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GUIDING THE JOURNEY TO HEALING: GENERALIZED DEMODICOSIS MANAGEMENT IN A GERMAN SHEPHERD

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Abstract

Canine Demodicosis, commonly known as red mange or follicular mange, is a challenging ectoparasitic refractory skin disease affecting dogs. It stems from the excessive proliferation of Demodex spp mites within hair follicles and occasionally sebaceous glands, precipitating dermatological disturbances. This review delves into the intricate facets of Canine Demodicosis, exploring its causes, manifestations, and impact on affected canines. The disease manifests when these mites colonize hair follicles and sebaceous glands, leading to a spectrum of presentations from localized to generalized demodicosis. The latter is characterized by pronounced dermatological alterations encompassing erythema, alopecia, follicular hyperkeratosis, pustules, and crusts across the body. The condition is often further complicated by secondary pyoderma, exacerbating its severity [5]. In severe instances, generalized demodicosis poses a potentially life-threatening risk, emphasizing the need for early recognition and intervention. Intriguingly, Demodex mites are not exclusive to afflicted dogs, with a prevalence of 5.4% even among ostensibly healthy canines [2]. This highlights the complex interplay between mite presence and disease development. The canine demodicosis landscape is sculpted by three key Demodex species: Demodex canis, the most prevalent; Demodex injai, characterized by a robust physique; and Demodex cornei, distinguished by a shorter stature, approximately half that of D. canis. All three species engender disease in canines, adding nuance to the disease's etiology. A deeper comprehension of Canine Demodicosis hinges on grasping the life cycle of D. canis, which encompasses four stages: a fusiform egg, a six-legged larva, an eight-legged nymph, and an eight-legged adult. This intricate progression likely unfolds over a span of 20-35 days, significantly influencing disease dynamics.

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This review synthesizes a comprehensive perspective on Canine Demodicosis, fostering awareness of its multifaceted aspects. Heightened insight into its etiological underpinnings, clinical presentations, and species variation underscores the significance of timely intervention and management in minimizing the disease's impact on canine health.

Introduction

Canine Demodicosis (red mange, follicular mange) is an ectoparasitic refractory skin disease of dogs caused by the excessive multiplication of the mite *Demodex* spp in the hair follicle and sometimes in sebaceous glands. It is a dermatologic disease that occurs when mites colonize the hair follicles, sebaceous glands. Demodicosis can be localized or generalized. In generalized demodicosis dermatological changes include erythema, alopecia, follicular hyperkeratosis, pustules and crusts all over the body. Often, a secondary pyoderma further complicates the disease [5]. Generalized demodicosis may be a severe and potentially lifethreatening disease. *Demodex* mites were found in the skin of 5.4% of healthy dogs [2]. Three species of Demodex are involved in canine demodicosis. The most common type is *Demodex canis* and remaining two are *Demodex injai* characterized by large body and *Demodex cornei* which is having a short body and about half the length of *D. canis*, also cause disease in canines [7]. The *D.canis* mite develops through four life stages: a fusiform egg, a six legged larva, an eight legged nymph, and an eight legged adult. The life cycle probably takes 20-35

Materials and methods

Male german shepherd dog aged 1.5 yr presented to a field Veterinary officer, Bhadravathi, Shivamogga with a history of severe dermatitis since two months. Upon clinical examination by Veterinarian, dog exhibited papules, pustules, erythema, diffused alopecia, hyperpigmentation, erosions and crusts. Distribution of lesions observed on face, around the eyes and ears, chin region, fore limbs, neck and lateral abdomen. Skin scraping and hair plucks were collected from the affected dogs for laboratory examination. Scrapings were collected with scalpel blade dipped in liquid paraffin and collection of scrapings was continued until there was slight oozing of blood from dermal capillaries and sent for Department of Veterinary Parasitology, Veterinary College, Shivamogga. Skin scrapings was put into a 10% KOH and boiled for 5 minutes and centrifuged, after centrifugation sediments were collected. Few drops of sediments were added on glass slide, a cover slip was applied over it and examined under compound microscopes with 100X and 400X of magnification for presence of mites.

Results and discussion

Canine demodicosis is a non-contagious, inflammatory parasitic skin disease of dogs characterized by excessive proliferation of commensal mite *Demodex canis* within the hair follicles and sebaceous glands [8]. Three forms of demodicosis are seen in dogs viz.., localized demodectic mange, juvenile–onset generalized demodicosis and adult onset generalized demodicosis. Localized demodicosis is seen in dogs less than 1 year old. The generalized form is mostly triggered by immunosuppression. At the early stage of demodicosis alopecia and scaling of the skin is observed but when it is complicated by secondary bacterial infection it produces pustular and crusting dermatitis [4].

In the present study, the dog presented with a history of severe dermatitis since two months, upon external examination papules, pustules, erythema, alopecia, hyperpigmentation, erosions, and crusts were found on the body surface. Deep skin scraping revealed presence of carrot/cigar shaped *Demodex canis* mite on microscopic

examination and spindle shaped eggs of *Demodex canis* mite were also found. Based on the history, clinical findings and laboratory examination of skin scraping the present case was diagnosed as canine demodicosis. The measurements were carried out on total body length of mites. The adult mites were measured in microns by using ocular and stage micrometers under compound microscope. Measurement data showed, the mean total body length of *D. canis* was 212 ± 12.81 µm was much more than that of *D. corne*i (132.21 ± 14.6µm*)*. The mean total body length of the *D. canis* mites obtained from deep skin scrapings was almost agreeable with [1] (226.1 ± 11.68 µm) and [3] (224 µm).

Dog was treated with oral ivermectin at 400µg/kg/day for 15 days and adviced the owner of dog to use amitraz (2 ml in 1 litre of water) weekly twice as topical application on dog followed by bath with benzyl peroxide shampoo up to the recovery period. For controlling secondary bacterial infection Ampicillin at 25 mg/kg twice a day orally, BID for 14 days was given [6]. Ten days after therapy moist lesions and scales were disappeared. Three weeks after treatment, deep skin scraping revealed less number of *D.canis* mites. One month after treatment, the general skin condition was improved and skin scraping revealed absence of mites and regrowth of hair was noticed.

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