

Feline Information Bulletin

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Feline Skin Disorders

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Feline dermatology is in its infancy; much information has been gathered in the last five to ten years. This bulletin will present a brief overview of the current status of some of the more common feline skin disorders and attempt to point out where research is sorely needed. In a few skin disorders, such as abscesses and nutritional steatitis, the cause, diagnosis, treatment, and even prevention are well established. In other disorders, such as dermatophytosis and flea allergy, the cause and diagnosis are fairly straightforward, but many questions about treatment and prevention remain unanswered. In yet another group of cutaneous diseases, such as the eosinophilic granuloma complex and feline endocrine alopecia, diagnosis is easy and control is possible with maintenance drug regimes, but little is known concerning cause and prevention.

Bacterial Skin Diseases

Normal skin is a good culture medium for bacteria. Bacteria are normally found on the surface of the skin and in the outer portions of hair follicles down to the depth of sebaceous gland ducts. Although knowledge concerning normal and abnormal skin bacteria in man is quite advanced, it is minimal for the dog and virtually

nonexistent for the cat. Bacterial skin diseases of the cat include abscessation-cellulitis, atypical mycobacterial infection, dermatophilosis (streptothricosis), actinomycosis, nocardiosis, and tuberculosis. Only the first two will be discussed here.

Abscessation-cellulitis (AC). AC is one of the most common of feline skin disorders and may affect any breed, sex (but especially intact males), or age. AC is almost always a secondary occurrence to bites and scratches from cat fights, the most common areas affected being the face, limbs, base of the tail, and back. The bacteria involved are invariably those that normally reside in the cat's mouth (*Pasteurella multocida*, *Streptococcus* spp., *Fusiformis* spp.).

An abscess is an infection characterized by a focal accumulation of pus. Cellulitis is a diffuse infection of the skin characterized by swelling, pain, and failure to "come to a head." Signs of AC are quite variable, from the classic abscess (swelling, heat, pain, eventual drainage) to swelling without heat or pain to severe pain without much swelling. Affected cats will often have fevers, elevated white blood cell counts, depression, lethargy, and lack of appetite. AC must be treated with respect, as more serious infectious sequelae may include pyothorax, otitis media, osteomyelitis, sinusitis, rhinitis, septic arthritis, and bacteremia.

Diagnosis is usually made by history, physical examination, and surgical drainage. Treatment usually includes surgical drainage and topical and systemic antibiotics. Recurrent, chronic, or poorly healing AC should

always cause one to suspect a concurrent feline leukemia virus (FeLV) infection. FeLV infection may be associated with suppression of the cat's immune responses and predispose it to recurring infections of many organ systems.

Prevention of AC would necessitate avoidance of cat fights; it has been shown that castration of male cats, even in adulthood, is 80 to 90 percent effective in preventing fighting.

Atypical mycobacterial infection (FL, leprosy). Feline leprosy (FL) is caused by bacteria that are thought to be mainly soil and water inhabitants and cause infection by wound contamination. There are apparently several species of mycobacteria involved. A cat of any breed, sex, or age may be affected.

Signs of FL include one to multiple nonpainful, nonpruritic (nonitching) nodules (tumors) in the skin that frequently ulcerate. These lesions may occur anywhere on the body. Regional lymphadenopathy may be present, but the cat usually appears healthy otherwise.

Diagnosis is made by history, physical, and surgical biopsy. The different mycobacteria involved are very difficult to culture, and culturing requires special laboratory techniques. Treatment is by surgical removal. To date, drug therapy with various antileprosy and antituberculosis agents used in man has been disappointing in the cat.

Much remains to be learned about FL. It has only been recently recognized in the United States, and questions as to the exact mode of

transmission, the number and types of mycobacteria involved, and the relationship to murine and human leprosy must be answered.

Fungal Skin Diseases

Fungi may be responsible for superficial (as is most common) or deep infections of the skin. Fungal skin diseases of the cat include dermatophytosis, pityrosporiasis, sporotrichosis, mycetoma, phaeohiphomycosis, blastomycosis, coccidioidomycosis, cryptococcosis, and histoplasmosis. Only dermatophytosis will be considered here.

Dermatophytosis (D, *dermatomycosis tinea*, ringworm). D is one of the more common feline skin disorders and is caused by a number of fungi, the most common of which are *Microsporum canis*, *Microsporum gypseum*, and *Trichophyton mentagrophytes*. *M. canis* is the most common cause of feline D, and the main source of infection is carrier cats; *M. gypseum* is found in soil, and *T. mentagrophytes* is carried by rodents. These fungi are transmitted by direct and indirect contact (environment, fomites, air, etc.) and are readily passed from animal to animal, and from animal to man. A cat of any breed, sex, or age (but especially young cats) may be affected.

