

Case Report

Therapeutic Management of Chronic Generalized Demodicosis in a Pug

Neeraj Arora^{2*}, Sukhdeep Vohra¹, Satyavir Singh¹, Sandeep Potliya², Anshul Lather³, Akhil Gupta³, Devan Arora⁴, Davinder Singh⁴

¹ Veterinary Parasitology; ² Veterinary Surgery and Radiology; ³ Veterinary Microbiology; ⁴ Veterinary Public Health and Epidemiology, College of Veterinary Sciences, Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar – 125004, Haryana.

*Corresponding author: neeru40@gmail.com

ARTICLE HISTORY

Received: 2013-11-07
Revised: 2013-12-30
Accepted: 2013-12-30

ABSTRACT

A two year old female pug was presented to Teaching Veterinary Clinical Complex, LLRUVAS, Hisar with the history of itching, alopecia, crust formation, haemorrhage and thickening of the skin on face, neck, trunk and abdomen since last two months. The condition was laboratory diagnosed as chronic demodicosis and treated with amitraz and ivermectin along with supportive therapy. The female pug responded well to the treatment and recovered completely on 28th day after the start of the treatment.

Key Words: Amitraz, Demodicosis, Ivermectin, Pug

All copyrights reserved to Nexus® academic publishers

ARTICLE CITATION: Arora N, Vohra S, Singh S, Potliya S, Lather A, Gupta A, Arora D and Davinder Singh D (2013). Therapeutic management of chronic generalized demodicosis in a pug. *Adv. Anim. Vet. Sci.* 1 (2S): 26 – 28.

INTRODUCTION

Animal skin is exposed to attack by many kinds of parasites and each species has a particular effect on the skin; that can be mild or severe. In this regard, most of the ectoparasitic infestations produce irritation and sensitization of the skin. The reaction of the skin to these ectoparasites living in or on the skin results in inflammation, edema and an attempt to localize the foreign body, toxin or excretory products of the parasite. These reactions are often allergic and cause itching and burning sensation (Scott *et al.*, 2001). Canine demodicosis, also called demodectic mange or follicular mange or red mange, is a common skin disease encountered in veterinary practice. Though the mite is a normal inhabitant of the hair follicles of all canines, clinical signs of demodicosis are common because of excessive proliferation of mite within the hair follicles (Scott *et al.* 2001). Canine demodicosis 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). Various drugs have been used against the *Demodex* mites with mixed results (Mueller, 2004). However, in view of increase in amitraz-resistant generalized demodicosis cases (Živičnjak, 2005) the current communication shows the therapeutic management of a generalized demodicosis in a pug with a combination therapy of acaricides and macrocyclic lactones along with adjunctive treatment.

A two year old female pug weighing 8 Kg was presented to Teaching Veterinary Clinical Complex, Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar, Haryana with history of inappetance, hair shedding, foul smell from body and pruritis since 2 months. On clinical examination of the dog alopecia, crust formation, erythema and lichenification of skin

was observed in the region of face, neck, trunk and limbs (Figure 1).



Figure 1: Alopecia, erythema and lichenification of skin

Deep skin scrapings from the skin of affected areas taken with proper sample collection technique were examined microscopically. The skin scrapings didn't show any evidence of mite infestation, however, faecal sample examination showed 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. The morphology confirmed it to be *Demodex canis* (Soulsby, 1982) (Figure 2). Complete blood count, liver function test and mineral profile were also performed (Hb, TLC and DLC were performed as per standard procedures while iron, copper, ALT and AST were estimated by biochemical autoanalyser using Erba kits.) Skin

scrapings /cm² area were also collected before start of treatment and on subsequent days post-treatment (Singh and Chhabra, 1992) and the mite count/cm² area was also correlated with improvement of lesions.

