SHORT COMMUNICATION

Epidemiological Study on Canine Demodicosis

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Abstract

Canine demodicosis, a parasitic dermatological disorder caused by excessive proliferation of *Demodex* mites, poses a significant health concern in dogs, particularly under immunocompromised conditions. This study investigated the occurrence and associated risk factors of demodicosis in 50 dogs presented with clinical signs suggestive of demodicosis to the Veterinary College, Hebbal, Bengaluru, between January and June 2025. Diagnosis was confirmed via deep skin scraping, hair plucking, and acetate tape impression, with skin scraping yielding the highest detection rate (28%). Fourteen dogs (28%) tested positive for *Demodex* spp., with higher prevalence observed in juveniles (< 1 year), Shih Tzu and non-descript breeds, and dogs maintained on homemade diets, housed outdoors, and lacking regular deworming or dietary supplementation. No significant sex-based predisposition was noted. These findings emphasize the multifactorial etiology of demodicosis and highlight the importance of nutritional adequacy, housing hygiene, and parasite control in disease prevention and management.

Keywords: Alopecia, Canine, Demodicosis, Immunosuppression, Skin scraping.

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Introduction

Canine demodicosis is a parasitic skin disease caused by excessive proliferation of *Demodex* mites in the hair follicles and sebaceous glands (Ferrer *et al*., 2014; Arsenović *et al*., 2015). It is commonly referred to as follicular mange or red mange, this condition is marked by an abnormally high population of demodectic mites, specifically *Demodex canis*, *Demodex injai*, and *Demodex cornei*. According to Mueller *et al*. (2012) the onset of clinical disease is influenced by either immunosuppression or an impaired cutaneous immune response. Endo-parasitism, malnutrition and debilitation in young animals and chemotherapy, neoplasms, hypothyroidism, or hyperadrenocorticism in adult animals may lead to immunosuppression, triggering mite proliferation. In juvenile animals, conditions such as endo-parasitism, malnutrition, and general debilitation, and in adults, factors including chemotherapy, neoplastic disorders, hypothyroidism, or hyperadrenocorticism, may contribute to immunosuppression, thereby facilitating the proliferation of demodectic mites. Definitive evidence establishing a direct causal link between these predisposing factors and the onset of demodicosis remains insufficient. With this understanding of the disease, the present investigation was conducted to study occurrence of canine demodicosis and its associations with various risk factors.

Materialsand Methods

A total of 50 dogs presented to the Department of Veterinary Medicine, Veterinary College, Hebbal, Bengaluru (India) between January 2025 and June 2025 with dermatological lesions like erythema, alopecia, pruritic, scaling, lichenification suggestive of demodicosis were included in the study irrespective of age, sex and gender.

All the suspected dogs were screened for presence of *demodex* mites by deep skin scraping (DSS), hair plucking or trichography (HP), and acetate tape impression (ATI) and detailed history regarding various risk factors like age of dog, sex, breed, diet, housing management and dietary supplements provided for dogs were recorded. The dogs with presence of mites under microscope were considered positive for demodicosis.

Results and Discussion

Upon microscopic examination, fourteen out of 50 dogs (28.0%) presented were found positive for *demodex* spp. Skin scraping demonstrated the highest diagnostic yield (28%), followed by acetate tape impression (20%) and hair plucking (16%). Similar trends have been reported by Cai *et al*. (2014), Shchelkanov *et al*. (2020), and Malik *et al*. (2023).

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Higher occurrence of canine demodicosis was noticed in dogs less than one year of age (8/14, 57.14%) followed by dogs aged more than one year (6/14, 42.86%). Shrestha *et al*. (2015) and Rahaman *et al*. (2021) also reported similar findings. This higher occurrence of demodicosis in dogs which are less than one year of age could be due to poorly developed immune system, lack of proper nutrients and more stimulation of sebaceous glands during puberty by mites along with the various stress factors like immunity, malnutrition, debilitating diseases and endo-parasitism. This study indicated no gender related variation in the occurrence of demodicosis. Solanki *et al*. (2007) also reported no significant influence of gender on occurrence of demodicosis in canines. Higher occurrence of demodicosis was observed in Shih Tzu and Non-descript (3/14, 21.43% each), followed by Golden retriever and pug (2/14, 14.29%), Rajpalayam, Labrador, Beagle, Siberian Husky (1/14, 7.14% each). The variation in occurrence of demodicosis in different breeds depends on population of particular breed in a geographical area which depends on owner preferences and specific needs of the owner. More incidence in non-descriptive may be due to their poor body condition that results in alteration of micro-environment of body causing it more risk to increased multiplication of mites leading to increased level of infection in them. Sharma *et al*. (2018) and Patowary *et al*. (2022) recorded highest occurrence of diseases among non-descriptive dogs.

Out of the total 14 dogs tested positive for demodicosis in the study, eight dogs (57.14%) were maintained exclusively on a homemade diet, three dogs (21.43%) consumed only commercial feed, while the remaining three dogs (21.43%) received a combination of both homemade and commercial diets. Higher occurrence of disease in dogs which were mainly on home-made diet might be due to lack of essential nutrients which potentially influence on immune function and skin health of animals which are common key factors in demodicosis.

Higher occurrence of demodicosis was observed in dogs which were housed primarily outdoor (8/14, 57.14%) followed by indoor (4/14, 28.57%) and mixed housing pattern (2/14, 14.29%). Muller *et al*. (2020), Rahaman *et al*. (2021) also recorded outdoor-managed or free-roaming dogs had a higher prevalence of demodicosis than indoor-cared dogs. Higher occurrence of disease in out-door managed dogs may be due to susceptibility to parasitic infestations due to increased contact with contaminated surfaces, soil and other animals, potentially facilitating the transmission and proliferation of *Demodex* mites.

Higher occurrence of demodicosis was observed in dogs which were not receiving any dietary supplements (10/14, 71.43%) followed by dogs which were receiving dietary supplements (4/14, 28.57%). It may be due to lack of specific nutrients which are essential for developing immune function of the animal.

Among the 14 dogs confirmed positive for demodicosis, 57.14% (8 dogs) had a history of vaccination. These findings suggest that vaccination status does not exert an apparent influence on the development of demodicosis. Vaccines in dogs are mainly designed to stimulate protective immune responses against specific diseases. There is no evidence to suggest that routine immunization protocols modulate the innate or cell-mediated immune mechanisms implicated in demodicosis pathogenesis.

The occurrence of demodicosis was highest in dogs which were not regularly dewormed (8/14, 57.14%) followed by dogs which were dewormed regularly (6/14, 42.86%). Reddy *et al*. (2024) reported higher occurrence of demodicosis in dogs which were not regularly dewormed. This higher occurrence may be due to intestinal parasitism may compromise immune function, thereby facilitating the overgrowth of *Demodex* mites. Internal parasites compete for essential nutrients, potentially leading to deficiencies in micronutrients such as zinc, vitamin A, and vitamin D, all of which play critical roles in maintaining skin integrity and immune competence.

In conclusion, the present study recorded a 28% (14/50) prevalence of canine demodicosis among dermatological cases, with skin scraping proving the most sensitive diagnostic method. The findings highlight the multifactorial nature of demodicosis and underscore the importance of improved nutrition, management, and parasite control practices in reducing disease burden.

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