Signs of D are extremely variable, which is often confusing and misleading. Skin lesions vary from the classic ringworm (circular area of alopecia, scaling, crusting, with or without inflammation) to pigmentary changes of skin or hairs to broken hairs to seborrhea sicca ("dandruff") to miliary eczema to the asymptomatic carrier. Lesions may occur anywhere but are especially common on the face, head, and extremities.

Diagnosis is by history, physical, and fungal culture. The Woods light (ultraviolet light) examination and KOH preparation are quick, easy, inexpensive diagnostic aids but offer no better than 50 percent accuracy.

Treatment must include (1) the affected animal, (2) in-contact animals, and (3) the environment. Treatment of infected animals includes isolation, clipping (single

lesions or the entire body), topical fungicide dips (such as lime sulfur or captan) once weekly, and griseofulvin orally. Such therapy is continued until clinical or mycologic cure is achieved (four to twelve weeks). Griseofulvin should not be given to pregnant queens, as teratogenicity (birth defects) may result. Treatment of exposed animals should include isolation, dips, and griseofulvin for two weeks. If no signs of disease have occurred, drug therapy may be stopped and isolation continued. Treatment of the environment includes weekly thorough vacuuming and emptying or discarding vacuum bag and weekly fungicidal washings (iodophors, formaldehyde, Clorox, etc.) where feasible (floors, walls, kennels, etc.). Every infected hair that falls off the cat and comes to rest in the environment is a source of infection for over a year.

Important questions concerning therapy and prevention remain. There is currently much confusion and concern over what the effective dose and frequency of administration of griseofulvin in cats should be. Preliminary studies in other animal species suggest that vaccination against D may be beneficial. To date, prevention is possible only by avoiding infected animals and humans.

Parasitic Skin Diseases

Parasites are one of the more common causes of skin disease in the cat. These parasites may be on the skin (ectoparasites) or within the body (endoparasites). Parasitic skin diseases in the cat include cheyletiellosis, demodectic mange, trombiculidiasis (chiggers), otodectic mange (ear mites), fleas, pediculosis (lice), ticks, cuterebriasis (grubs), myiasis (maggots, "fly-strike"), and intestinal parasitism. Only a few of these will be discussed here.

Cheyletiellosis (C, "walking dandruff"). C is caused by three species of a fairly large mite: *Cheyletiella parasitivorax*, *C. blakei*, and *C. yasguri*. These mites may also be found on dogs and rabbits. They are transmitted by direct and

indirect contact and may also produce transient skin disease in humans. No breed, sex, or age predilections of these parasites are known.

Signs of C are quite variable and include seborrhea sicca, miliary eczema, and the asymptomatic carrier. In the case of the cat with asymptomatic infection, the only clue may be the red, itchy dermatitis in its owner.

Diagnosis includes history, physical examination, skin scrapings, and fecal flotation. Treatment includes (1) the affected cat (parasiticide dips, shampoos, or powders, weekly for three to four weeks), (2) in-contact animals (same), and (3) the environment (thorough vacuuming, parasiticide washes, weekly for three to four weeks). Parasiticide agents containing almost any of the organophosphates or the chlorinated hydrocarbons are to be avoided in cats. Prevention requires avoiding contact with infected animals, which may be problematical in the outdoor cat.

Otodectic mange (OM, ear mites). OM is caused by the mite *Otodectes cynotis*. This mite infects cats and dogs and may produce transient dermatitis in humans. OM is quite contagious, by direct or indirect contact.

Signs of OM include (1) otitis externa (external ear infection), with resultant head shaking, ear scratching, creation of sores and ulcers around the head and ears, and a discharge from the ears, which may vary from a coffee-ground appearance to a waxy brown; (2) seizures (unusual severe cases); and (3) the asymptomatic carrier.

Diagnosis includes history, physical, otoscopic examination, and microscopic examination of ear swabs. Treatment must include (1) the affected cat (miticidal otic preparations, twice weekly for four weeks, and flea powder, total body, once weekly for four weeks); and (2) in-contact animals (same). It must be remembered that ear mites reside on the skin, as well as in the ears. Environmental contamination is not a problem with this parasite. Prevention requires avoiding infected animals. Flea and tick collars and medallions are of no benefit in OM.

