GENERALISED DEMODICOSIS IN A HYPOTHYROID DOG AND ITS SUCCESSFUL THERAPEUTIC MANAGEMENT

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Canine demodicosis is a common non-contagious parasitic dermatosis frequently encountered in veterinary practice. This disease is most commonly caused by *Demodex canis* ; however, other species, such as, *Demodex injai* (a large bodied mite) and *Demodex cornei* (a short bodied mite), may also be involved (Tater and Patterson, 2008). It can be of generalized or localized form. Generalised demodicosis is one of the most frustrating skin diseases, one will ever treat. Number of mite is kept low by dog's immune system (Singh *et al*., 2011). Once the immune system is affected, it causes multiplication of the organisms and causes excessive and recurring lesions in the body of dog. Correction of underlying reason is necessary for therapeutic management of demodicosis.

CASE HISTORY AND DIAGNOSIS

One Boxer breed of dog age 1.5 years was presented with the history of chronic skin lesions like alopecia, erythema, pruritus and hyperkeratinisation on many parts of body. It was treated locally with antibacterials, antifungals and antiparasitic drugs. But it didn't show any improvement. It was mildly anorectic and weak. Body temperature of animal was 103.5°F with congested mucous membrane and normal lymph nodes. Dog was slightly depressed with a rough body coat. Animal was subjected to different diagnostic tests. Deep skin scrappings were collected from the lesions and examined after treating with 10% KOH and identified by microscopic examinations (Soulsby, 1982). Microscopic examination of skin scrapings revealed the presence of elongate, cigar shaped mite with body divisible into head, thorax bearing four pairs of short and stumpy legs and abdomen bearing transverse striations confirmed it to be *Demodex canis* (Soulsby, 1982) (Fig. 1). Further the sterile swab collected from lesions revealed *Staphylococcus* organisms on microbial culture, which was sensitive to Gentamicin only. No growth was observed in fungal medium. Neither any parasites nor protozoans were found in the blood or faecal sample.

Fig1. Cigar shaped *Demodexcanis* (40x)

Thyroid profile was determined using chemiluminescent microparticle immunoassay (Architect, Abbott). Total thyroxine (0.7µg/dl) and free thyroxine level (0.5 ng/dl) of blood was decreased while Thyroid Stimulating Hormone level (3.2 ng/ml) was slightly increased from the basal level. Hematological examination (Fully automatic analyser, BS-120, Mindray) showed leukocytosis (19000/µL) along with neutrophilia (83%) and eosinophillia (11%). Liver and kidney functions were tested using Microlab 300, Merck by measuring Alanine amino transferase activity (IFCC Kinetic method) and serum creatinine (Jaffe Kinetic method) respectively. Increase in Alanine amino transferase activity (150 mg/dl) was observed along with normal serum creatinine (0.8 mg/dl) level.

TREATMENT AND DISCUSSION

The animal was diagnosed to suffer from chronic demodicosis with concurrent hypothyroidism. Dog was treated with L-thyroxine @ 20 µg/kg body weight daily (Eltroxine, The Swiss Pharmacy, Geneva), Ivermectin 200 µg/kg body wt weekly interval (Neomec, Intas, Ahmedabad), topical application of Amitraz 0.05% solution(Ridd 12.5%, Provimi Animal Nutrition India Pvt. Ltd, Bengaluru) after application of benzoyl peroxide shampoo (Pet Pen, Provimi) weekly and Inj. Gentamicin sulphate @ 4 mg/kg intramuscularly for three days. The animal was also provided with supportive therapy including oral administration of liver protectants, antihistaminics and Vitamin supplements. The skin scrappings were again examined on 14th, 28th and 35th day post-treatment. Animal promptly responded to therapy after third treatment with no mites were detectedon 28thdays post-treatment and successfully resolved normal health, regrowth of hair with complete remission of lesions after fifth week of treatment. Our findings are in line with the observations of Arora *et al*.(2013)

Hypothyroidism in the present investigation is the most common endocrine disorder in dogs. Hypothyroidism may result from dysfunction of any part of the hypothalamic-pituitary-thyroid axis. Most acquired canine hypothyroidism is the result of lymphocytic thyroiditis or idiopathic thyroid atrophy (Ettinger, 2010). A deficiency of thyroid hormones (hypothyroidism) resulting from impaired production of thyroid hormones makes the body increasingly vulnerable to the assault of the pathogens (Patterson and Frank, 2002) and accounts for higher dermatological disorders. The present observations are in accordance with the study of Srikala and Kumar (2014).Treatment with Thyroxine preserves normal regulation of Thyroxine to Triiodothyronine conversion, which allows physiologic regulation of tissue Triiodothyronine concentrations (Ettinger, 2010). Mild increase in liver enzymes may be due to continuous administration of Ivermectin tablets and antifungal agents. Benzoyl peroxide has keratolytic effect and follicular flushing action. So it was applied in shampoo form for better penetration and action of topically applied miticidal drugs. Miticidal therapy with oral Ivermectin and topical Amitraz application was fruitful in the present case. Mueller(2004) also observed similar results with this combination of drugs. Staphylococcal infection which occurred secondary to demodicosis was effectively managed by the antibiotic selected by antibiotic sensitivity test.

Thus, management of underlying disorders and controlling of secondary bacterial infection are obligatory along with miticidal therapy for effective treatment of Demodicosis. This is the first time report of successful therapeutic management of generalized demodicosis in a hypothyroid Boxer dog from this region and hence placed on record.

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