

International Journal of Advanced Biochemistry Research



ISSN Print: 2617-4693
 ISSN Online: 2617-4707
 IJABR 2024; 8(1): 519-521
www.biochemjournal.com
 Received: 15-10-2023
 Accepted: 22-12-2023

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Canine demodicosis: A case report and successful recovery at Izatnagar, Bareilly

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DOI: <https://doi.org/10.33545/26174693.2024.v8.i1.g.431>

Abstract

Canine demodicosis, also known as demodectic mange, is mainly caused by *Demodex canis*. It causes both localized and widespread (generalised) skin infections in dogs all throughout the world. An adult male dog (one-year-old), weighing 15 kg was presented to Veterinary clinical complex, Izatnagar, Bareilly. The animal had history of anorexia, alopecia, dehydrated, erythema, itchy skin, crust formation, hyperpigmentation, and dullness. On clinical examination and skin scrapping examination it was diagnosed as demodicosis (*Demodex canis*). The case was treated with tablet Bravecto (fluralaner 1000 mg) once a day orally for two weeks, along with antibacterial, antifungal and supportive nutritional therapy. The dog reacted well to medication, and no further notable side effects were observed. The third week of treatment marked the full recovery. The current report's goal is to educate pet owners about the prevalence of *Demodex canis* and its therapeutic care.

Keywords: *Demodex canis*, fluralaner, dog, itching, erythema

Introduction

Dogs are the mostly reared pet animals throughout the world. A wide range of parasites with zoonotic potential are infecting the canines, which are of human health concerns. Among that, canine demodicosis is most important cutaneous disease of dogs that is encountered across veterinary practices. Demodicosis is very commonly reported in the immuno-deficient young, adult and old dogs. There are three documented species of canine *Demodex* mites and they are *Demodex canis*, *D. injai*, and, *D. cornei*. The first species to be identified was *Demodex canis*; two other *Demodex* mite species may be either mutations of *Demodex canis* or distinct species (Sivajothi *et al.*, 2015) [9]. *Demodex injai* is a long-bodied demodectid mites with males that are more than twice as long as male *D. canis* mites (Hillier and Desch, 1997) [3].

Scarff (1988) [5] reported a short and stubby form of the *Demodex* and described being about half the length of the female *D. canis* (Scarff, 1988; Chesney, 1999) [5, 2]. However, *Demodex canis* is the major causative agent of canine demodicosis and which colonize in the hair follicles, sebaceous glands of dogs. It is characterized by significant changes in skin such as alopecia, erythema, follicular hyperkeratosis, comedones, pustules, seborrhoea, crusts etc. A secondary pyoderma can also be frequently reported as complications of demodicosis. *Demodex canis* is a follicular effecting, most common skin infection in dogs and, two types of infections are documented such as, a localized and a generalized form. The localized form occurs mainly in younger dogs less than a year old. But the cutaneous infection may become generalized due to proliferation of mite population. Generalized demodicosis in dog might take several months to years for recovery in dog. The clinical sign - persistent pruritus observed in infected animals due to itching, which result in wounds on the body. This article presents a case report about alarming incidence of demodicosis in Izatnagar region of Bareilly and the advisable treatment, prevention and control of disease in dogs.

Case History

A one-year-old male dog weighing 15 kg was presented to the Teaching Veterinary Clinical Complex, Indian Veterinary Research Institute, Izatnagar, Bareilly with a history of inappetence, dullness, severe itching, foul body odour and hair shedding.

There was previous history of skin infections and also ectoparasite incidences. As per the history, animal was regularly vaccinated and the deworming schedule was followed as advised by veterinarian. On physical examination, the infected dog was anorexic with dehydrated skin. The moderate clinical signs include alopecia, erythema, papular and pustular lesions, skin rashes, crust and scab formation around face, ears, fore limbs, hind limbs, ventral abdomen, inner thigh, loin and tail region. Also, hyperpigmentation was observed in these regions. The body temperature of the affected dog was found to be 101.8°F. Other parameters like heart rate, respiration rate, pulse rate, mucous membrane, urination and defecation were normal.



Fig 1: Demodicosis (*Demodex canis*) in a pug dog showing lesions in (a) face, (b) lower mouth, (c) ear and (d) abdomen region

Method/Diagnosis

Based on the clinical signs observed in animal, the infection was tentatively diagnosed as skin infection of parasitic origin. For the confirmatory diagnosis of the condition, deep skin scrapings were done with the help of fresh scalpel and surgical blades. The suspected crusted papule of skin and the adjacent area was selected on infected animal for sample collection. Unnecessary hairs were clipped to reduce the number of hairs during slide preparation. A drop of liquid paraffin was placed on the selected area and allowed for spreading-out. The skin was squeezed to maximize the numbers of mites inside the skin area to be scrapped. Scraping of skin started with the help of scalpel and surgical blades and finished till the slight bleeding occurs. The scrapings were transferred from scalpel blade into a test tube and then digested in 3-5 ml of 10% potassium hydroxide solution. The solution with skin scraping was boiled for 3-4 minutes till all the hairs and skin tissues were dissolved and the solution became homogenous. The solution was cooled and centrifuged at 1500rpm for 5 minutes. The supernatant solution is discarded and from the sediment a small drop was taken onto a clean and clear glass slide. Applied cover slip and examined under 10X and 40X objective microscope for the detection of mites, if any.

