ISSN: 2583-8288
Popular Article
Published on: 25.09.2024

Canine Demodecosis

Manaswini Dehuri
Assistant Professor,
Department of Veterinary Parasitology,
Odisha University of Agriculture and Technology, Bhubaneswar-751003, India
DOI: 10.5281/Vettoday.13882707

Demodex spp. mites are normally present as commensals in hair follicles and sebaceous glands in animals and humans, which multiply to excessive numbers causing clinical conditions. They have an elongated body with four stumpy legs, can be visualised under a microscope. Three species of demodectic mites are associated with disease in dogs. It is not contagious and is acquired from the dam during nursing. The most common species frequently encountered in dogs, *Demodex canis*, was first identified in 1859. Another causative agent is *Demodex injai* which has a longer body while *D cornei* has a short-body form, most likely to be a morphological variant of D canis (Mueller et al. 2020). There are various immunological, genetic, endocrine and other factors like breed, nutrition, length of hair, oxidative stress, debilitating diseases, that are risk factors and predisposing factors leading to rise in populations of mites associated with skin lesions like demodecosis. Various conditions like neoplasia, chemotherapy, hyperadrenocorticism or hyperthyroidism may lead to immunosuppression, triggering mite proliferation (Shchelkanov et al.,2020). The clinical presentation of demodecosis shows wide variation depending on the age at onset, the extent and severity of the lesions and the presence of secondary infection.

Demodecosis in canines is commonly known as follicular mange or red mange. Juvenile onset demodecosis is manifested in young canines (3 months - 18 months), is mostly a localised form of demodecosis in which recovery occurs spontaneously in most cases. Juvenile demodecosis is assumed to be due to cell-mediated deficiency and may be linked to the gradual expansion of mite populations. Breeds more susceptible to this condition are like bull dog, bull terrier types and shar-pei dogs (O'Neill, et al.,2020).

Adult onset demodecosis occurs usually after 4 years of age or older, it is believed to be associated with immune suppression reducing the host's ability to control mite numbers.

Localised demodecosis is characterised by a benign clinical course with just a few skin lesions that usually resolve spontaneously, without treatment. The condition starts with one or two hairless spots, especially on muzzle, face, legs and around the eyes, with clinical signs of scattered alopecia, comedones, and erythema.

Generalised demodecosis involves more local lesions with patchy areas, erythematous lesions, scales and papules. The skin has crust formation, ulceration due to pyoderma. Generalized form do not resolve spontaneously, requires prolonged acaricidal and antibiotic treatment. It can become severe and life-threatening due to extensive pyoderma and association with secondary bacterial infection (Miller et al.,2013).

Clinical signs and symptoms

- Local or diffuse erythema
- Inflammatory dermatitis
- Comedones formation

- Alopecia
- Crusts or scales
- Pustular or papular dermatitis
- Hyperpigmentation of hair follicular
- Wrinkled and thickened skin with a mousy odour
- Secondary bacterial infection may lead to follicular pustules, furunculosis with scale, crust, exudation and ulceration

Diagnosis

- Based on Clinical history, signs and symptoms
- Deep skin scrapings are usually the most common procedure for diagnosis of the mite, where scrapings are dissolved in 10% potassium hydroxide or hydrogen peroxide. A drop of mineral oil or paraffin is used for better adherence of the sample. The skin is scraped until capillary bleeding occurs, to indicate sufficient depth of skin scraping.
- Trichograms are used for areas where skin scrapings become difficult like periocular and interdigital areas. About one cm of area should be plucked with forceps in direction of the hair growth and put in a slide along with a drop of mineral or paraffin oil. Large number of hairs (more than 50) should be plucked for better results.
- Tape strips (Scotch tape) - During squeezing of skin, the acetate tape is pressed onto the skin with the sticky surface down and the hairs are collected.
- Skin biopsy (histopathological examination)- In few cases, skin biopsies for histopathological investigation might be required for detection of Demodex species in hair follicles or in foreign body granulomas due to furunculosis.
- Direct examination of the exudate from pustules or draining tracts may reveal mites in few cases. Specimens can be collected by squeezing the exudate onto a glass slide, and observed under microscope with addition of mineral oil.
- Cytological specimens stained with commercial Romanowsky stains, like Diff Quik, can reveal Demodex on the evaluation of cytological samples of dogs with exudative forms of demodecosis.

Treatment

- Treatment for generalized demodecosis should be monitored clinically and microscopically (by repeated skin scrapping) for several weeks to a month till a negative skin scrapping result. Acarcide treatment should continue four weeks to decrease the risk of a disease recurrence (Mueller ,2004)
- Clipping of long hair and application of anti-seborrheic sampoo before application of miticides
- Amitraz-Topical application (0.025%–0.05%) for every 7–14 days is effective for canine demodecosis.
- Ivermectin (0.3–0.6 mg/kg/day) is effective against the follicular mite.
- Moxidectin, a macrocyclic lactone is effective at 0.3–0.5 mg/kg body weight in the treatment of canine generalized demodecosis.
- Doramectin is a longer-acting macrocyclic lactone injected subcutaneously every week at 0.6 mg/kg body weight are reported as a successful treatment for Demodex mite.
- Milbemycin oxime is the fermentation product of Streptomyces and can be administered at a dose of 0.5–2 mg/kg daily.
- Combined use of acaricides and macrocyclic lactones and nutritional supplements in generalized demodicosis cases (Scott,2012)
- A new group of ectoparasiticides isoxazolines that include fluralaner, sarolaner, afoxolaner and lotilaner. These molecules have been shown to target a binding site that inhibits insect and acarine ligand-gated chloride channels, in particular those gated by the neurotransmitter GABA, thereby blocking pre- and postsynaptic transfer of chloride ions across cell membranes (Mueller et al.,2020).
- Systemic antibiotics may be administered in secondary bacterial infection and pyoderma.

References

Miller, W. H. , Griffin, C. E. & Campbell, K. L. (2013) Canine demodicosis In: Muller & Kirk's Small Animal Dermatology. 7th edn. Eds Miller W. H., Griffin C. E. and Campbell K. L. Elsevier, St. Louis, MO, USA: 284-342

Mueller RS (2004) Treatment protocols for demodicosis: an evidencebased review. Vet Dermatol 15: 75–89.

Mueller RS, Rosenkrantz W, Bensignor E, Karaś-Tęcza J, Paterson T, Shipstone MA.(2020) Diagnosis and treatment of demodicosis in dogs and cats: Clinical consensus guidelines of the World Association for Veterinary Dermatology. Vet Dermatol. 31(1):5-27.

O'Neill, D. G., Turgoose, E., Church, D. B., Brodbelt, D. C., & Hendricks, A. (2020). Juvenile-onset and adult-onset demodicosis in dogs in the UK: prevalence and breed associations. The Journal of small animal practice, 61(1), 32–41.

Scott DW(2012) Untreated generalized demodicosis in young dogs. Vet Dermatol 23: 174–175

Shchelkanov MY, Tabakaeva Moskvina TV, Kim EM, Derunov DA, Galkina IV(2020) The prevalence and risk factors of canine demodicosis: A retrospective long-term study of 409 cases. Trop Biomed. 37(3):778-782.