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Pattern of skin problem in cat at Teaching and Training Pet Hospital and Research Center, Dhaka, Bangladesh

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Abstract

Pet animals especially cat populations are being popular day by day throughout the country. But several diseases affect serious health problem of thesecat and make worried their owners. Skin diseases/disorders are one of the most important problems among them. This retrospective study was aimed to know the occurrence of different skin diseases/disorders in cat and their distribution among different factors at Teaching and Training Pet Hospital and Research Center (TTPHRC), Purbachal of Chattogram Veterinary and Animal Sciences University (CVASU). The data regarding skin issues were collected from the previously recorded case sheet for the period of January, 2023 to December, 2023. All data stored in excel worksheet and analyzed by stata 14.2 versions. About 399 cats were visited at the hospital for different skin issues during the study period. These data represented about 6.70% different skin diseases/disorders in cat. Among them bacterial dermatitis (25.56%) was the highest where as mixed infection (0.75%) and worm infestation (0.75%) were the lowest. Other skin diseases/disorders included allergy/atopic dermatitis (8.27%), fungal dermatitis (18.8%), fleas (10.53%) and mites (12.78%) infestation, feline acne (1.50%), feline psychogenic alopecia (5.26%) and nutritional deficiency disorders (15.79%). Among different factors, this study revealed the young cats (0-1 year) were significantly more susceptible (47.37%) ($p<0.05$). Rearing system was also considered as an important factor as cats which were reared semi-intensively, were more prone to the skin disorders. Irregularity of deworming and more importantly less concern of the pet owner's on regular skin care played a vital role in the acceleration of skin problems in the cats. In conclusion, a good percentage of skin problems in cats are existing in the hospital cases. In addition, during young age regular skin care and deworming should be maintained to reduce skin problems in cats.

Keywords: Skin disorders; Different factors; Cats; TTPHRC

1. Introduction

There is a diverse range of animals that populate the Earth, however, mere inclusion in the animal kingdom does not automatically grant the status of a domesticated creature. It is the presence of camaraderie and an emotional bond between humans and animals that sets them apart as pets. In Bangladesh, rearing of pet animals was not popular in the recent past rather than treating them as street animals. However, recently pet animals have been rearing in urban cities of Bangladesh for the purpose of physical, social and emotional well-being of their owners, particularly children [6,7]. Pet keeping is usually associated with certain responsibilities like housing, disease management and responsible for pet ownership with negative consequences for public health when neglected [23]. Dogs and cats may be the most frequent household pets around the world [5]. Pet dogs and cats are susceptible to several illnesses. Diseases that are infectious

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as well as non-infectious impact them. Dermatological disease has become one of the most common problems in cats nowadays. The skin, which is the largest organ found within the body of a feline, encompasses approximately one-fourth of its overall body weight. This remarkable bodily structure serves as a crucial safeguard against the external surroundings while also playing a pivotal role in maintaining the cat's body temperature, immune protection, sensory perception, vitamin D production and it acts as a barrier between the animal and the environment. Comprised of distinct layers, the skin consists of the outermost layer known as the epidermis which serves as a shield and defense mechanism, followed by the dermis which lies beneath the epidermis and serves as a supportive layer that nourishes the epidermis. Further down lies the subcutis, the innermost layer that encompasses muscular and fatty tissues that provide insulation and protection. Additionally, the skin also comprises various appendages such as claws, sebaceous glands responsible for lubricating the skin and hair, and miniature muscles referred to as arrector pili which possess the ability to cause the hair to stand upright when stimulated [15]. In addition to the aforementioned critical roles and the maladies that have a direct impact on the integumentary system, it is plausible for this system to also exhibit and convey pathological phenomena originating from other bodily tissues. Due to these characteristics, dermatologic problems are among the most commonly seen disorders in veterinary hospitals. It is important for the veterinarian to know and understand about the physiology of the skin and about the most common dermatologic disorders that affects dogs and cats. Dermatology is an important medical specialty in pet animals for many reasons. First, many skin diseases are infectious or contagious, and core knowledge of these diseases is needed by veterinarians caring for pet animals so as to prevent outbreaks and spread of zoonotic diseases. Second, the general appearance of the animal influences adoption decisions by potential new owners. Finally, many skin diseases of cats are manageable but not curable. The care needed to manage some of these diseases often exceeds many well-intentioned owners' capabilities, resulting in the surrender of many animals because of chronic skin diseases. Also, many “severe” skin cases may be nothing more than a manageable chronic skin disease that has relapsed. Lack of simple dermatologic treatments often gives the mistaken impression that the animal is not a suitable pet. A basic knowledge of the common skin diseases seen in animals and how to triage and sort out these animals can greatly enhance their opportunities for rehoming. The dermatological diseases of animals have been the subject of extensive research worldwide. Numerous investigations have assessed the characteristics of the most prevalent dermatological disorders. According to reports, the most prevalent diagnoses in dogs include flea infestations, bacterial infections, allergic skin disorders, anal sac issues [9,10,11,13,19,21]. Abscesses, flea infestations, ear mites, allergic skin disorders, and neoplasia are often observed in cats [13,19]. On the other hand, there is scant data about the frequency of skin diseases in pet cats in this country. In spite of its great importance, to the best of our knowledge, Bangladesh has conducted very limited research on it, which encourages us to focus solely on it. Therefore, this study offers baseline information on the different types of skin diseases and conditions among the pet cats in Dhaka City. Considering the above circumstances, the present study was conducted to investigate the frequency of dermatological diseases in pet cats, and analyze the associated factors for the occurrence of dermatological diseases of pet cats.