Amitraz (Diponil[®]) 12.5% was diluted @ 4 ml (500 mg)/L of water (at 500 ppm or 0.05% concentration) and carefully worked into the skin with a sponge after every week for twenty-one days. Before dipping, bathing with benzoyl peroxide shampoo was done for soothing of skin and removal of crusts and debris. Ivermectin (Tab. Neomec[®]) was given @ of 600µg/ kg body weight at weekly interval for three weeks. Oral cephalixin tablets (250mg) were also given daily for 15 days to check any secondary bacterial infections. Fatty acids supplement and liver tonic was also given along with adequate nutrition during the treatment period. New hair growth on affected skin started after 7th day of start of treatment (Figure 3) and complete uneventful recovery occurred on 28th day after start of the treatment (Figure 4).

Canine demodicosis is a common skin disease of dogs in which proliferation of *Demodex canis*, an acarine parasite of canine hair follicles, is associated with the development of cutaneous lesions (Scott et al. 2001). Singh *et al* (2011) reported 19.40% prevalence of *Demodex canis* in Punjab, out of 134 skin scraping examined in dogs whereas Gunaseelan, L. et al (2011) reported 10.2% demodex infestation in dogs in Chennai city. Although a number of protocols have been used to treat generalized demodicosis, topical amitraz and systemic and oral ivermectin have been repeatedly used in various dosages (Paradis and Laperriere, 1992; Nayak et al. 2000; Mueller, 2004). Amitraz (at 300ppm dilution) has been found to be safe and efficacious with dippings repeated five times at weekly interval (Nayak et al. 2000). Ivermectin when given subcutaneously @ 200 µg at weekly interval for 5 weeks also cured canine demodicosis (Nayak et al. 2000). Also, the results obtained in the current study were also in congruent with that of Paradis and Laperriere (1992) and Mueller (2004) who found ivermectin to be satisfactory to treat demodectic mange when given orally @ 0.3 to 0.6 mg/kg body weight.



Figure 2: Showing cigar shaped *Demodex Canis* (10×40X)



Figure 3: New hair growth on affected areas of skin on day 14th after start of the treatment

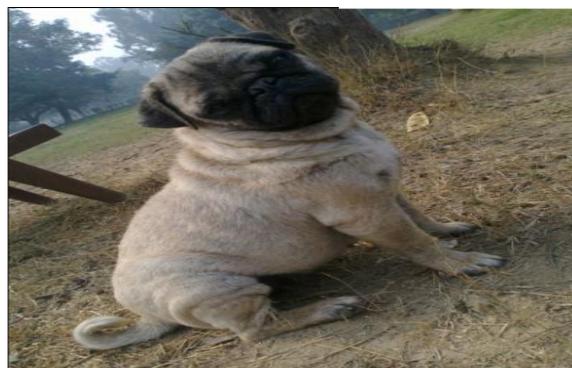


Figure 4: Complete recovery occurs on day 28th, after start of the treatment arrange the figures accordingly

In present communication *Demodex canis* was not found in direct skin scrapping on day 0, which might be due to wrinkling as well as thickening and extensive involvement of skin of the animal. Pug licks the skin due to severe pruritis, as a result *Demodex canis* was found in faecal examination. So it is suggested that faecal examination of the animals suspected for demodicosis or with chronic form of mange must be done. Results of complete blood count, liver function test and mineral

profile showed anaemia, leukocytosis due to neutrophilia, increase in values of aspartate aminotransferase and alanine aminotransferase, decrease in serum iron and increase in serum copper (Table 1). Similar findings were also reported by Jyotsna *et al.* (2005) reported decrease in serum iron and cobalt level and increase in serum copper but no change in serum zinc level in demodectic mange in dogs.

Table 1: Haematological values, liver function test and mineral profile of Pug

Parameters	Before treatment	After recovery
Haemoglobin	8.2 g%	11.6 g%
TLC	28,000 / μ l	12,400 / μ l
Neutrophils	87%	71%
Lymphocytes	11%	25%
Alanine aminotransferase (ALT)	98 IU/L	54 IU/L
Aspartate aminotransferase (AST)	85 IU/L	48 IU/L
Serum Iron	28 μ g/dl	96 μ g/dl
Serum Copper	230 μ g/dl	175 μ g/dl

