Clinical management of frustrating canine generalized demodecosis in a female german shepherd dog: A case report

Anil Kumar, Ankesh Kumar, Ranveer Kumar Sinha, Ramesh Tiwary and Nikee Kumari

Abstract

A German shepherd dog about one and half year old was presented to the TVCC Hospital, BVC, Patna with a complaint of inappetance, alopecia, redness and itching all over the body. Clinical examination revealed rough haircoat, alopecia, itching and erythema at face, ears, ventral abdomen along with swollen distal aspect of front and hind limbs, subsequently deep skin scrapings were collected and digested with 10% KOH and diagnosed as *Demodex canis*. The lesions of the dog was washed with benzyl peroxide and treated with Ivermectin @ 400 μg/kg s/c at every week interval and Amitraz @ 4ml/litre of water twice weekly for 4 weeks. During the due course Cephalexin @ 30 mg/kg, Meloxicam @0.2mg/kg and cetirizine@1mg/kg daily orally administered to prevent secondary bacterial infection, inflammation and itching respectively. An uneventful recovery was observed after 56 days of therapy.

Keywords: german shepherd dog, generalized demodicosis, demodex canis, ivermectin, amitraz

Introduction

Ectoparasitic infestation is the single most important cause of dog skin disease, among which canine demodicosis is a common disease affecting dogs world-wide, and can be one of the most serious of all canine dermatoses (Scott et al., 2001) [17]. It is caused by mite called *Demodex canis* that appear microscopically as cigar-shaped and considered as normal inhabitants of cutaneous microfauna in dogs. However, in immunosuppressed (Tarallo et al., 2008) [22] and Janus et al., 2014) [6] or predisposed individuals by several factorssuch as age, body condition, breed, and climateconditions (Rodriguez-Vivas et al., 2003 [13] and Abdel-Ghaffa et al., 2008) [1] it produces clinical diseases in the form of localized or generalized demodicosis. Though, the lesions can occur anywhere on the body, but the face and feet are most commonly affected and it is generally accepted that up to four focal lesions indicate localized disease, whilst more than a dozen lesions, a large lesion or paw involvement suggest generalized disease (Mueller, 2008) [10]. Clinically, the clinical signs are usually characterized by alopecia, erythema, pustules and pruritus etc. which ultimately leads to concomitant bacterial and fungal infections (Pradhan et al., 2012) [12]. Management of canine demodicosis is challenging and frustrating that requires long term treatment. The treatment mainly involves specific miticidal therapy along with adjunctive therapy, if needed. Thus, the present case report discusses the successful clinical management of frustrating canine generalized demodicosis in a german shepherd dog.

Material and Methods

A one and half year female German Shepherd dog was presented to the TVCC hospital, Bihar Veterinary College, Patna with a complaint of inappetance, loss of hair, redness and itching all over the body. The clinical examination revealed rough hair coat, alopecia, itching and erythema at face, ears, ventral abdomen along with swollen distal aspect of front and hind limbs (Figure 2). The dog was vaccinated and dewormed two week before. Skin scrapings were taken and digested in warm 10% KOH and smear was prepared for the detection of mites and examined microscopically. The skin scraping examination revealed the presence of elongate, cigar shaped mite, *Demodex canis* with body divisible into head, thorax bearing four pairs of short and stubby legs and abdomen bearing transverse striations (Soulsby, 1982) [21] (Figure-1). The hematobiochemical parameters haemoglobin (Hb), packed cell volume (PCV), total erythrocyte count (TEC), total leucocyte count (TLC), Differential leucocyte count
(DLC), Total Protein, Albumin, and alanineaminotranferase (ALT) were also estimated before and after treatment (Table-1). On the basis of history, clinical signs and skin scrapping the case was diagnosed as canine generalized demecosis.

