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Dr. Kamal Hasan
Assistant Professor (Job Contract), Department of TVCC, Veterinary College, KVAFSU, Hassan, Karnataka, India

Dr. Manjunatha DR
Assistant Professors, Department of TVCC, Veterinary College, KVAFSU, Hassan, Karnataka, India

Dr. Ramesh D
Assistant Professors, Department of TVCC, Veterinary College, KVAFSU, Hassan, Karnataka, India

Dr. Satheesha SP
Assistant Professors, Department of TVCC, Veterinary College, KVAFSU, Hassan, Karnataka, India

Dr. Shivakumar M
Associate Professor and Head, Department of Veterinary Medicine, Veterinary College, KVAFSU, Hassan, Karnataka, India

Correspondence
Dr. Kamal Hasan
Assistant Professor (Job Contract), Department of TVCC, Veterinary College, KVAFSU, Hassan, Karnataka, India

Diagnosis and treatment of generalized canine demodecosis

Dr. Kamal Hasan, Dr. Manjunatha DR, Dr. Ramesh D, Dr. Satheesha SP and Dr. Shivakumar M

Abstract
A German Shepherd dog of 9 years of age with clinical signs of severe hair loss along with moist crusty skin lesions associated with severe itching was presented to the college Hospital, Veterinary college Hassan. Microscopic observation of the deep skin scrapings with 10% KOH digestion test revealed the *Demodex canis*. It was successfully treated with Ivermectin, at the rate of 0. 06 mg/kg Body weight subcutaneous every week interval for 4 weeks., topical application of Amitraz at the rate of 0.05% @ 4ml/litre of water once in a week for 4 weeks preceding to that animal was washed with a shampoo containing Benzyl peroxide. A course of broad spectrum antibiotic, Cepodoxime was administered at the rate of 10 mg/kg Body weight orally for 10 days. Additionally, oral supplementation of omega 3 and omega 6 fatty acids was given for one month. Two successive deep skin scraping examination was performed after one week interval of last injection yielded no mites, indicated complete recovery from the disease.

Keywords: Demodecosis, amitraz, ivermectin

Introduction
Canine demodicosis (Follicular Mange) is an inflammatory skin disorder in dogs associated with higher than normal populations of Demodectic mites [1]. *Demodex canis* is an ectoparasite and the normal inhabitant of the canine hair follicles and sebaceous glands of skin. There are three distinguished Demodex mites in dogs: *D. canis*, *D. injai* and *Demodex Cornei* [2]. However, in Karnataka, Morphological characterization was done for *D. canis* and *D. cornei* [3]. These mites assume pathogenic role mainly due to altered immune response or transmission from dam to pup leading to the development of clinical signs like alopecia, erythema and development of scales and lesions either localized on face and limbs or generalized all over the body. Demodicosis is supposed to be frequently appears in an immune-deficient dogs and it also might be due to immunosuppressive therapy such as cytotoxic therapy or common immunosuppressive diseases such as cancer. Stress can also cause Demodecosis, especially in puppies [4]. Canine Demodecosis is classified as Canine localized Demodecosis (CLD) or Canine generalized (CGD) according to the extent of the disease. The localized form of the disease occurs most commonly in young dogs, is characterized by focal erythema and alopecia on face and distal limbs and is self-resolving in most dogs [5]. The present paper elucidates the progress of the treated canine Demodecosis.

Materials and methods
Clinical history
A German Shepherd dog of age 9 months was presented to College Hospital, Veterinary College Hassan, with the history of skin lesions with Pruritis from one month. Clinical examination of the animal revealed exhibited pustules, erythema, alopecia, erosions. Distribution of lesions of were observed on face, chin region, fore limbs and lateral abdomen (Fig. 1).

Skin Scrapings
Skin scrapings, and hair plucks was collected from the affected dog for laboratory examination. Scrapings were collected with scalpel blade and collection of scrapings was continued until there was slight ooze of blood from dermal capillaries. Material was suspended in a few drops of 10% KOH on a microscopic slide, a coverslip was applied and the

preparation was examined under low and high power (10X, 40X) of microscope.

