

## Chronic Pododemodicosis in a Great Dane

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### Abstract

A 4 year old Great Dane was presented to the Small Animal Clinic with a history of chronic swelling of all the paws. This animal had been treated for over 3 months but the condition was progressively worsening. Clinical examination revealed all vital parameters were within normal ranges. There was gross swelling of all the paws, the skin was erythematous, hyperpigmented and hyperkeratotic. There was also diffuse purulent discharge from parts of the paws. Skin scrapings were positive for Demodectic mange. *Staphylococcus aureus* and *Proteus* sensitive to Gentamicin and Norfloxacin were isolated from swabs taken for culture and sensitivity. This report describes the case and the management of pododermatitis due to Demodicosis complicated with bacterial infection and emphasizes on the need for definitive diagnosis of such cases before any treatment is instituted.

Keywords-Pododermatitis, demodicosis, management

### Introduction

Canine demodicosis is an inflammatory parasitic skin disease characterized by excessive proliferation of *Demodex* mites (*Demodex canis*, *D. njai* and *D. cornei*) within the hair follicles (Tarello, 2007; Izdebska, 2010). These parasites are part of the normal skin flora and in small numbers cause no disease. Clinical disease occurs when animals are immunocompromised and large numbers of the parasite inhabit hair follicles, sebaceous glands and apocrine sweat glands. The cutaneous lesions are frequently complicated by bacterial pyoderma (Holm, 2003; Heine et al, 2005; Tarello, 2007).

Certain breeds such as Shar-pei, English-bulldog, Scottish-terrier and Great Dane have been reported to be at an increased risk of developing the disease (NAVC, 2005). There are two main forms of demodicosis, generalized and localized the age of onset may be juvenile, adult or some dogs may have a chronic demodectic pododermatitis (Nayak et al, 1997). inflammation

The higher frequency of the localized form relative to the generalized form may be due to a self-limiting factor as well as an unexplained self-cure phenomenon of the disease that has been reported (Nayak et al, 1997). There are limited reports on chronic canine demodicosis in Kenya that are non-responsive to conventional treatment.

This case report describes the clinical and laboratory findings as well as treatment outcome of chronic pododermatitis caused by *Demodex* mites, complicated by *Staphylococcus aureus* and *Proteus* spp. infection in a 4 year old Great Dane that had failed to respond to treatment.

### Case report

A 4 year old Great Dane dog was presented to the Small Animal Clinic of the University of Nairobi with a history of swelling of the paws for over 6 months. The owner complaint was that treatment had been instituted by the attending practitioner, the lesions were getting progressively worse with each successive treatment. The client did not have the details on the treatment that had been instituted.

On physical examination, all the physiological parameters were within the normal ranges. The paws of all the 4 limbs were grossly enlarged, alopecic, encrusted and had a sanguinopurulent discharge which the dog licked continuously (Figure 1 and 2).



Figure 1. The enlarged paws with alopecia and inflammation.

A Giemsa stained blood smear was negative for hemo-parasites but had a slight neutrophilia. A tentative diagnosis of pododemodosis was made based on the clinical findings. An impression smear of the discharges from the paws revealed *Demodex* mites (adults, larvae and eggs) (Figure 3).



**Figure 2.** Close up of forelimb paws showing alopecia, erythema, encrustation and sanguinopurulent discharge



**Figure 3.** Impression smear from the front paws showing *Demodex* mites (adults, larvae and eggs)

A sterile bacteriological swab of the discharges was taken from one of the paws for culture and sensitivity. Culture was done on Blood Agar and McKonky media and using the morphological characteristics, gram stain and biochemical tests the bacteria were identified as *Staphylococcus aureus* and *Proteus spp.* Antibiotic sensitivity test was done using Himmedia discs (Himedia Laboratories PVT Ltd). The *Staphylococcus aureus* and *Proteus spp.* were sensitive to Norfloxacin and Gentamicin (Table 1).

**Table 1.** Sensitivity of the mixed bacterial isolates from the paw lesions

Antibiotic	Sensitivity	Antibiotic	Sensitivity
Ampicillin	Resistant	Chloramphenicol	Resistant
Tetracycline	Resistant	Cotrimoxazole	Resistant
Amoxicillin-Clavulenic acid	Resistant	Sulphamethoxazole	Resistant
Norfloxacin	Sensitive	Gentamicin	Sensitive

A diagnosis of Pododemodicosis with secondary bacterial infection was reached based on the clinical and laboratory findings.

