

Non-allergic Causes of Pruritus in the Dog and Cat

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Non-allergic cases of pruritus in the dog are caused by:

1. Infections (pyoderma, *Malassezia* [yeast] ; less commonly dermatophytes)
2. Ectoparasites (scabies, *Notoedres*, *Cheyletiella*)
3. Cutaneous lymphoma

Infections

Pyoderma and yeast - Pruritic dogs (especially those with atopic dermatitis, food allergy, and flea allergy) are very prone to secondary infections with *Staphylococcus pseudintermedius* and *Malassezia pachydermatis*.¹ Thus, clinical signs of superficial pyoderma (epidermal collarettes, papules), or yeast infection (waxy brown exudate on skin or proximal claws, erythema interdigitally or under tail) are common. *S pseudintermedius* may further exacerbate the atopic state by eliciting production of IgE specific for *Staphylococcus*, as well as by producing staphylococcal protein A (SPA), which may nonspecifically bind to IgE molecules on mast cells. In return, the atopic state may contribute to or enhance pyoderma, by the pruritus physically reducing the barrier the stratum corneum poses for infection, by the increased ability of *S pseudintermedius* to "stick" to atopic dogs' corneocytes, or by the degranulation of mast cells making the epidermis more permeable to staphylococcal antigens. While *S pseudintermedius* is the most commonly isolated bacteria from superficial pyodermas in dogs, *S aureus* and *S schleiferi* have also been isolated.^{2,3}

Besides allergic dogs, occasionally dogs with hypothyroidism or hyperdrenocorticism (Cushing's disease) have secondary pyodermas, or less commonly, *Malassezia* infections.

Diagnosis of superficial pyoderma is usually made by clinical signs; diagnosis of *Malassezia* infections is made by scrape or tape preparations of the superficial skin, stained with DiffQwik™ and examined under oil immersion.

Atopic cats may be prone to secondary infections with *S pseudintermedius* and *Malassezia pachydermatis*, although seemingly not at the same rate as dogs.⁴

In allergic dogs it is vital to treat secondary bacterial infections (usually superficial pyodermas), as in most animals these are also contributing to pruritus. The author uses the following antibiotics:

Cephalexin 20-30 mg/kg q 8-12 h

Cefpodoxime (Simplicef™) 5-10 mg/kg q 24 h
Lincomycin (Lincocin ®) 20 mg/kg q 12 h
Enrofloxacin (Baytril®) 5 - 10 mg/kg q 24 h
Amoxicillin-Clavulanate (Clavamox®) 13.75 mg/kg q 12 h
Marbofloxacin (Zeniquin®) 3- 6 mg/kg q 24 h

With the increase in methicillin-resistant *S pseudintermedius*, *S aureus*, and *S schleiferi*, the author now strongly recommends culture of any dog with epidermal collarettes that fails to begin to respond to one of the above antibiotics over a 3-4 week period of time. Epidermal collarettes may be cultured using a dry sterile culturette rolled across the collarettes.⁵ Most successful treatment protocols of the author's cases require at least 5-6 weeks of antibiotics.

Shampoos may be helpful as adjunct treatment in pyodermas, particularly in superficial pyodermas. There are many good, effective anti-bacterial shampoos available. The author's favorite is an ethyl-lactate containing shampoo (Etiderm®, Virbac), which is effective, lathers well, and well-liked by owners.

For treatment of *Malassezia*, ketoconazole (5mg/kg), itraconazole (5mg/kg) or fluconazole (5 mg/kg) have all been effective in the author's hands. Do NOT use ketoconazole in cats, as this species is prone to develop hepatic problems with this drug. Terbinafine 30 mg/kg q 24h is tolerated in both dogs and cats, but may be expensive. Systemic drugs should be used for at least 1 month, at which time the pet is rechecked via cytology.

Topicals such as Malaseb® (DVM: chlorhexidine and miconazole); Mal-A-Ket® (Dermapet: boric and acetic acids, and ketoconazole) or Resizole® (Virbac: miconazole), are helpful. 'Wipes'; such as Malaseb® or Malacetic®, are very useful in the treatment of interdigital yeast and bacteria infections, especially for the long term.

