

A survey of canine and feline skin disorders seen in a university practice: Small Animal Clinic, University of Montréal, Saint-Hyacinthe, Québec (1987–1988)

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Abstract

Dermatological disorders accounted for 18.8% and 15.2%, respectively, of all the dogs and cats examined at the Small Animal Clinic, University of Montreal, Saint-Hyacinthe, during a one-year period. In dogs, the most common groups of dermatological disorders encountered were bacterial folliculitis and furunculosis, allergic dermatitis, endocrinopathy, neoplasia, ectoparasitism, and immune-mediated dermatitis. The most common primary final diagnoses were bacterial folliculitis and furunculosis, atopy, food hypersensitivity, flea bite hypersensitivity, hyperadrenocorticism, and hypothyroidism. Breed predispositions were found for several canine dermatoses: bacterial folliculitis and furunculosis (collie, German shepherd, golden retriever, Newfoundland), atopy (boxer, golden retriever), food hypersensitivity (boxer, German shepherd), hyperadrenocorticism (miniature poodle), hypothyroidism (Doberman pinscher, Gordon setter), castration-responsive alopecia (chow chow), demodicosis (Old English sheepdog), and idiopathic pruritus (pit bull terrier).

In cats, the most common dermatoses were abscesses, otodectic mange, cheyletiellosis, flea bite hypersensitivity, atopy, flea infestation, neoplasia, and food hypersensitivity. Himalayan and Persian cats accounted for 50% of the cases of cheyletiellosis and 75% of the cases of dermatophytosis, respectively. Hereditary primary seborrhea oleosa was seen only in Persian cats.

Résumé

Une étude portant sur les maladies dermatologiques canines et félines examinées à une clinique universitaire : Hôpital des Petits Animaux, Université de Montréal, Saint-Hyacinthe, Québec (1987–1988)

Les maladies dermatologiques affectaient 18,8% et 15,2% respectivement, de tous les chiens et chats examinés à l'Hôpital des Petits Animaux, Université de Montréal, Saint-Hyacinthe durant la période d'un an. Chez le chien, les maladies dermatologiques les plus fréquemment rencontrées étaient folliculite et furon-

culose bactériennes, dermatite allergique, endocrinopathie, néoplasie, ectoparasitose, et dermatite immunitaire. Les diagnostics définitifs primaires les plus fréquents étaient folliculite et furunculose bactériennes, atopie, allergie alimentaire, hypersensibilité aux piqûres de puce, hyperadrénocorticisme, et hypothyroïdie. Des prédispositions selon la race ont été trouvées pour plusieurs dermatoses canines : folliculite et furunculose bactériennes (collie, Berger allemand, golden retriever, Terre Neuve), atopie (boxer, golden retriever), hypersensibilité alimentaire (boxer, Berger allemand), hyperadrénocorticisme (caniche miniature), hypothyroïdie (Doberman pinscher, Gordon setter), dermatose répondant à la castration (chow chow), démodicose (Berger anglais) et prurit idiopathique (pit bull terrier).

Chez le chat, les maladies dermatologiques les plus fréquemment rencontrées étaient abcès, gale otodectique, cheyletiellose, hypersensibilité aux piqûres de puce, atopie, infestation aux puces, néoplasie, et allergie alimentaire. Les chats Himalayens et Persans ont expliqué 50% des cas de cheyletiellose et 75% des cas de dermatophytie, respectivement. La séborrhée grasse primaire héréditaire n'a été rencontré que chez les chats Persans.

Can Vet J 1990; 31: 830-835

Introduction

The demographics of skin disease in man have been studied. Several large surveys have documented the prevalence, incidence, frequency, and economic impact of dermatological disorders in human medicine (1-7). In veterinary medicine, very little information is available concerning the demographics of canine and feline skin disorders. It has been estimated (based on anecdotal information) that from 20% to 75% of the cases seen in the average small animal practice have skin problems as a chief or concurrent owner complaint (8-13). A 1978 Ralston Purina Company survey indicated that 25% of all small animal practice activity was involved with the diagnosis and treatment of problems with skin and hair coat (14). A nation-wide survey by the Alpo Company in 1985 of 2,540 small animal practitioners in the United States revealed that skin disorders were the most common reason for patient visits to the veterinarian's office (15).

Using data gathered from 17 North American veterinary teaching hospitals for the year 1983, Sischo *et al* reported that the 10 most commonly diagnosed canine skin diseases were, in decreasing order of frequency, flea bite hypersensitivity, skin cancer, bacterial

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This study was undertaken when Dr. Scott was on sabbatical leave at the Faculté de Médecine vétérinaire, Université de Montréal.

