammatory but pathogenic fungi, prevalent worldwide (Joshi *et al.*, 2011). In canines, the disease is often caused by *Microsporum* spp. and at times by *Trichophyton* spp. These genera of fungi are zoophilic and/or anthrophilic in nature (Sharma *et al.*, 2009; 2010). The clinical disease appears to confine more in tropics and sub tropic. Diseased pets maintained in comfortable cooler environment can spread and contaminate the house hold surroundings such as curtains, floor, furniture etc. with fungal elements (De Vroey, 1985). The study was therefore, conducted to determine the prevalence of canine dermatophytes in and around Jaipur.

MATERIALS AND METHODS

Study Area: Jaipur, is the largest city of Rajasthan, where the climate for the major part of the year is semi-arid. In summer, (April -June) the surroundings are comparatively dry and hot. With the onset of monsoon in mid-June, the surroundings abruptly shift to humid with ambient temperature ranging between 30°C -35°C.

During August- October, the average annual rainfall is about 650 mm, whereas winter season (November-February) witnesses lower temperature between 5°C-15°C with comparatively dry surroundings.

The Animals: A total of 109 dogs of different age and breeds were presented to the Teaching Veterinary Clinical Complex of the College between June, 2009 and May, 2013. These dogs had the history of alopecia, erythema and dandruff. The animals were subjected to laboratory investigations for dermatophytes.

Techniques: System-wise clinical examination and history was recorded. Confirmation was done by microscopic examination of skin scrappings taken from dermatological lesions (Quinn *et al.*, 1994). Wet mount of each skin sample was prepared to witness the presence of pathogenic fungal elements, including macroconidia and mycotic hyphae (Rippon, 1988). Subsequently, the skin samples were inoculated and cultured on Sabouraud Dextrose Agar (SDA; Hi-media) plates containing Penicillin and Streptomycin. The inoculated plates were incubated at 25°C and examined daily for 21 days. The pathogenic dermatophyte fungal elements were identified using standard procedure (Quinn *et al.*, 1994).

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RESULTS AND DISCUSSION

Clinical examination of affected dogs exhibited circular alopecia, itching and erythematic and dark lesions on ears, ventral part of abdomen, thorax and other parts of body. The infection was confined to epidermal keratinized tissues. There appeared neither deeper tissue invasion by the fungal elements into subdermal tissues nor any sign of inflammatory reaction but for mild erythema. The animals were weak, fatty in look and malnourished. The affected dogs had normal body temperature, pulse, respiration and no untoward signs of involvement of other systems of the body. Enquiries from respective owners revealed that affected pets rest in cooler surroundings in places with coolers or air conditioners during day time especially during monsoon months.

Microscopic examination revealed samples from 45 (41.28%) dogs to be positive for mycotic infections. All positive samples by microscopic examination yielded both pathogenic dermatophytes as well as contaminant saprophytes on cultural examination. *Microsporum gypseum* infections were found in 41 dogs (91.11%), *Trichophyton mentagrophytes* infection in three samples (6.67%) and *M. canis* in one dog (2.22%). The contaminating geophilic saprophytes in the cultured samples belonged to *Alternaria* spp., *Aspergillus* spp., *Penicillium* spp. and *Mucor* spp. The findings in respect of contaminating saprophytes are in consonance with earlier published reports (Mitra *et al.*, 1998; Bernardo *et al.*, 2005).

The study revealed that the disease was higher (23 of 45 of affected dogs; 51.11%) during pre-monsoon and monsoon seasons extending from June to October. The prevalence coincides with the most favored geo-climatic determinants attributing faster multiplication, growth and distribution of pathogenic fungal elements (*M. gypseum* and *T. mentagrophytes*). In the surroundings, besides synergistic predisposing impact of housing etc. as majority of affected dog population belonged to well to do families with adequate modern indoor facilities for their upkeep. The infection was severe and more prevalent in pets maintained indoor in cooler surroundings using desert coolers and/or air conditioners to combat impact of prevailing hot surrounding during summer and monsoon months

(April to June). Higher humidity is congenial for faster multiplication and propagation of fungal elements as reported earlier (Bhardwaj *et al.*, 2012; Pier *et al.*, 1994).

The younger dog population aged between 6-18 months was comparatively more susceptible to infestation, witnessing a higher occurrence (46.67%) than those pets above one and half year old (31.11%) and those in the higher age group of over three years (22.22%). Possibly acquired resistance of epidermal tissues through repeated exposure to lower grade infestation with mycotic elements may have played a role in reduced prevalence rate in dogs aged over three years. Similar finding has been reported by Copetti *et al.* (2006).

The prevalence of dermatophyte infection was higher in the males (73.33%) than female animals (26.67%). It was in conformity with the earlier report (Bhardwaj *et al.*, 2012). However, Cabanes *et al.* (1997) observed no influence of sex on occurrence of canine dermatophytosis. It would be therefore, interesting to further investigate the role of sex hormone and its impact on the prevalence of the disease.

Investigation on susceptibility of affected dog population to different genera of mycotic elements revealed higher prevalence of *M. gypseum* followed by *T. mentagrophytes* and *M. canis* infection which is in confirmation with previous reports from India (Sharma *et al.*, 2010). However, Pinter *et al.* (1999) and Bhardwaj *et al.* (2012) reported higher prevalence of *M. canis* than *M. gypseum* in canines. The difference in susceptibility could be attributed to geographical distribution of the pathogens and affinity of fungal elements to the host.

In conclusion, the study reveals the prevalence of dermatophytosis in canine population in this semi arid part of the country. Further studies are warranted to precisely ascertain the impact of various epidemiological determinants on the prevalence of disease.

ACKNOWLEDGEMENT

The Authors thanks the Dean, Apollo College of Veterinary Medicine, Jaipur for providing necessary facilities for this study.

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