2. Materials and Methods

2.1. Study population and sample size

The study population was cats with any type of skin lesion through the period of January, 2023 to December, 2023. A retrospective study was carried out on the cats that were registered for different dermatological problems in Teaching and Training Pet Hospital and Research center, Purbachal, Dhaka. A total of 399 different dermatological cases were found in cats during the study period.

2.2. Diagnostic approach

2.2.1. Clinical history

The clinical history of diseases was also collected from recorded in the case sheet though it is important for causal factors of diseases. Physical examination of the patient both distant and close inspection, palpation, percussion, and auscultation procedure followed through the standard procedure.

2.2.2. Clinical examination

Through a clinical examination of the patients, including respiration rate, heart rate, pulse rate, temperature, body condition score, skin condition, etc. were determined using clinical examination tools. Skin conditions were determined by palpation on skin surface, parting of hair and combing etc.

2.2.3. Laboratory diagnosis

Bacterial, mycotic and availability of mites was confirmed by the smear staining and skin scrapping method using standard protocol. Allergy was diagnosed based on hematology and serum IgE.

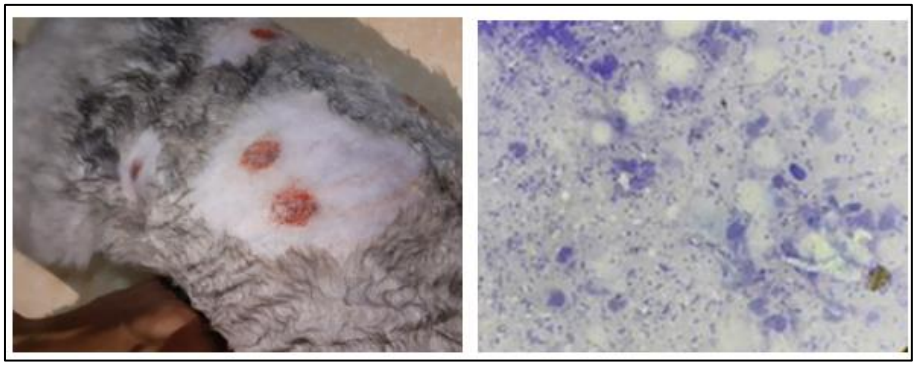

Figure 1 Red, swelled, and inflamed area with pyogenic membrane and Giemsa stain found multiple bacteria with neutrophil indicate bacterial dermatitis