Fleas and flea allergy dermatitis (FAD). Flea infestation and FAD are probably the most common cause of skin disease in the cat. Several species of fleas may infect cats, including *Ctenocephalides felis* (cat flea), *C. canis* (dog flea), and *Pulex irritans* (human flea). Any of these fleas may attack cats, dogs, and humans. Transmission is by direct and indirect contact. No breed, sex, or age predilections of fleas are known.

Signs of the flea infestation are variable. Cats with simple flea infestation may exhibit minor pruritus (itching) and dermatitis or no signs at all, in spite of harboring many fleas. The cat with FAD, however, has developed an allergy to flea saliva, and the bite of a single flea can produce pruritus and dermatitis lasting for twenty-four to ninety-six hours. FAD usually results in papules (little red bumps), scabs, excoriations (self-mutilation), alopecia (hair loss), licking, biting, and scratching around the neck, back, posterior and medial thighs, and the abdomen (miliary-eczemalike). These signs tend to occur during the spring, summer, and fall in the northern United States and year-round in the South.

Diagnosis includes history, physical examination (fleas or flea dirt), and finding tapeworm segments in the cat's stool, haircoat, or environment. Treatment must include (1) the affected cat (parasitidal shampoos and powders, weekly for at least four weeks; cortisonelike drugs to suppress the allergic reaction for seven to ten days); (2) in-contact cats and dogs (same); and (3) the environment (thorough vacuuming and vacuum bag disposal, sprays, "bombs," professional exterminators). It is imperative to address vigorous therapy to the environment, as the flea spends 90 percent of its lifetime off the host in the host's environment. Unfed fleas will survive for months in homes.

Prevention, at present, can be accomplished *only* by avoiding infested animals and environments. Obviously, this is impossible for outdoor animals, as there is no known way of eliminating fleas outdoors.

Flea collars and medallions are helpful but do not prevent fleas from jumping on cats and biting them. Thus, for the cat with FAD, they are of minimal benefit. Prevention, then, is the outstanding problem as concerns fleas and FAD. Research on flea repellents and hyposensitization (allergy shot) products is urgently needed. Already, reports of flea populations resistant to most available pesticides are surfacing from around the country.

Pediculosis (lice). Lice are an uncommon cause of skin disease in the cat, being more common in areas of crowding and socioeconomic depression and where sanitation and cleanliness are poor. The cat louse is *Felicola subrostratus* and appears to be quite host-specific. Transmission is by direct and indirect contact. No breed, sex, or age predilections exist.

Signs of lousiness are variable, including (1) mild to moderate itching without skin lesions, (2) miliary eczema, and (3) the asymptomatic carrier. These signs tend to be most severe during cold weather.

Diagnosis is by history and physical examination. Treatment includes (1) the affected cat (flea shampoos or powders weekly for four weeks); (2) in-contact cats (same); and (3) the environment (thorough vacuuming, sprays). Lice do not usually persist in the environment for more than three to seven days.

Intestinal parasitism (IP). Many of the intestinal parasites of cats may occasionally be associated with skin disease. No breed, sex, or age predilections of these parasites are known. Signs may include (1) itching without skin lesions, (2) seborrhea sicca, and (3) miliary eczema. Intestinal parasites associated with such skin disorders have included roundworms, hookworms, and tapeworms. How these parasites produce skin disease is not known, but allergic reactions are suspected. Diagnosis is by history, physical, and fecal flotation (one to three samples). Treatment includes eliminating the parasite involved.

Allergic Skin Diseases

Allergic skin diseases of the cat include urticaria-angioedema ("hives"), food allergy, allergic contact dermatitis, drug eruption (drug allergy), flea allergy dermatitis, and those associated with intestinal parasitism. Flea allergy (the most common cause of allergic dermatitis in cats), and intestinal parasitism have already been discussed. The others are uncommon to rare, and only food allergy will be discussed.

Food allergy (FA). FA is an uncommon cause of skin disease in the cat. Virtually every conceivable foodstuff has been reported to cause FA in the cat. Over 70 percent of the cases of feline FA have been consuming the offending diet for over two years prior to the onset of signs. No breed, sex, or age predilections have been noted.

Signs include (1) miliary eczema, (2) pruritic, ulcerative dermatitis about the head and neck, (3) pruritus without skin lesions, and (4) urticaria-angioedema. Gastrointestinal signs (vomiting or diarrhea) are rare.

Diagnostic techniques include history, physical, elimination diet, and test-meal feedings. Elimination diets must consist of foods that the cat does not eat with any regularity. One cannot simply switch to a different brand, flavor, or consistency of cat food. Boiled chicken, long-grain rice, and water are often used. Salt, preservatives, food colorings, and other condiments must be avoided. Signs usually improve dramatically within seventy-two hours after the offending diet is discontinued.

