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Demodicosis in a Pug: A case study

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Abstract

A 3 year old female pug was presented to the department of veterinary clinical complex, veterinary college, Bidar with the history of alopecic patches all over the body and itching since one month. Clinical examination revealed presence of papules, pustules, erythema, focal and generalized alopecia, hyperpigmentation, erosions and crusts over fore head, ventrum of neck, brisket, abdomen, perineum, forelimbs and hind limbs. Deep skin scraping examination showed the presence of *Demodex canis* mite. The affected dog was treated with Ivermectin @ 200 µg/kg body weight S/C, at weekly intervals for 8 weeks along with supportive therapy. Owner was advised to give bath with benzoyl peroxide shampoo followed by amitraz (2 ml in 1 litre of water) as topical application weekly twice on dog up to the recovery period. Two month after treatment, the general skin condition of dog was improved and skin scraping revealed absence of mites and regrowth of hair was noticed

Keywords: Pug, *Demodex canis*, skin scraping, ivermectin, amitraz

Introduction

Demodicosis is a common disease in canine practice caused by *Demodex* mites. It is associated with proliferation of the mites *Demodex canis*, which are normal inhabitants of the hair follicle, and sometimes of the sebaceous glands. 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 (Tater and Patterson, 2008) [6] and resultant infection is also called as demodectic mange or red mange or follicular mange, which is a normal inhabitant of young dog's skin, especially the short-haired breeds, and can be acquired from the dam during nursing (Sivajothi *et al.*, 2015) [4]. Demodicosis can be classified as localized and generalized, with a juvenile or adult onset. Localized demodicosis starts with one or two hairless spots, especially on muzzle, face, legs and around the eyes, which needs no treatment. Generalized demodicosis may be a severe and potentially life threatening disease. Generalized demodicosis is characterized by involving five or more local lesions with patchy areas, erythema, alopecia, follicular hyperkeratosis, pustules and crusts all over the body. More often, a secondary pyoderma further complicates the disease (Scott *et al.*, 2001) [2]. *Demodex canis* mite develops through four stages: a fusiform egg, a six legged larva, an eight legged nymph, and an eight legged adult. The life cycle probably takes 20-35 days.

Case history and observation

A 3year old female pug was presented to the department of veterinary clinical complex, veterinary college, Bidar with the history of alopecic patches all over the body and itching since one month. Upon Clinical examination, dog exhibited intense pruritus, papules, pustules, erythema, focal and generalized alopecia, hyperpigmentation, erosions and crusts. Distribution of lesions observed on fore head (Fig. 1), ventrum of neck, brisket, abdomen, perineum, forelimbs and hind limbs (Fig. 2 & 3). The rectal temperature was 101.2°F, conjunctival mucus membrane were slightly congested.

Skin scraping was collected from the affected dog 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 noticed. Skin scrapings were 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 microscope with 10X and 40X of magnification for presence of mites.



Fig 1: Erythematous lesions over forehead



Fig 2: Generalized alopecia with erythematous crusty papules



Fig 3: Generalized alopecia with crusty lesions

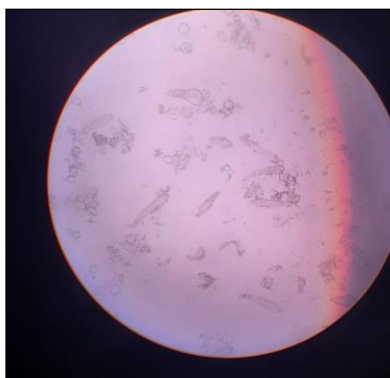


Fig 4: *D. canis* on microscopic examination

Results and Discussion

Microscopic examination confirmed the presence of *Demodex canis* mites (Fig. 4). The parasite was identified according to

its morphological characteristics cited by Soulsby (1986) [5]. The mite collection technique gives a useful diagnostic data as habitat of *Demodex canis* is hair follicles and sebaceous glands which move deeper into layer of dermis, so it may concluded that the suitable collection techniques for *Demodex canis* are deep skin scraping or hair-plucking examination (Sivajothi *et al.*, 2015) [4]. Based on the history, clinical findings and laboratory examination of deep skin scraping the present case was diagnosed as generalized canine demodicosis. Dog was treated with Ivermectin @ 200µg/kg body weight S/C, at weekly intervals, and treatment was continued until skin scraping examination was found to be negative. Ivermectin is known to act on GABA neurotransmission at two or more sites blocking interneuronal stimulation of excitatory motor neurons, leading to flaccid paralysis in mites. More recent evidence suggest that ivermectin may exert it's effect through action on glutamate-gated Cl⁻ ion conductance at the postsynaptic membrane or neuromuscular endplate. (Adams, 2001) [1]. Supportive therapy included administration of chlorpheniramine maleate @ 0.4mg/kg BW. For controlling secondary bacterial infection oral antibiotic cefpodoxime proxetil was given @ 10mg/kg BW for 4-5 weeks and Hydroxyzine was given @ 1mg/kg BW for 1 week. Owner was advised to give bath with benzyl peroxide shampoo followed by amitraz (2 ml in 1 litre of water) as topical application weekly twice on dog up to the recovery period. Bathing with benzoyl peroxide shampoo before dipping may be beneficial because of it's keratolytic and follicular flushing activity and hence is recommended for the treatment of demodicosis (Scott *et al.*, 2001) [2]. Topical amitraz is FDA-approved for treating generalized demodicosis in dogs older than 4 months of age (Singh *et al.*, 2011) [3]. Amitraz acts by inhibition of the enzyme monoamine oxidase and as an agonist at octopamine receptors, monoamine oxidase metabolizes amine neurotransmitters in mites and ticks, and octopamine is thought to modify tonic contractions in parasite muscles (Adams, 2001) [1]. 5 weeks after therapy moist lesions and scales disappeared and deep skin scraping revealed less number of *Demodex canis* mites. Two month after treatment, the general skin condition was improved and skin scraping revealed absence of mites and regrowth of hair was noticed. Long term antibiotic to check secondary complication and antihistamine to reduce intense pruritis has contributed for early redressal of clinical signs and overall improvement. Simultaneous use of ivermectin parenterally and amitraz topically in the present investigation has proved more efficacious along with supportive treatment resulting in complete recovery.



After Therapy



After Therapy

Acknowledgement

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