Results

The skin scraping examination revealed the presence of elongated, cylindrical and cigar shaped mite, which was identified as *Demodex canis* with body divisible into the head, thorax and the abdomen. The mite is characterized by thorax with four pairs of three jointed short and stumpy legs and long, transversely striated abdomen according to Soulsby, 1982^[10].

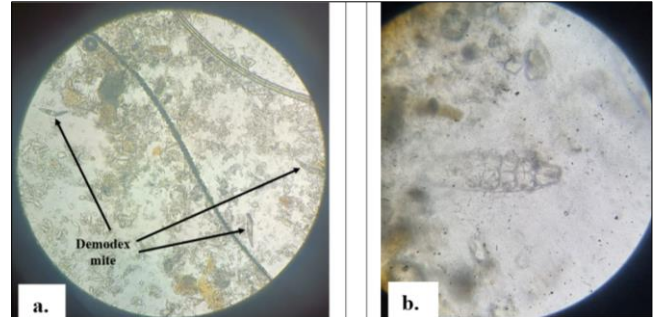


Fig 2: *Demodex* mites in skin scrapings under (a) 10X magnification and (b) 40X magnification

Treatment and Prognosis

For two weeks, the dog was given an oral medication called Bravecto (Fluralaner 1000 mg) once a day. For ten days, a 10 mg/kg combination of clindamycin hydrochloride and nicotinamide tablets was administered to suppress bacterial infection. For four months, 0.4 mg/kg of the tablet Apoquel (oclacitinib maleate) was used to manage pruritus and atopic dermatitis. For 15 days, a 5 mg/kg tablet of itraconazole was administered to manage the fungal infection. For thirty days, the ZincOtin-DS tablet (zinc, biotin, folic acid, vitamin E, and linolenic acid) was taken twice a day. For 30 days, 10 milliliters BID of Syrup Foxyfur (omega 3, omega 6, vitamin A, vitamin D3, vitamin E, zinc, and biotin) to enhance skin health and decrease hair loss. For 15 days, 75 ml BID of Syrup REVELL (including 15 well-proven herbal components) to enhance and promote liver functioning. To rebuild the skin's natural defences, four weeks of weekly administration of ALLERDERM Spot-on (Skin Lipid Complex, a proprietary blend of ceramides, fatty acids, and cholesterol) was administered. Vet-Pro was fed a nutritionally enhanced, hypoallergenic diet for three months in order to support the body's natural defences against skin and coat health issues. It is also recommended to administer liquid betadine twice a day to the entire body. For two weeks, it was advised to take a bath using Petben shampoo (benzoyl peroxide) once every three days to degrease and exfoliate hair follicles. On clinical observations after two weeks of treatment, the texture of skin appeared as almost normal and the skin scraping was negative for mites.

Discussion

The current case was classified as generalized demodicosis due to the widespread lesions observed in the body. Several drugs are used in the multimodal treatment of canine generalized demodicosis (Mueller *et al.*, 2012)^[4]. The clinical indications and lesions of demodicosis may be caused by a variety of predisposing factors, including as malnourishment, malnutrition, and an aberrant environment that encourages mite proliferation and the development of other skin diseases (Mueller *et al.*, 2012; Shrestha *et al.*, 2015)^[4, 6]. Because most cases of canine generalized

demodicosis entail a subsequent bacterial skin infection that requires systemic antibiotic therapy for several weeks, broad-spectrum antibiotics were used in this our study for treatment (Verde, 2005; Mueller *et al.*, 2012) ^[11, 4]. Shampoos containing benzoyl peroxide are frequently advised due to their keratolytic and follicular flushing properties. Shampoo containing benzoyl peroxide demonstrated good results when treating generalized demodicosis. The animal in the current case study that received enough nutritional supplements responded well to treatment for canine demodicosis due to its antioxidant qualities (Singh *et al.*, 2011; Yatoo *et al.*, 2014; Arsenovic *et al.*, 2015) ^[7, 12, 1]. It also helped the animal cope with the side effects of a particular acaricidal treatment (Singla *et al.*, 2013) ^[8].

Conclusion

From a medical perspective, *Demodex canis* has continued to provide significant challenges for both pet owners and veterinarians. In addition, it is imperative that pet owners provide their animals with appropriate treatment and intensive care to prevent widespread diseases. The present case of demodicosis, which was diagnosed through skin scraping and treated with tablet Bravecto (fluralaner 1000 mg) once a day orally for two weeks, along with other antibacterial, antifungal medication and Petben shampoo, was successfully and completely cured.

Acknowledgement

We acknowledge the Head, Division of Parasitology, IVRI, Izatnagar and the Director, IVRI, Izatnagar, for all the facilities for disease diagnosis.

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