Table 2: Mite count (per cm^2) along with lesions

Days post treatment (DPT)	Mite Count	Lesions
0 (Pre-treatment)	0	Skin coat thickened and full of hard crust, wrinkling of skin and foul smelling
3 DPT	67 + 13	Softening of skin with breakage of crusts
7 DPT (After Second Treatment)	8 + 3	Skin coat is smooth free of crusts at head limbs. Inter-digital areas show some thickening and crust formation.
10 DPT	4 + 1	Skin normal with appearance of new buds of hair follicles. Only mites lesions at one foot pad
14 DPT (After third Treatment)	0	Skin coat normal new hairs at limbs and head areas started.
21 DPT (After fourth Treatment)	0	Hair growth at limbs and head with smooth and shiny skin. Areas at neck and between folds show small hairs growth
28 DPT	0	Complete hair growth with normal, smooth and shining hair coat on all over the body

The detail of skin scraping along with mite count and improvement in skin lesions is given in Table 2. It was observed in the present study that although no mite was found in skin scraping on day 0 due to thickening, wrinkling and extensive involvement of skin, the active mites (67/ cm^2) along with eggs were found on day 3 when the softening of skin and breakage of thick crust started. From the improvement of lesions on skin and reduction of mites in scrapings, the animal started appearing healthy after second treatment. At this point most of animal owners or the veterinarian stops the acaricide treatment of the animal but some mites at the extremities i.e. inter-digital area still remains alive and proliferate with the appearance of favourable conditions (specially post-rainy season with the start of winters). After third treatment the animal was parasitologically free of any adult mite or its developmental stages and skin growth at all the body parts also started. To rule out any mite present on body fourth treatment was also given on 21th day. Complete hair growth along with smooth and shiny skin was observed on 28th day.

So it is suggested to field veterinarians that although the animal appears normal clinically after second treatment, at least three to four dips in amitraz is recommended by parasitologist for complete recovery of animal and to prevent the occurrence of demodicosis.

ACKNOWLEDGEMENT

The authors are highly thankful to internee students for taking interest in care and management of this pug.

CONFLICT OF INTEREST

No conflict of interest to declare.

REFERENCES

- Gunaseelan L, Bhavya S, SenthilKumar K and Balachandran C (2011). Influencing factors for mange mite infestation of dogs in Chennai city. Tamilnadu J. Vet. & Anim. Sci. 7: 247-249.
- Jyotsna P, Maiti SK, Sanyal PK and Tiwari SP (2005). Haematobiochemical and mineral profiles in generalized canine demodicosis. Int. Pol. 6 No. 2 pp. 331-334.
- Mueller RS (2004). Treatment protocols for demodicosis: an evidence-based review. Vet. Derm. 15: 75-98.
- Nayak DC, Dey PC, Parida GS and Biswal S (2000). Therapeutic evaluation of amitraz, deltamethrin and ivermectin in experimental canine demodicosis. Ind. Vet. J. 77: 883-886.
- Paradis M and Laperriere E (1992). Efficacy of daily ivermectin treatment in a dog with amitraz-resistant, generalized demodicosis. Vet. Derm. 3: 85-88.
- Scott DW, Miller WH and Griffin CE (2001). Parasitic skin diseases. Muller and Kirk's Small Animal Dermatology. 6th ed., W. B. Saunders, Philadelphia. pp. 423-516.
- Singh H, Jyoti, Haque M, Singh NK and Rath SS (2011). Prevalence of canine parasitic infections in and around Ludhiana, Punjab. J. Vet. Parasitol. 25: 179-180.
- Singh S and Chhabra MB (1992). Comparative efficacy of ivermectin and fenvalerate against sarcoptic mange in pigs. Ind. Vet. J. 69:1037-1040.
- Soulsby EJL (1982). Helminths, Arthropods and Protozoa of Domesticated Animals. 7th ed. ELBS, Bailliers Tindall and Cassel, London.
- Tater K C and Patterson AC (2008). Canine and feline demodicosis. Vet. Med. pp. 444-461.
- Živičnjak T (2005). A retrospective evaluation of efficiency in therapy for generalized canine demodicosis. Vet. Arh. 75(4):303-310.