Treatment includes introducing single dietary items, seven days at a time, until variety and economy are achieved. Daily vitamin and mineral supplements should also be prescribed.

Autoimmune Skin Diseases (ASD)

Autoimmune skin diseases (ASD) are those in which the animal begins to attack and destroy its own skin. These disorders tend to be quite

severe, and their causes are unknown. The diagnosis of ASD requires rather sophisticated laboratory testing, and, thus, these entities are only now beginning to be recognized in cats. Examples of ASD recognized in cats include pemphigus vulgaris, pemphigus foliaceus, and lupus erythematosus. These diseases are undoubtedly rare, and only time and improved technology will allow understanding of their importance.

Endocrine (Hormonal) Skin Diseases

Endocrine skin diseases of the cat include feline endocrine alopecia, hypothyroidism, and hyperadrenocorticism (Cushing's disease). These diseases are uncommon to rare. Only feline endocrine alopecia will be discussed.

Feline endocrine alopecia (FEA). The cause of FEA is unknown, although its exclusive occurrence in neutered cats and its good response to sex hormone therapy suggest that it is related to sex hormone deficiency or imbalance. Ninety percent of the cases are seen in castrated males, the other 10 percent in ovariectomized females. No breed or age predilections are reported.

Signs include alopecia affecting the abdomen, genital region, and posterior and medial aspects of the thighs. Hairs in the affected areas can be easily epilated.

Diagnosis includes history, physical examination, and response to therapy. Treatment methods include injections of the androgen-estrogen or progesteronelike drugs as needed or maintenance doses of megestrol acetate (Ovaban).

As may be noted from the above discussion, research is needed on the cause and prevention of FEA. Likewise, no diagnostic laboratory test is available. Studies of the blood and urine androgen-estrogen levels in normal and FEA cats might be extremely enlightening.

Seborrheic Skin Diseases (SSD)

Seborrhea refers to abnormal skin keratin production, with or without

abnormalities in sebaceous (oil) and apocrine (sweat) gland function. Thus, SSDs are often referred to as seborrhea sicca (dry and flaky), and seborrhea oleosa (greasy and flaky), and seborrheic dermatitis (greasy, flaky, red, inflamed, and itchy).

The important question to be answered when one is presented with a cat having SSD is whether the disorder is primary (cause unknown) or secondary (associated with some other disease). Secondary SSD may be seen with (1) endocrine skin diseases (FEA, hypothyroidism, hyperadrenocorticism), (2) parasitic skin diseases (cheyletiellosis, lice, fleas, intestinal parasites), (3) fungal skin disease (dermatophytosis), (4) dietary deficiencies (protein, fats, vitamin A), (5) liver disease, (6) intestinal malabsorption, (7) autoimmune skin disease (pemphigus foliaceus), and (8) environment (high ambient temperature with low humidity, excessive bathing or powdering).

Diagnosis includes history, physical examination, and testing for causes of secondary SSD. Treatment of secondary SSD is directed at the underlying cause. Treatment of primary SSD is symptomatic (antiseborrheic shampoos as needed) and continued for the life of the cat. Coal tar shampoos must not be used on cats.

Feline acne and stud tail are other, localized forms of SSD in the cat.

Actinic Skin Disease (FSD, Photodermatitis)

Feline solar dermatitis (FSD). FSD is caused by ultraviolet light (sunburn) in susceptible cats. White cats or cats with white ears, noses, and eyelids are predisposed. No sex or age predilections are reported. FSD occurs most commonly in the southern regions of the United States.

Signs include reddening of the tips of the ears, and occasionally the nose and eyelids, and then progress to alopecia, scaling, ulceration, and crusting. Latter stages of FSD are accompanied by head shaking and ear scratching.

Diagnosis includes history and

physical examination. Treatment is dependent on the stage at which FSD is recognized and may include (1) keeping the cat indoors between 8:00 a.m. and 4:00 p.m., (2) topical sunscreens, (3) cortisonelike drugs, and (4) amputation of the pinnae. FSD must be recognized and treated early, as neglected cases can undergo malignant transformation, especially into squamous cell carcinoma.