Table 1. Final diagnosis in 419 dogs with 558 dermatological disorders

Diagnosis	Number of cases	Diagnosis	Number of cases
Bacterial folliculitis/furunculosis	141	Dermatomyositis	3
Cured with antibiotic therapy	72	Nevi	3
Recurrent, idiopathic	15	Color mutant alopecia	2
Secondary ^a	54	Alopecia and melanoderma of Yorkshire terrier	2
Allergic dermatitis	130	Pattern baldness	1
Atopy	71	Contact dermatitis ^g	14
Food hypersensitivity	26	Idiopathic pruritus ^h	14
Flea bite hypersensitivity	19	Otitis externa	14
Other ^b	14	Foreign body dermatitis (porcupine quills)	13
Endocrinopathy	48	Perianal gland hyperplasia	7
Hyperadrenocorticism	19	Intertrigo	6
Hypothyroidism	15	Abscess	6
Castration-responsive dermatosis	5	Dermatophytosis	5
Testicular neoplasm-associated dermatosis	4	Acral lick dermatitis	4
Hyposomatotropism	3	Follicular arrest	4
Other ^c	2	Excessive seasonal shedding	3
Neoplasia ^d	39	Idiopathic necrosis/hyperkeratosis of footpads/nose	3
Ectoparasitism	34	Hepatocutaneous syndrome	2
Demodicosis	13	Juvenile cellulitis	2
Flea infestation	8	Zinc-responsive dermatosis	1
Scabies	7	Bacterial pseudomycetoma	1
Cheyletiellosis	3	Acne	1
Black fly bites	3	Impetigo	1
Immune-mediated dermatoses	27	Bite wound	1
Sterile pyogranuloma syndrome	5	Laceration	1
Other ^e	5	Mats	1
Vasculitis, idiopathic	3	Senile cutaneous atrophy	1
Pemphigus erythematous	3	Catabolic skin ⁱ	1
Discoid lupus erythematous	2	Idiopathic nasal alopecia/hyperpigmentation	1
Pseudolymphoma, postvaccination	2		
Pemphigus foliaceus	1		
Pemphigus vulgaris	1		
Bullous pemphigoid	1		
Erythema multiforme (tetracycline)	1		
Eosinophilic granuloma	1		
Lichenoid dermatitis, idiopathic	1		
Sebaceous adenitis	1		
Seborrhea ^f	17		
Congenital/hereditary dermatoses	15		
Hypotrichosis	4		
			558

^aThese bacterial infections were secondary to allergic skin disease (atopy, food hypersensitivity, flea bite hypersensitivity), endocrine disease (hypothyroidism, hyperadrenocorticism), and ectoparasitism (demodicosis, scabies)

^bThese dogs had combinations of two different allergies (11), urticaria (2) or staphylococcal hypersensitivity (1)

^cThese two dogs had clinical presentations suggestive of endocrine skin disease, but owners declined workup

^dThe following tumors were diagnosed: sebaceous gland hyperplasia, perianal adenoma, lipoma, mast cell tumor, histiocytoma, fibrovascular papilloma, squamous cell carcinoma, melanoma, lymphosarcoma, apocrine sweat gland adenocarcinoma, hemangiopericytoma, seborrhic keratosis, papilloma, ear polyp, metastatic carcinoma

^eThese five dogs had clinical presentations suggestive of immune-mediated disease, but definitive diagnoses could not be established

^fThese dogs had fatty acid deficiency (5), hypothyroidism (3), primary seborrhea (3), and no diagnosis in seven (diagnostic workup not permitted)

^gTen of these dogs had cutaneous reactions to various medicated shampoos

^hThese dogs had clinical presentations suggestive of nonseasonal allergic skin disease. Diagnostic testing (hypoallergenic diet, intradermal skin test) was negative in five dogs, and not permitted in the other nine dogs

ⁱThis dog had skin and hair coat typical of a debilitated animal, but workup was not permitted

pyoderma, seborrhea, allergy, demodicosis, scabies, immune-mediated dermatoses, endocrine dermatoses, and acral lick dermatitis (16). Significant differences were noted in the frequency of these skin diseases in the various geographic regions studied. A survey conducted in 1981 by the American Academy of Veterinary Dermatology revealed the most common feline dermatological disorders to be, in decreasing order of frequency, parasitic dermatoses, "miliary dermatitis", "eosinophilic granuloma complex", endocrinological,

fungal, hypersensitivity, bacterial, psychogenic, seborrhic, neoplastic, and autoimmune dermatoses (17). In a two-year (1983 and 1984) retrospective study of feline skin diseases conducted at the New York State College of Veterinary Medicine, Scott *et al* reported that skin diseases accounted for 6% of all the feline hospital cases examined, and "miliary dermatitis" was the most common feline cutaneous reaction pattern (38.1% of total) (18).