**Treatment and Discussion**

Treatment was initiated with ivermectin injection @ 400μg/kg body weight subcutaneously once in week for four weeks. External application was also advised with amitraz @ 4mL in 1 liter of water twice a week for four weeks as topical application followed by bath with benzyl peroxide shampoo, used for its follicular flushing activity. Cephalexin @ 30 mg/kg was given orally daily for 15 days to prevent bacterial infection and to alleviate itching, antihistamine cetrizine was used @ 1mg/kg body weight once daily. Omega fatty acids (Nutricoat advance, Petcare Co.,) and hepatobiliary drug (Tefroli forte, TTK Co.,) were also given orally during the course of treatment to minimize oxidative stress and to nourish the skin and hair follicles for healthy skin growth. The dog owner was advised to follow up weekly and one week later the dog was again presented to the hospital with aggravations in erythematous skin lesions with severe painful swelling of limbs (Figure-3). The history taking revealed that owner was using unhygienic winter coat without drying hair coat properly. The dog owner was advised Meloxicam @ at a dose rate of 0.2 mg/kg to treat inflammation and continue the same treatment. It was recommended to discard the unhygienic winter coat and advised to dry the hair coat properly after application of medicaments. Thereafter the animal responded very well after 4 week of treatment and skin scrapping revealed absence of mites with resolution of skin lesions and disappearance of clinical signs of erythema, and pruritus. The same treatment was further continued for next few weeks until recovery and almost complete recovery occurred after 56 day of treatment (Figure-4). Demodicosis is a common skin disease of the dog. The present case was considered as a generalised demodicosis due to presence of more numbers of lesions throughout the body (Satheesha, et al. 2016) and (Kaplaywar et al., 2017). The lesions in the present case were similar to those described by Gupta et al., 2002, Janus et al., 2014 and Kaplaywar et al., 2017. Treatment of canine generalized demodicosis is multimodal which include a number of medications for demodicosis treatment (Muller, 2008). In the present case the weekly dose of Ivermectin at 400μg/kg s/c combination with Amitraz (12.5%) and benzyl peroxide shampoo showed a good success in the treatment of generalised demecodosis. These findings were in accordance with the findings of Roy et al., 1991 and Kaplaywar et al., 2017, but the clinical signs and lesions were aggravated after a week of treatment might be due to predisposing factors like poor condition, malnutrition and abnormal environment that favours mite proliferation and development of skin disease which is supported by previous reports of Folz, 1983, Nayak, 1993, Muller et al. 2012 and Shrestha et al., 2015. The use of broad spectrum antibiotic strongly recommended in the present case was due to the fact that most cases of canine generalized demodicosis involve a secondary bacterial skin infection, that required for several weeks along with acaricidal treatment (Verde, 2005 and Muller, 2011). In the present case study the haematological parameters (Table-1) revealed decreased level of haemoglobin concentration, total erythrocyte count, leukocytosis, neutrophilia and eosinophilia. These finding were in accordance with the findings of Pradhan et al., 2012 [12], Arora et al., 2013 [2] and Janus et al., 2014 [6]. The biochemical changes in the present case were also showed decreased level of total protein, albumin which concurred with the findings of Sakina et al., 2012 [15] and increase level of ALT, which was in accordance with the findings of Arora et al., 2013 [2]. In the present case study provision of adequate nutritional supplements as omega fatty acids and heptoprotective drugs such as liver tonics given good response in managing canine demecodosis by its antioxidant properties (Singh et al., 2011 [19], Yatoo et al., 2014 [24] and Arsenovic et al., 2015) and also to overcome side effects of specific acaricidal treatment (single et al., 2013) [19] respectively.

**Table1: Haematobiochemical parameters of affected dog.**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Before treatment</th>
<th>After recovery</th>
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<tbody>
<tr>
<td>Hb (g %)</td>
<td>9.2</td>
<td>11.8</td>
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<tr>
<td>PCV (%)</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>TEC (/micro litre)</td>
<td>3.9</td>
<td>4.6</td>
</tr>
<tr>
<td>TLC(/micro litre)</td>
<td>18,200</td>
<td>11, 400</td>
</tr>
<tr>
<td>DLC (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>86</td>
<td>74</td>
</tr>
<tr>
<td>L</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td>E</td>
<td>06</td>
<td>03</td>
</tr>
<tr>
<td>Total Protein (g/dl)</td>
<td>5.20</td>
<td>6.36</td>
</tr>
<tr>
<td>Albumin (g/dl)</td>
<td>2.04</td>
<td>3.18</td>
</tr>
<tr>
<td>ALT (IU/L)</td>
<td>88</td>
<td>65</td>
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**Fig 1:** Cigar shaped Deodex canis in skin scrapping

**Fig 2:** Dog showing lesions of erythema on face, limbs, ears and trunk
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Conclusion
It is concluded that canine demodicosis is a common skin problem often complicated with bacterial infection in dogs causes severe morbidity. Hence Macrocylic lactones derivative like Ivermectin and miticidal agent like Amitraz along with antibacterial therapy and nutritional supplements has got great efficacy in canine parasitic management.

References