Results and Discussions

Clinical Symptoms includes Pustules, Pappules, alopecia on the abdomen and trunk region .Deep skin scrapping was taken until the capillary bleeding was observed and microscopic examination under low power 10 X resulted more than 2-4 *Demodex canis* mites in a single field (Fig. 3).

Fig 1: Dog showing the generalized demodecosis all over the body

Fig 2: Dog showing severe alopecia and rashes all over the body

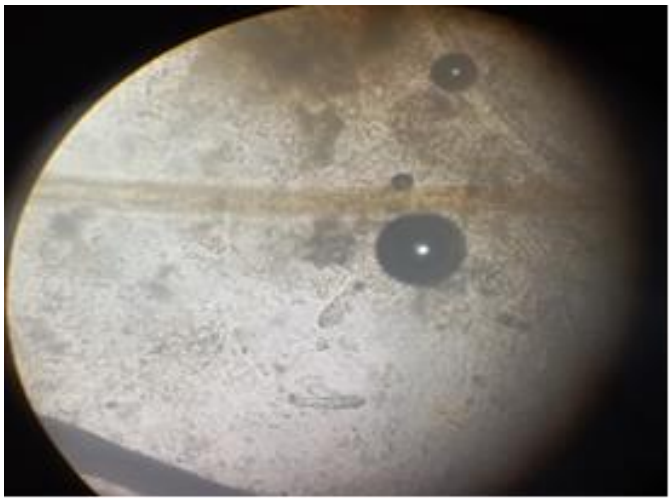

Fig 3: Microscopic Examination reveals the presence of demodectic mites in the deep skin scrapings

Fig 4: Recovered Dog from Demodecosis after Treatment

Table 1: Hematology and serum biochemical parameters before and after treatment.

Parameters	Before Treatment (Day 1)	After Treatment (Day 29)	Reference Range
Hematological Test			
Total Leucocyte Count (TLC) Cells /µL	21,200	16900	8,000-12,000
Hemoglobin gm/dl	6.1	7.03	8 - 17
PCV%	31	34	35 - 57
Total RBCs million/µL	4.2	5.3	5.6 - 8.8
Biochemical Tests			
Alanine Aminotransferase (ALT) U/ L	50	55	10-40
Blood Urea Nitrogen (BUN) mg/dl	22	18	15-24

Treatment

The present case report the treatment includes Amitraz a concentration of 0.05% applied once in a week for followed for 4 weeks, in order to prevent the secondary bacterial infection Cefpet® (Intas pharmaceuticals Ahmadabad)dry syrup is administered in addition Nutricoat advanced® (Cargill Pvt. Ltd) syrup containing omega-3 and omega -6 fatty acids helped in skin regeneration. Topical Amitraz is FDA approved for treating generalized Demodecosis in dogs older than 4 months of age [1]. The use of broad spectrum antibiotic is majorly due to secondary bacterial skin infection, which needs administration of systemic antibiotics for several weeks along with acaricidal treatment [6]. The present GSD dog was treated successfully with the medication as reported above with utmost care and management the recovered animal found to be normal (Fig. 4). Also as depicted the values of serum biochemical parameters and hematology values for before and after the Treatment (Table 1). In this present study, the haematogical parameters revealed Leukocytosis, and anemia. After treatment the blood values moved towards normal although liver enzymes were still elevated, which might suggest the increase in liver function with concurrent use of various drugs to treat the disease [7]. In the present case study the haematological parameters (Table-1) revealed anaemia and leukocytosis and similar findings were also reported recently [1, 2].

Conclusion

The present case study concluded that Ivermectin is a good choice of drugs along with Amitraz dip to treat mange. To control the reoccurrence of infection, cage or premises of dog residence should be sprayed with diluted Amitraz solution.

Ethical Matters

In the present study the samples of skin scrapings used from the clinical case presented to the hospital, indicating no ethical issue related in this study.

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Conflict of interest

All the authors declares that they have no conflict of interest.

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