Dermatophytes - Watch out for dogs (especially terriers!) that like to dig in the ground and/or roam outside. These dogs sometimes present with dramatic crusts and erythema on the face, the ears, with progression to the legs. They have a ringworm infection with either *Trichophyton mentagrophytes* or *Microsporum gypseum*. Do NOT be dissuaded by a lack of contagion in other animals or the owners, or even by a negative dermatophyte culture - *T mentagrophytes* can be difficult to culture. A biopsy, with special stains for fungi, may show the organism quicker than a culture. For treatment of dermatophytes, using the same azoles as for *Malassezia*, but at a twice a day dosage, is required.: ketoconazole (5mg/kg q 12h), itraconazole (5mg/kg q 12h) or fluconazole (5 mg/kg q 12h). Terbinafine 30 mg/kg q 24h may be used, as may griseofulvin may also be used at the following doses: *Microsize* dosage - cats: 50 mg/kg/day divided; dogs: 50-100 mg/kg/day divided. *Ultramicronsize* dosage - cats: 5-15 mg/kg/day divided; dog: 10-30 mg/kg/day divided. Griseofulvin must be given orally with a fatty meal. Cats should be FeLV/FIV negative (otherwise, risk of leucopenia). It is also a teratogen.

Ectoparasites

These include scabies (*Sarcoptes scabiei* - usually found in dogs), cat scabies or head mange (*Notoedres cati* – usually found in cats), and cheyletiellosis (*Cheyletiella* spp – found in dogs, cats, and rabbits). The two scabies species usually cause severe pruritus, while *Cheyletiella* may present with primarily excessive scale. In dogs, crusts around the margins of the ears that are associated with pruritus, especially if seen with crust on the elbows, hocks and a papular eruption (rash) on the ventral abdomen are HIGHLY suggestive of scabies.

All three parasites may cause a papular, pruritic rash in people. Diagnosis of *S scabiei* and *Cheyletiella* spp can be challenging, as in some animals very few mites are needed to cause pruritus, thus they are not always seen on skin scraping. Do not let a negative skin scraping dissuade you from treatment! In contrast, *Notoedres cati* is often easy to demonstrate on skin scraping. In general, any animal exhibiting signs of these ectoparasites should be presumptively treated, along with all in-contact animals, and any people (owners, veterinarians, or nurses) with compatible signs should seek medical attention. The author prefers topical selamectin (Stronghold®, Pfizer) using the same dosage size as for fleas but on a twice a month basis for two months. Alternatively, ivermectin at 0.3 mg/kg SQ or PO, given at the same dose rate (twice a month for two months) may be used. *Cheyletiella* can live off the host for perhaps 10 days, so the premises should at least receive a thorough cleaning/vacuuming, particularly if multiple pets are affected.

Cutaneous Lymphoma

Cutaneous lymphosarcoma occurs in older dogs (although young dogs are occasionally affected) with no sex predilection but with a predilection for boxers, cocker spaniels, beagles, German shepherds, golden retrievers and Scottish terriers. It is very rare in cats. Cutaneous lymphosarcoma is usually generalized or multifocal and may present as nodules, plaques, ulcers, erythroderma and/or exfoliative dermatitis. It may occur with or without other systemic involvement. Pruritus is very common.

Histologically, cutaneous lymphosarcoma in the dog can be divided into epitheliotropic and nonepitheliotropic types. Epitheliotropic (following or "hugging" the epidermis histologically) forms of cutaneous lymphosarcoma have been shown in the dog to usually be of T lymphocyte origin while nonepitheliotropic forms are usually of B lymphocyte origin. Nonepitheliotropic lymphosarcomas are characterized by diffuse dermal and subcutaneous infiltration by malignant lymphocytes. The epitheliotropic form is often termed 'mycosis fungoides'. It often begins as a generalized pruritic exfoliative dermatitis or erythroderma and progresses over a variable length of time (weeks to months) to nodules and plaques, ultimate systemic involvement and death. Canine mycosis fungoides also may have a primarily mucocutaneous distribution.

Clinical management of cutaneous lymphosarcoma, with or without concurrent systemic involvement, is difficult. Without treatment, most dogs presented to a referral center are euthanized within one month of diagnosis. Response to standard chemotherapeutic protocols

used in lymphosarcoma of other organ systems have been disappointing; 40% to 50% success rate may be seen using isotretinoin (Accutane), 3-4 mg/kg/day⁶. Prednisone (1 mg/kg/day) may alleviate some of the pruritus. Recently, lomustine (CCNU), an alkylating agent, has been effective in the treatment of dogs with cutaneous lymphoma, at a dose of 50mg/m² q 21-30 days⁷. Remission lasted from 2-15 months. Neutropenia may be seen, and is most likely to occur 1-2 weeks after treatment, although this has usually been noted with higher doses⁸. While generally a safe drug, irreversible hepatic toxicity (again, generally at higher doses) has been reported⁹.

References

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