Practical and update management of canine demodicosis

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Canine demodicosis is a common parasitic skin disease in dogs. It can be classified into 2 types based on distribution of lesion; localized and generalized demodicosis. Localized demodicosis was reported to be usually spontaneous remission, therefore, no treatment is needed. Generalized demodicosis, on the other hand, cannot heal spontaneously so miticidal therapy should be prescribed. However, there are a variety of miticidal choices for demodicosis treatment. This article will summarize pros and cons of different types of miticidal for the treatment of canine demodicosis. Recently, systemic treatment, for example, daily oral administration of ivermectin, milbemycin oxime, and moxidectin are very efficacious to treat generalized demodicosis. Although these drugs are not licensed in dogs for this use, they can offer viable alternatives to the management of difficult cases.

Amitraz
Amitraz is a formamidine that is selectively interferes with the octopaminergic system of arthropods (similar to the adrenergic system in mammals) by binding to the octopamine receptors, which leads to the stimulation of monoamine oxidases (adenylate cyclase activity) and the G protein (Marc and Beugnet, 2012). Amitraz at 0.025% to 0.06% once a week has been demonstrated effective for treating canine generalized demodicosis. It should be applied carefully with a sponge and allowed to air-dry without rinsing. There are two main limitation of amitraz use in veterinary practice; a cumbersome application and the side effects. Adverse effects from amitraz include depression, sleepiness, ataxia, polyphagia, polydipsia, vomiting and diarrhea. Because amitraz is an α2-adrenergic receptor agonist, atipamezole can be used to treat adverse effects.

Ivermectin
Although ivermectin is not licensed for treatment of canine demodicosis, an evidence-based review concluded that oral ivermectin at a dose of 0.3–0.6 mg/kg daily can be recommended as therapy for canine generalized demodicosis. It has been considered as an effective treatment for generalized demodicosis. However, its use is limited by its severe neurologic effects observed in some patients. Dogs with the ABCB1-1Δ gene defect are extremely sensitive to ivermectin and can experience severe toxicity at dosages of 100 μg/kg once a day; other mutations may have similar effects. This is an off label treatment, and must be administered under careful veterinary supervision.

The treatment has to be stopped immediately when any clinical signs are observed. Adverse effects include hypersalivation, depression, tremors, mydriasis, blindness, ataxia). A gradual dose increase from 0.05 mg/kg on day 1 to 0.1 mg/kg on day 2; 0.15 mg/kg on day 3; 0.2 mg/kg on day 4 and 0.3 mg/kg on day 5 is recommended.

Doramectin
Subcutaneous doramectin doramectin at weekly intervals is a useful and well-tolerated treatment for generalized demodicosis in the dog. Remission was achieved in 94.8% of dogs treated with weekly subcutaneous injections of doramectin at a dose rate of 0.6 mg/kg body weight. The mean duration of treatment was 7.1 weeks. Despite the low incidence of adverse events, this treatment has a risk of neurotoxicity, similar to ivermectin. This treatment can be a good option for dogs difficult to medicate orally. However, this is not an option for dogs with sensitivity to macrocyclic lactones (due to ABCB1 gene defect or to other reasons).

Milbemycin oxime
Milbemycin oxime was initially licensed for heartworm prevention. It is consequently approved in some countries for treatment of demodicosis. A dosage of 1-2 mg/kg PO once a day was shown to be efficacious treatment of canine generalized demodicosis. Milbemycin is considered safe, even in dogs with the ABCB1-1Δ gene defect. Nevertheless, milbemycin is relatively expensive, especially for large dogs with demodicosis.

Topical moxidectin
Recent studies have demonstrated that topical application of 2.5% moxidectin–10% imidacloprid is effective against canine generalized demodicosis (Paterson et al, 2014). There was a study showed that weekly application of moxidectin–imidacloprid can be an effective treatment of canine generalized demodicosis without the potential toxicity associated with ivermectin. It is also safe in dogs with the ABCB1-1Δ gene mutation. Dogs should be treated weekly and examined monthly, along with skin lesion scrapings. Based on clinical practice guidelines for canine demodicosis, topical moxidectin should be prescribed for mild cases of demodicosis.

Oral isoxazolines
Isoxazolines are new chemical class of antiparasitic drugs. Initially, it is licensed for tick and flea control in dogs. They have a broad insecticidal and acaricidal spectrum. Isoxazolines approved for veterinary use so
far (afoxolaner, fluralaner, sarolaner) are only for oral administration to dogs (i.e., they have a systemic mode of action). Ingested isoxazolines are rapidly absorbed into blood and distributed throughout the whole body of the host, including the skin. Blood-sucking parasites (mainly fleas and ticks) are killed during their blood meal. It is supposed that parasites living in the skin (Cheyletiella, Sarcoptes, Demodex) are also exposed to the drug and killed. Recent data (Fourie et al, 2015) suggest that fluralaner (and very likely afoxolaner and sarolaner) are effective for the treatment of generalized demodicosis. In an open study, all 8 dogs with generalized demodicosis treated with a single oral dose of fluralaner (25 mg/kg) were parasitologically negative after 56 and 84 days, and 7 of 8 exhibited hair regrowth at the end of the study (day 84). However, because no other controlled nor larger studies are available, this drug should be considered only as an alternative to the other acaricidal treatments with more evidence of efficacy (e.g., amitraz, moxidectin–imidacloprid, ivermectin).

In conclusion, there are several choices of treatment for generalized demodicosis in dogs. Each drug has its properties, cost, efficacy and convenience. Therefore, veterinarians should discuss treatment options with pet owner and prescribed treatment options for individual dogs.

References