The dog was initially treated with 800,000 iu penicillin G and 800 mg. dihydrostreptomycin (Penstrep-400, Interchemie, Holland) intramuscular for 2 days but this was changed to 300 mg Gentamicin (Genta-100, Interchemie, Holland) intramuscular for 5 days based on the culture and sensitivity results. The lesions were cleaned with 0.15% chlorhexidine solution (Alguard antiseptic, Sphinx pharmaceuticals, Nairobi) daily for 5 days and topical 0.075% amitraz (Tactic stock spray, Intervet international B.V., Holland) weekly wash for 7 weeks. The dog was injected with 30 mg Ivermectin (Supermec, Assia animal health, Nairobi) weekly subcutaneously for 7 weeks.

#### Outcome

Three weeks after the start of treatment, erythema and exudation on the paws had reduced. In addition, hair had started regrowing on the paws (Figure 4). An impression smear revealed few mites. Six weeks into treatment, there was full regrowth of hair on all the paws and an impression smear was negative for mites (adults, nymphs and larvae) (Figure 5). Treatment was continued for a further 2 weeks and the condition had not recurred 12 months after the last treatment.



**Figure 4.** Hair regrowth on the front paws 3 weeks after the onset of treatment



**Figure 5.** Full regrowth of hair 6 weeks after the onset of treatment

#### Discussion

Chronic pododemodicosis is one of the forms of localized demodicosis in dogs (Nayak *et al*, 1997). Successful treatment of this condition is dependent on finding and identifying the mite in skin scrapings or impression smears and instituting appropriate and effective treatment protocols (Nayak *et al*, 1997). It is prudent in all cases of dermatitis to take skin scrapings before one administers corticosteroids since this can exacerbate the clinical signs if the dermatitis is caused by *Demodex* spp (Waisglass, 2009). Exacerbation of the clinical signs might be made worse when there is complicating bacterial infection as was in this particular case

A detailed medical history of the patient is required to determine what is predisposing the dog to demodicosis. It is also important to find out if there are concurrent medications being administered, whether the disease has occurred before or whether the littermates/parents are/have been affected. However, details of previous management of this patient were unavailable. Ancillary tests such as a haematological and biochemical profile, fecal smears, assessment of the nutritional status of the animal as well as additional tests based on clinical examination are recommended (Waisglass, 2009).

The condition in this case was reportedly worsening despite the treatment that was being undertaken whose details the owner did not know. This could have been due to the bacterial infection that was concurrently present in this dog. It has previously been reported that concomitant factors potentially immunosuppressive such as hypothyroidism

(Saridochelakis et al., 2007), diabetes mellitus and chemotherapy (Duclos et al., 1994) may play an important part in proliferation of mites. It is quite possible the attending practitioner may have used steroids, worsening the bacterial infection and aiding the proliferation of the mites in this case, as the client complained of the condition worsening after some injectable medication had been carried out.

This patient was treated using a combination of 0.15% chlorhexidine solution (Alguard antiseptic, Sphinx pharmaceuticals, Nairobi) antiseptic wash, amitraz (0.075%) (Tactic stock spray, Intervet international B.V., Holland) weekly wash, and Ivermectin (Supermec, Assia animal health, Nairobi) at 0.6 mg/kg bodyweight for 7 weeks until the scrapings were negative for mites. The bacterial infection was managed by Gentamicin (Genta-100, Interchemie, Holland) at 6mg/kg intramuscular. The need to manage other factors that may be influencing/affecting the condition is paramount as illustrated in this case that responded well after the treatment also targeted the bacterial infection. The lesions healed and normal hair regrowth occurred in 6 weeks. This observation agrees well with Tarello (2007) finding that cutaneous lesions in adult onset demodicosis with concurrent babesiosis and /or granulocytic ehrlichiosis disappeared within 3-9 weeks when there was concomitant treatment. Clinical cure of generalized demodicosis has also been achieved through elimination of underlying factors (Desch and Hillier, 2003). However, there are some breeds of dogs such as Collies, Sheep dogs and their crosses which are sensitive to Avermectins, for which alternative drugs such as milbemycin oxime (1-2 mg/Kg) or moxidectin (0.4 mg/Kg) for an average treatment duration of 4 months can be used. Drug combinations such as such topical Metaflumizone and Amitraz (Promeris®) used every 4 weeks for 3 treatments and Imidacloprid have been evaluated for treatment of generalized demodicosis (Heine et al., 2005) but there are no reports of their use in the treatment of pododemodicosis. However, they may offer a viable and safe option especially for dogs sensitive to Avermectins.

In this case, in addition to managing the demodicosis, the bacterial infection present was treated with antibiotics and disinfectant dips which enabled quick resolution of the demodicosis to the treatment used in this case. In conclusion, it is imperative that a definitive diagnosis confirmed by laboratory identification of Demodex mite infestation and establishment of the occurrence of any concurrent infections/conditions are necessary for success in the management of pododemodicosis in dogs.

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