



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(10): 1845-1846
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www.thepharmajournal.com
Received: 01-08-2022
Accepted: 03-09-2022

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Diagnosis and therapeutic management of canine demodicosis

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Abstract

Canine demodicosis is one of the commonly encountered parasitic infestation in Canines caused by different spp of *Demodex* mites including *Demodex canis*, *Demodex injai* and *D. cornei*. In this study diagnosis of demodicosis was done using gold standard test skin scrapping examination which is more affordable, easier and precise. Treatment was initiated for canine demodicosis with amitraz, ivermectin, fluoroquinolones and benzyl peroxide. Follow up was done for 3 consecutive weeks and skin scrappings examination was taken at the end revealing considerable improvement in the condition. Conventional treatments will often appear to work however, along with it hygienic managerial practices are efficient in preventing demodicosis to greater extent.

Keywords: Canine demodicosis, skin scrapping, ivermectin, amitraz

Introduction

Demodicosis is defined as an inflammatory skin infection of parasitological origin. Demodicosis is most common cutaneous infections encountered in canine practice (Sivajothi S *et al.*, 2015) [1]. The disease is caused by *Demodex* mites, mainly *Demodex canis* and to a lesser extent *Demodex injai* (Gortel K 2006) [2]. *Demodex* mites are normal flora localized in the skin of most apparently healthy dogs, and Canine demodicosis is a common noncontagious parasitic dermatosis caused by different spp of *Demodex* mites including *Demodex canis*, *Demodex injai* and *D. cornei* (Mueller G.H *et al.*, 1989) [5]. Generalized demodicosis can be one of the most frustrating skin diseases, one will ever treat. Conventional and newer miticidal therapies are available to veterinarian to treat this frustrating skin disease. Using natural remedies for mange, on the other hand, can enhance the dog's immune system, so that the body can fight off the mange mite infection by itself the disease arises when these mites overly multiply in the skin and hair follicles (Dimri U *et al* 2006) [1]. Clinically, the disease has two forms, localized and generalized; the latter has more serious outcomes, whereas the former presents with a more favorable prognosis (Kumar A *et al.*, 2015) [3]. Clinical picture of the disease is usually associated with erythema, pustules, crusts, hyperkeratosis, and alopecia with secondary pyoderma as a frequent complication. Microscopic examination of skin scraping is most favourable and fastest technique for its confirmatory diagnosis (Mederle N *et al.*, 2010) [4].

Materials and Method

Deep skin scrapings are considered to be the diagnostic tool of choice in most patients with suspected demodicosis. Samples were collected with curettes, spatulae, sharp or dull scalpel blades. By placing a drop of mineral oil on the sampling instrument or directly on the skin for better adherence of the sampled debris to the instrument. Multiple scrapings of approximately 1 cm² of affected skin was performed in the direction of hair growth. The skin was scraped until capillary bleeding occurs indicating sufficient depth of the scraping. Debris were then transferred to a mixed mineral or paraffin oil and examined with a cover slip under microscope, a bunch of cigar shaped mites were found indicative of demodicosis. (Paterson T.E *et al.*, 2009) [7].

Direct examination of the exudate from pustules of severely affected dog was done by incising the exudative lesions with the blunt side of a second scalpel blade after gently removing the crusts and squeezing the lesion followed by mixing with liquid paraffin and microscopic examination. (Mueller, R.S *et al.*, 2020) [6].

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Treatment and Discussion

Canine demodicosis treatment involves mainly to resolve inflammation and thereby reduce any secondary skin infections and fur loss and ideally to remove the mites from the skin. The gold standard of treatment is to reach two negative skin scrapings from previously affected sites within a 30 day interval. (Perego, R *et al.*, 2019)^[8].

Amitraz (Mitaban®) dip: Mitaban dip immersion bath is a FDA approved drug for this disease. Dips were advised weekly for two weeks. Clipping of long hair all over the body was advised for long-haired dogs throughout treatment so that the dip solution can reach the mites down in the hair follicle. Precautionary measures like avoiding coming in contact with eyes and licking was asked to be avoided (Sharma P *et al.*, 2018)^[10].

Ivermectin (neomec®): is available as an injectable liquid or oral paste as a deworming agent It can be given orally daily as a liquid to dogs to treat demodicosis. Subcutaneous injections of ivermectin were advised weekly for three consecutive weeks, Dogs were first started on a low dose of ivermectin and then gradually given a higher dose while monitoring for side effects. (Paterson T.E *et al.*, 2009)^[7].

Antibiotics (Bayrocin®): Antibiotic course of 5 days was started to avoid secondary bacterial infections Bayrocin @ 5mg/kg b.wt oid, and progress was kept on check weekly basis animal shown recovery. (Perego, R *et al.*, 2019)^[8].

Antihistamine (Atarax®) are administered @0.5 mg/kg b.wt bid for 5 days

Topical applicants: benzyl peroxide Petben® that flushes out the mite burrowing deep in the hair follicles advised to use twice in a week and Staphben ointment was applied on the skin lesions that aids in healing. (Scott D.W *et al.*, 2001)^[8].

Conclusion

In young dogs with generalized demodicosis, genetic and immunological factors seem to play a role in the pathogenesis and affected dogs should not be bred. In old dogs and cats, underlying immunosuppressive conditions contributing to demodicosis should be explored. Deep skin scrapings are the diagnostic gold standard for demodicosis. Amitraz, macrocyclic lactones and more recently have all demonstrated good efficacy in the treatment of canine demodicosis. Therapeutic measures should be based on, drug availability and individual case parameters.

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