Psychogenic Skin Disease

Feline hyperesthesia syndrome (FHS, neurodermatitis). FHS is usually seen in the Siamese, Burmese, Abyssinian, Himalayan, and crosses thereof. No sex or age predilections are reported. FHS may be caused by any stimulus that would cause a cat to constantly worry a particular area of skin, such as parasites, allergy, anal sac problems, joint, muscle, or bone pain, matted fur, foreign matter in the coat, etc. However, in over 90 percent of the cases, FHS is precipitated by psychogenic trauma and displacement phenomena. Examples would include a new pet, baby, or guest in the home; a favorite family member leaving the household; or the cat being boarded or hospitalized.

Signs include either (1) localized areas of alopecia, excoriation, ulceration, and crusting, or (2) localized areas of alopecia without skin lesions. Favorite areas include the abdomen, flank, medial thigh, back, and front leg.

Diagnosis includes history and physical examination. An exhaustive history is mandatory in these cases, for only if the inciting cause can be detected and remedied can the FHS ever be cured. Treatment includes (1) correcting the underlying cause, and (2) antianxiety drugs, such as phenobarbital or progesteronelike drugs (Ovaban, for instance).

Congenital-Hereditary Skin Diseases (CHSD)

CHSD of the cat include alopecia universalis (Sphinx cat), cutaneous asthenia (Ehlers-Danlos syndrome), dermoid cysts, and epitheliogenesis imperfecta. These diseases are rare.

Nutritional Skin Diseases (NSD)

NSD described in the cat include deficiencies of iodine (hypothyroidism), vitamin A (seborrhea), riboflavin, biotin (miliary eczema), vitamin E (steatitis), fatty acids (seborrhea, miliary eczema), and protein (seborrhea). These are extremely rare to nonexistent today, because cats are usually fed good commercial diets.

Physicochemical Skin Diseases (PCSD)

PCSD reported in the cat include contact dermatitis (kerosine, flea collars, other chemicals and irritants), decubital ulcers (bedsores), frostbite, burns, and thallium poisoning. These disorders are rare in cats.

Neoplastic Skin Diseases (Tumors)

Skin tumors are common in cats; in fact, the skin is the second most common site for cat tumors. Most cat skin tumors are malignant. Thus, they should be subjected to exfoliative cytology or surgical biopsy as soon as possible. Therapy may include surgery, radiation, or drugs.

Feline Skin Diseases of Undetermined Cause

These include the eosinophilic granuloma complex, nodular panniculitis, and some diseases in the miliary eczema complex.

Eosinophilic granuloma complex (EGC). EGC is a group of common, apparently related skin lesions seen in cats of

all breeds, sexes, and ages. Although the cause of this group of skin lesions is unknown, one of the types, the eosinophilic ulcer ("rodent ulcer"), is frequently associated with concurrent FeLV infection.

Signs include (1) one or multiple nonpruritic ulcers, especially on the upper lip (eosinophilic ulcer), (2) one or multiple raised, red, pruritic plaques, especially on the abdomen, flank, or medial thigh (eosinophilic plaques), and (3) one or multiple linear, raised, firm, nonpruritic, yellowish pink lesions, especially on the posterior thighs and in the mouth (linear granuloma).

Diagnostic techniques include history, physical examination, and biopsy. Treatment includes cortisone-like drugs or progesterone-like drugs (such as Ovaban). About 25 to 50 percent of these cases will require long-term maintenance therapy.

Obviously, research is desperately needed on the cause of EGC, especially the viral and immunological aspects of it.

Miliary eczema complex (MEC). MEC is a common group of diseases that result in a skin disorder characterized by papules, crusts, excoriations, alopecia, and pruritus. MEC usually begins over the back and may spread to involve the entire body. MEC may affect cats of any breed, sex, or age.

Known causes of MEC include flea allergy dermatitis, pediculosis, cheyletiellosis, intestinal parasitism, dermatophytosis, food allergy, drug eruption, biotin deficiency, and fatty

acid deficiency. Depending on what area of the country you are in, these entities may account for 40 to 85 percent of all MEC cases. Obviously, depending on geographic location and cause, MEC may be seasonal or nonseasonal.

Diagnosis includes history, physical, and tests for known causes of MEC. Again, depending on where you live, 15 to 60 percent of the cases of MEC may be idiopathic, of unknown cause.

Treatment of MEC of known cause involves specific therapy for that cause. Idiopathic MEC, however, responds well to only one type of drug, progesterone-like compounds (such as Ovaban). Unfortunately, maintenance therapy usually needs to be continued for the life of the cat.

Many questions need to be answered about idiopathic MEC. What causes it? Is there a specific diagnostic test that could be used for it? Why are progesterone-like drugs so effective, and how might this shed light on the cause?

Further Information

For more information about the work of the Cornell Feline Research Laboratory, write to

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