The purpose of the present study was to document

Table 2. Breed predilections in canine dermatoses

Dermatosis	Breed	% of cases	% of hospital population	Relative risk
Bacterial folliculitis/ furunculosis, cured	Newfoundland	5.6	1.1	5.1
	Golden retriever	8.3	3.6	2.3
	Collie	7.0	3.5	2.0
Bacterial folliculitis/ furunculosis, recurrent	German shepherd	33.3	8.9	3.7
Atopy	Boxer	15.5	2.7	5.8
	Golden retriever	8.4	3.6	2.3
Food hypersensitivity	Boxer	11.6	2.7	4.3
	German shepherd	19.2	8.9	2.1
Hyperadrenocorticism	Miniature poodle	21.1	4.8	4.4
Hypothyroidism	Gordon setter	20.0	0.1	200.0
	Doberman pinscher	33.3	3.9	8.5
Castration-responsive alopecia	Chow chow	40.0	1.7	23.5
Demodicosis	Old English sheepdog	23.1	0.8	28.9
Idiopathic pruritus ^a	Pit bull terrier	60.0	2.1	28.6
Dermatological disease in general	Boxer	6.0	2.7	2.2
	Dachshund	1.5	0.7	2.1
	Bichon frise	2.5	1.2	2.1

^aPit bull terriers accounted for three of five cases of idiopathic pruritus wherein full-allergy testing was performed

the types, frequencies, and breed predilections of canine and feline dermatological disorders encountered at a university small animal clinic in Québec.

Materials and methods

From July 1, 1987 through June 30, 1988, 419 dogs and 111 cats were examined for skin disorders at the Hôpital des Petits Animaux at the Faculté de Médecine vétérinaire, Université de Montréal, Saint-Hyacinthe, Québec. Dermatological diagnoses were established by standard criteria (13). All animals were examined by dermatologists (the authors). Signalments (breed, age, sex) for animals with dermatological diseases were compared with those for the general canine and feline hospital populations during the same time period, and relative risks were calculated as reported previously (16,19): the percentage of a parameter being studied that was accounted for by a certain group of individuals *divided by* the percentage of the general population that was accounted for by the same group of individuals.

Results

During the one-year study period, 419 dogs (with 558 dermatological diagnoses) and 111 cats (with 124 dermatological diagnoses) were examined for skin problems (Table 1). The general hospital populations during the same time period were 2,226 dogs and 728 cats. Thus, dermatological disorders accounted for 18.8% and 15.2%, respectively, of all the dogs and cats examined during the study period. There were no apparent age or sex predilections for dermatological disease as a whole. However, the following breeds of dogs appeared to be at increased risk for dermatological disease (Table 2): boxer, dachshund, and

bichon frise. In addition, the following breeds of dogs appeared to have a decreased risk for dermatological disease: Yorkshire terrier (0.2% of dermatological cases versus 1.4% of general hospital population, relative risk 0.1), Pomeranian (0.5% versus 1.5%, relative risk 0.3), and Samoyed (0.5% versus 1.2%, relative risk 0.4).

The most common dermatological disorders seen in dogs were bacterial folliculitis and furunculosis (141 of 558 diagnoses, 25.3%), allergic dermatitis (130 of 558, 23.3%), endocrinopathy (48 of 558, 8.6%), neoplasia (39 of 558, 7.0%), ectoparasitism (34 of 558, 6.1%), and immune-mediated dermatitis (27 of 558, 4.8%) (Table 1). The 10 most common primary final diagnoses were bacterial folliculitis and furunculosis (87 of 558, 15.6%), atopy (71 of 558, 12.7%), food hypersensitivity (26 of 558, 4.7%), flea bite hypersensitivity (19 of 558, 3.4%), hyperadrenocorticism (19 of 558, 3.4%), hypothyroidism (15 of 558, 2.7%), contact dermatitis (14 of 558, 2.5%), idiopathic pruritus (14 of 558, 2.5%), otitis externa (14 of 558, 2.5%), and demodicosis (13 of 558, 2.3%) (Table 1). Breed predilections appeared to exist for certain canine dermatoses (Table 2).

