CONCOMITANT DEMODICOSIS AND *MICROSPORUM CANIS* INFECTION IN DOG

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D*emodex canis* (Prostigmata: Demodicidae) is an ectoparasite which lives in the hair follicles and sebaceous glands of Dog. Though on normal condition it does not cause skin infection but under stress or weak immune status their numbers are increased. *Microsporum canis* is also well known dermatophytoses in canine and a zoophilic species responsible for skin lesions. Most studies of these two organisms in dogs have been independent of each other. This paper reports a concomitant infection of demodicosis and microsporium dermatophytoses in a German shepherd male dog aged 3 years which was brought to the Clinical complex of the Faculty of Veterinary Sciences, Srinagar with a history of chronic skin irritation and alopecia. The owner reported that the dog has been treated for long time around six months by the local vet but no satisfactory results of recovery seen. The case was later referred to the Division of Pathology for detailed examination of the skin affection. Blood sample were collected in EDTA and smear were prepared for different haematological evaluation. The skin found to be more affected visualized through magnifying lens were selected for skin scrapping. The area was sterilized with spirit for saprophytic fungi. A pre sterilized blunt scalpel was used for scrapping the skin. The outer edge of the scab collected with hair follicle by scrapping with the blunt scalpel until blood has just drawn. The samples were subjected to direct microscopy. Part of Scab sample were put in 10%KOH and another were taken for cultural examination. Direct microscopy was made of KOH prepared sample for presence of mite and another of stain by Lactophenol blue for the presence of any fungus. The collected scab was subjected for cultural examination in Sabouraud Dextrose Agar (SDA).

The clinical examination revealed erythematous lesions, alopecia over back, base of ear and tail and ventral part of the abdomen. In some of the area there were spongy, raised lesions without having any discharge suggestive of kerion formation.

The hematological analysis primarily represented low haemoglobin content (9gm/dl) with microcytic hypochromic anaemia and mild eosinophilia.

Based on morphological features the mite, it was identified as Demodex spp. as also reported by Wall and Shearer (1997) and Taylor *et al.* (2007). The intensity of infection per microscopic field was counted which revealed higher parasitic load and found to be 9-15 nos of demodex mite per microscopic field.

The stained smear of lactophenol blue revealed multi septed structure macroconidia with thick wall. The colony produced in cultured medium showed white cottony surface with bright yellowish in underside. The colony characteristic and morphology on stained smear were characteristic of *Microscoprium spp* of fungus.

The present investigation provide higher parasitic load of demodex infection in dog. The demodex infection in canine is very common with varies intensities have been reported and well documented in India as also mentioned by Nayak *et al.* (1997) and others part of the world. Under normal conditions demodex mite does not causing any skin disorder, however their number increases when immunity decreases in concomitant infections as also reported by Tsai *et al.* (2011). The co infection of

demodex and microsporum infection were also reported by Aho (1980); Ranganathan *et al.*, (1998) and Kao (1999).

The kerion formation in dog is not very much common; however in this case synergisms of both parasites and fungal infection may be responsible for formation of the lesion. Similar findings were also reported by Chaterjee *et al.*, (1980) in a 8 years old Mongrel male dog. Microcytic hypochromic anaemia observed in the present study may be due to the chronicity of the infection of demodex mite. Decrease haemoglobin level during infection period of demodex mite in dog was opined by Deb *et al.* (2000), however mild eosinophilia observed in the present case are contrary to the finding of Tsai *et al.* (2011). The peripherial eosinophilia observed in the study may be result of co infection which simulates was similar to findings of Moriello (2003) in feline.

References

Aho, R. (1980). Studies on fungal flora in hair from domestic and laboratory animals suspected of dermatophytosis. 1. Dermatophytes. Act. Path. Microbiol. *Scand*, **88**: 79–83.

Chaterjee, A., Chattopadhyay, D., Gupta, D.N.S. and Chakrabarti, A. (1980). An unusual association of Trichophyton mentagrophytes and *Demodex canis* in a mongrel dog with multiple kerions. *Annal. Trop. Med. Parasitol.,* **74**: 101-102.

Deb, A.R., Jha, M.K. and Prasad, K.D. (2000). Clinical and haematological changes in dogs infected with Demodex canis. *J.Res. Birsa Agril. Univ.,* **12**: 281-283.

Kao, D.Y. (1999). *Demodex* infections in the treatment in dog. *Chin. J. Vet. Sc. Tech.,* **2**: 16–17.

Nayak, D.C., Tripathy, S.B., Dey, P.C.,. Ray, S.K., Mohanty, D.N., Parida, G.S., Biswal, S. and Das, M. (1997). Prevalence of canine demodicosis in Orissa (India). *Vet. Parasitol.,* **73**: 347-352.

Moriello, K.A. (2003). Important factors in the pathogenesis of feline dermatophytosis. *Vet. Med.*, **98**: 845-858.

Ranganathan, S., Balajee, S.A.M. and Raja, S.M. (1998). A survey of dermatophytosis in animals in Madras, India. *Mycopath.*, **140**: 137–140.

Taylor, M.A., Coop, R.L. and Wall, R.L. (2007). In:Veterinary Parasitology, (3rd Edn.) Blackwell Publishing LTD, UK. Pp. 442-447.

Tsai, Y.J., Chung, W.C., Wang, L.C., Ju, Y.T., Hong, C.L., Tsai, Y.Y., Li, Y.H. and Wu, Y.L. (2011). The dog mite, *Demodex canis*: prevalence, fungal co-infection, reactions to light, and hair follicle apoptosis. *J. Insect Sci*., **11**: 76.

Wall, R. and Shearer, D. (1997). In: Veterinary Entomology (1st edn.) Champman and Hall, 2-6 Boundary Row, London. Pp. 43-135.