European Veterinary Conference
Voorjaarsdagen

Amsterdam, Netherlands
24 - 26 April, 2008

Next meeting:

www.voorjaarsdagen.org

Reprinted in IVIS with the permission of the Conference Organizers
Demodecosis is a common disease observed in young dogs, a rare disease in adult dog and an exceptional disease in cat.

Dogs:
3 types of demodex can be observed:
• Demodex canis, the classical one, sometimes considering as a normal inhabitant of the hair follicles and sebaceous gland.
• Demodex injai, the long body mite living in the hair follicles. This mite is more often observed in adult dogs and in terrier breeds (White west highland, Scottish)
• Demodex cornei, the short body mite living in the surface of the skin (stratum corneum).
Symptoms induced by the proliferation of these parasites are similar for Demodex canis and inja: erythema, alopecia, papules, pustules, furuncles. Symptoms induced by the third type (demodex cornei) are less precise (only few cases reported): pruritus and scaly dermatitis. The “classical” demodicosis is observed in young dogs (from 3 to 24 months-old). The proliferation of Demodex mites are associated to a defect in the integrity of the immune system (an inherited specific T cell deficiency). The adult onset demodicosis is also considered as an immunosuppressive disease caused by hyper(adreno)corticoïdism, hypothyroidism, diabetes mellitus or Neoplasia. The underlying condition is not always identifiable (or sometimes never identified) at the time of diagnosis of the demodicosis (a follow-up of these cases is very important).

Diagnosis
Usually the diagnosis of demodicosis is made easily via a deep-skin scraping where the skin is squeezed and scraped until capillary oozing is seen. Recently we explored the ability of the diagnosis via the hair pluck in comparison to skin scapes. There was no significant difference between skin scapes and hair pluck in the proportion of Demodex-positive samples (squeezing the skin prior to scraping significantly improved the number of positive samples). The site selected for sampling is very important; the most interesting lesions are comedones, erythema, alopecic plaques (edge of an expanding lesion). Examination of pus coming from an intact pustule often reveals mites.

Management
Localized demodicosis: the localized form is characterized by a maximum of 5 lesions in one body area. This form usually affects young dogs (less than 1 year of age); 90% of these cases heal spontaneously within 6 to 8 weeks but 10% will become generalized. For this form, we recommend no treatment or a topical treatment using amitraz solution (0,05-0,025% per week). Generalized demodicosis: more than 1 body area or more than 1 foot. Even if 30 to 50% of these cases (in juvenile form) can recover spontaneously without any treatment, we recommend a systemic treatment with macrocyclic lactones. Because of a secondary bacterial infection is often observed, a treatment with antibiotics (at least effective against staphylococcus) must be prescribed. Baths with benzoyl peroxide shampoo are helpful to flush the hair follicles and to reduce the bacterial overgrowth. Do not use corticosteroids (systemic or topical) even if pruritus is important!

Macrocyclic lactones uses
Although macrocyclic lactones are often not registered for the treatment in dogs, there are now classically recommended for the treatment of generalized canine demodicosis. Macrocyclic lactones work as a gamma-amino-butyric-acid (GABA) agonist and are by this way very effective against most common intestinal and most mites (not fleas or ticks). Ivermectin was launched on the veterinary market, in the years 80’s and very quickly some cases of extremely toxicity (neurologic signs, death) were reported. These accidents were generally observed in Collies, Shetland sheepdogs, Australian shepherds, and Old English sheepdogs (and sometimes in other breeds). Since this time, we know that the toxicity in these « ivermectin sensitive breeds are due to a mutation of the gene coding the “P-glycoprotein” (mutation on the « multi drug resistant » - MDR1). The P-glycoprotein appears to be involved in keeping drugs out of certain body tissues (having a mutant/non-functional protein fails to keep medications like ivermectin out of the central nervous system inducing an interaction on the canine GABA system). 30-50 % of Collies appear affected by the mutation (homozygotes MDR1-/-). Now some tests for MDR1 mutation detection exist and ivermectin sensitive dogs can be identified : http://www.antagene.com/; http://www.uni-giessen.de/mdrdefekt/. These tests have also revealed some mutations in other breeds (Swiss sheepdog) or individuals. The toxicity in sensitive dogs is not the same for all the macrocyclic lactones. It has been recently shown that the tolerance (in sensitive dog) is higher for mylbemycine oxime (5 mg/kg/day) than for moxidectine (300-400 mcg/kg/day) than for ivermectin (60-100 mcg/kg/day). Use of macrocyclic lactones in canine demodicosis (off label use)vermectine (Ivomec®) : 300-400 mcg/kg daily until negative parasitic samples + 1 month treatment. Moxidectine (Cydectin®) : 300-400 mcg/kg daily until negative parasitic samples + 1 month treatment. Mylemcyne Oxime (Interceptor®) : 0,5-2 mg/kg daily until negative parasitic samples + 1 month treatment.

Cats
two types of demodex are reported:
• Demodex cati, morphologically closed to Demodex canis, lives in the hair follicles
• Demodex gatoi, morphologically closed to Demodex cornei, lives in the stratum corneum.

Demodex Cati
Only few things are known concerning the biology of this parasite. D Cati is usually associated with systemic disease or an immunodeficiency state such as FeLV / FIV, hyper(adreno)corticism, diabetes mellitus, toxoplasmosis or neoplasia(multiple squamous cell carcinoma in situ). Association of demodicosis and dermatophytosis has been reported. Skin lesions are usually localized (often
Lesions consist in focal alopecia sometimes with erythema, comedones, scales and or seborrhea, erosion and crusts. Pruritus is usually absent or mild. Secondary pyoderma, as observed in dogs, is uncommon.

**Demodex Gatoi**
Characterization of demodecosis due to D gatoi is more difficult because only few cases are reported. Pruritus is usually important and excoriations can be very important. The main differential diagnosis is an allergic dermatitis and may be this demodecosis could be under-diagnosed. The dermatitis can be observed in several cats living all together in the same area. Some cats in a colony could be asymptomatic carrier.

**Diagnostic**
Skin scrapes and hair pucks are the best methods to reveal the mites. Biopsies can help to reveal the mites. The parasites are usually much more difficult to recognize in cats than in dogs because there are often less abundant and quite lucent.

**Treatment**
Macrocyclic latones are also the recommended treatment in cats. The response to the treatment has not been evaluated in large groups of cats until now. Lime sulfur dips seem to be effective.