In cats, the most common dermatoses were abscesses (23 of 124, 18.5%), otodectic mange (16 of 124, 12.9%), cheyletiellosis (10 of 124, 8.1%), flea bite hypersensitivity (8 of 124, 6.5%), atopy (7 of 124, 5.6%), flea infestation (6 of 124, 4.9%), neoplasia (6 of 124, 4.9%), and food hypersensitivity (5 of 124, 4.0%). For three feline dermatoses, breed predilections were suggested. Himalayan cats accounted for 50% of the cases of cheyletiellosis, but only 6.9% of the general hospital population (relative risk 7.3). Persian cats accounted for 75% of the cases of dermato-

phytosis, but only 7.9% of the general hospital population (relative risk 9.5). Hereditary primary seborrhea oleosa was seen only in Persian cats.

Discussion

In a one-year period, dermatological disorders were present in 18.8% of the dogs and 15.2% of the cats examined at the Hôpital des Petits Animaux, Université de Montréal, Saint-Hyacinthe. These figures are in general agreement with anecdotal reports (8,9,12) and survey results (14,15) published in the veterinary literature, and certainly emphasize the importance of dermatology in small animal practice.

In dogs, the most common dermatoses included, in descending order of frequency, bacterial folliculitis and furunculosis, allergic dermatitis, endocrinopathies, neoplasms, ectoparasitism, and immune-mediated skin disease. These dermatoses were also among the ten most common dermatoses tabulated in a 1983 survey of 17 North American veterinary teaching hospitals (16). However, one glaring difference between the 1983 North American survey (16) and the Saint-Hyacinthe survey was the importance of flea bite hypersensitivity. Although this was *the* most common canine dermatosis in the North American survey, as well as the most common canine dermatosis in the northeast region (the region corresponding geographically to Québec), it was only the fourth most common dermatosis in the Saint-Hyacinthe survey (3.4% of total). Other authors have indicated that, in some areas of the United States, flea bite hypersensitivity accounts for 50% or more of the dermatological cases seen in small animal practice, especially during warmer months (20).

Other comparisons can be made between results of the Saint-Hyacinthe survey and previous reports as concerns specific canine dermatoses. Atopy accounted for 12.7% of our cases, which is in general agreement with figures of 3% to 15% in the literature (19,21-23). Food hypersensitivity accounted for 4.7% of the Saint-Hyacinthe cases, compared to a stated 1% of the dermatological cases seen in general veterinary practice (24). Hyperadrenocorticism and hypothyroidism were the most common endocrine skin disorders in the Saint-Hyacinthe survey, which is consistent with other observations (13,25).

There is considerable information available on apparent breed predilections for specific canine dermatoses (10,12,13,19,21,26-37), but very little has been written concerning canine breed predilections for skin disease in general. Ihrke and Franti (9) reported that 31 breeds of dogs showed an elevated risk for skin disease in northern California. In our survey, only three breeds appeared to be at increased risk: boxer, dachshund, and bichon frise. Of these three breeds, only the dachshund was also at increased risk in the northern California study.

There were several breeds of dogs with an apparently increased risk for specific dermatoses in the Saint-Hyacinthe survey (Table 2). The Newfoundland, golden retriever, and collie were at increased risk to develop bacterial folliculitis and furunculosis, which is consistent with previous observations (13,28,30,32). The German shepherd accounted for one-third of our

cases of recurrent, idiopathic bacterial folliculitis and furunculosis, which has been previously reported (13,28,29,31,38) and attributed to an autosomal recessive inheritance pattern (39). The boxer and golden retriever were at increased risk to develop atopy, which is consistent with previous reports (13,19,28,29,32). The boxer and German shepherd were at increased risk to develop food hypersensitivity. Only the German shepherd had been listed in a previous report (28).

Breed predilections were demonstrated for certain endocrinopathies in our survey. The miniature poodle was at increased risk for hyperadrenocorticism, which has been previously reported (13,40). For hypothyroidism, the Doberman pinscher and Gordon

Table 3. Final diagnosis in 111 cats with 124 dermatological disorders

Diagnosis	Number of cases
Abscess	23
Otodectic mange	16
Cheyletiellosis	10
Flea bite hypersensitivity	8
Atopy	7
Traumatic alopecia ^a	7
Neoplasia ^b	6
Flea infestation	6
Food hypersensitivity	5
Idiopathic pruritus ^c	5
Dermatophytosis	4
Otitis externa (ceruminous)	4
Seborrhea ^d	4
Tail gland hyperplasia	3
Eosinophilic granuloma	3
Acne	2
Drug eruption ^e	2
Frost bite	2
Excessive seasonal shedding	1
Follicular arrest	1
Bite wound	1
Idiopathic pinnal alopecia	1
Acquired symmetrical hypotrichosis ^f	1
Bacterial folliculitis	1
Normal ^g	1

^aThese cats had self-induced hypotrichosis which was responsive to the application of an Elizabethan collar. Allergy testing was not permitted by owners

^bThese tumors included: basal cell tumor, lymphosarcoma, mammary adenocarcinoma, epidermoid cyst, and cutaneous horn

^cThese cats had nonseasonal pruritus consistent with atopy and/or food hypersensitivity, but owners declined workups

^dThese cats included two with hereditary primary seborrhea oleosa, and two with idiopathic seborrhea sicca (owners declined workups)

^eOne cat with reaction to topical otic preparations, one with reaction to amoxicillin.

^fFormerly called "feline endocrine alopecia"

^gCat presented as "ringworm" suspect, but was clinically normal and culturally negative

setter were at increased risk. The Doberman pinscher has been reported previously as a breed at risk for hypothyroidism, probably on a familial basis (13,41-43), but the Gordon setter has not been mentioned. Castration-responsive alopecia has been reported to occur most frequently in the Siberian husky, Alaskan malamute, and keeshond (13,37), but in the Saint-Hyacinthe survey the chow chow was at increased risk.

Canine demodicosis is well known to have breed predilections and familial tendencies (13,28-30,36,44). The Old English sheepdog was at increased risk in our survey, which is in agreement with other reports (13,44). "Idiopathic pruritus" is rarely discussed, and is usually a term applied to describe dogs which have clinical signs suggestive of allergy, but wherein definitive allergy testing was not done (45). In our survey, nine such dogs were included. However, there were another five dogs with prednisone-responsive pruritus for which extensive allergy testing was performed, and no precise diagnosis could be rendered. It is interesting to note that three of these dogs (60%) were pit bull terriers.

Many of the results of the Saint-Hyacinthe survey were consistent with previous literature: dermatomyositis was seen only in the collie and Shetland sheepdog breeds (13,30), primary seborrhea and zinc-responsive dermatosis were seen only in the cocker spaniel and Alaskan malamute breeds, respectively (13,33,37), and alopecia and melanoderma were diagnosed only in the Yorkshire terrier (13). As has been reported previously (13,26-30), the collie accounted for the majority of cases of certain rare autoimmune dermatoses: pemphigus erythematosus, discoid lupus erythematosus, and bullous pemphigoid. Juvenile cellulitis occurred only in the German shepherd, which is in contrast to previous literature that cites the dachshund and golden retriever as predisposed breeds (13,36,46).

In cats, the most common dermatoses encountered in our survey included, in descending order of frequency, abscess, otodectic mange, cheyletiellosis, flea bite hypersensitivity, atopy, flea infestation, neoplasia, and food hypersensitivity. The high incidence of abscesses and otodectic mange is consistent with previous reports (13,47). However, the low incidence of flea infestation and flea bite hypersensitivity is in stark contrast to the findings of other investigators (13,17,18,20,46). It is tempting to speculate that one explanation for the relatively high incidence of feline cheyletiellosis (13,47) encountered in the Saint-Hyacinthe survey is the relatively low incidence of flea problems. It may be that, because flea problems and, therefore, flea control programs are encountered sporadically, *Cheyletiella* spp. mite infestations are more common. *Cheyletiella* spp. mites are quite susceptible to virtually all flea control products and programs (13).

There is very little information available on breed predilections for feline dermatoses (13,46). In our survey, Himalayan and Persian cats were at increased risk for cheyletiellosis and dermatophytosis, respectively. Similar observations have been made previously by other investigators (13,47-49). We recognized a

previously unreported hereditary primary seborrhea oleosa in Persian cats in this survey, and this condition is the subject of a detailed report (50).

The factors that influence reported frequency of skin disease in man are numerous and complex (1,2), and include such variables as the genetic constitution of the population studied, the existing social, hygienic, and nutritional standards, the quantity and quality of diagnostic facilities available, the diagnostic acumen and special interest of the attending physician, and the climate. It must therefore be emphasized that the results of the Saint-Hyacinthe survey must be considered in light of some of the following inherent biases: case material was drawn solely from the province of Québec; about 50% of the clinic population studied were referrals from private practitioners; the animals were evaluated at a university veterinary teaching hospital, where technological capabilities might frequently surpass those available to the average private practitioner; the animals were studied by individuals specializing in veterinary dermatology; and the survey period covered only one year.

We hope that similar studies of greater magnitude will be undertaken in the future, so that the demographics of canine and feline dermatology can be more completely and meaningfully elucidated.

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