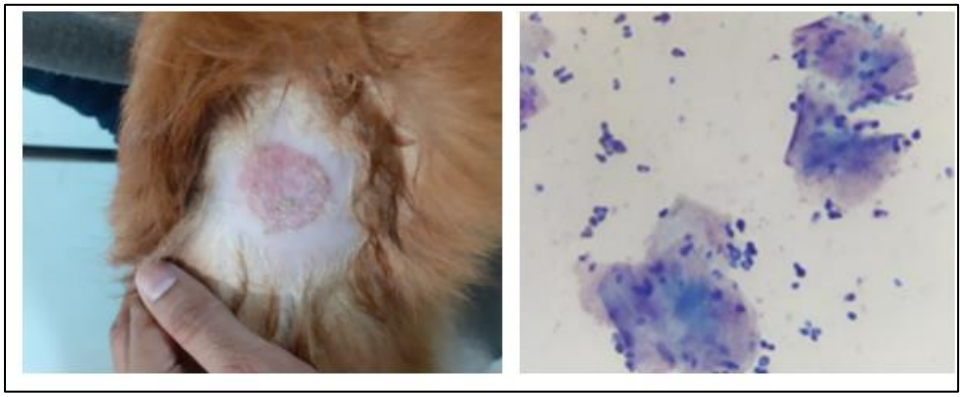

Figure 2 Circular, alopecic, and inflamed zone and Giemsa stain revealed budding spore indicate fungal dermatitis

Figure 3 Scale and crust formation in an around eye and ear with round shaped mite indicate scabies

Figure 4 Bilateral symmetrical alopecia with history of over grooming indicates psychogenic alopecia

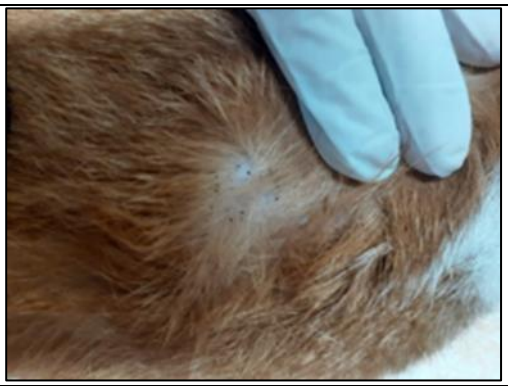

Figure 5 Flea dirt on whole body indicates flea infestation

2.3. Data collection

All the relevant information based on age, sex, breed, body weight, temperature, vaccination, deworming, source of pet, housing system, feeding history, coat color, skin lesions, general attitude, owner's complain, clinical observations, tests done for diagnosis and their findings and treatment during that time were recorded from case record sheet.

2.4. Data analysis

After collection, data were compiled in MS excel 2016. Data were sorted, coded, and compiled for further analysis. Data was analyzed with Stata 14.2 version. Chi-square tests were done with a 5% level of significance.

3. Results

3.1. Frequency and percentages of different skin disorders in cats:

Overall skin problem was revealed 6.7% among the cat cases (n=399, skin problem; N=5950, cat cases). Among them, bacterial dermatitis (25.56%) was highest and mixed infection and worm infestations were lowest (0.75%) in cats of this study. Other cases were fungal dermatitis (18.80%), nutritional deficiency (15.79%), mite infestation (12.78%), flea infestation (10.53%). feline psychogenic alopecia (5.26%), allergic dermatitis/atopic (8.27%) and feline acne (1.50%) (Table 1).

Table 1 Frequency and percentage of different skin disorders in cats (n=399)

Name of disorders	Frequency	Percentage
Feline Acne	6	1.50
Allergy/atopic dermatitis	33	8.27
Bacterial dermatitis	102	25.56
Worm infestation	3	0.75
Flea infestation	42	10.53
Fungal dermatitis	75	18.80
Mite infestation	51	12.78
Mixed infection (Bacterial and fungal)	3	0.75
Nutritional deficiency	63	15.79
Feline psychogenic alopecia	21	5.26

3.2. Frequency and percentage of different variables associated with various skin disorders in cats:

3.2.1. Breed

In breed predisposition, persian cat (55.64%) was highly susceptible for skin disorders followed by local cats (39.85%), mixed breed (3.76%) and exotic cat (0.75%) respectively (Table 2).

3.2.2. Age category

Considering the age category, skin disorders were significantly dominant in young cats (47.37%) compare to other age category like adult (39.10%), middle aged (9.77%) and old (3.76%) ($p<0.05$) (Table 2)

3.2.3. Sex:

The study showed male cats (54.89%) were a bit more susceptible to skin diseases than the females (45.11%) (Table 2).

Table 2 Frequency and percentage of different variables associated with various skin disorders in cats

Variables	Co-variables	Frequency	Percentage	P value(Chi-square test)
Breed	Exotic	3	0.75	0.070
	Local	159	39.85	
	Mixed	15	3.76	
	Persian	222	55.64	
Age(Y)	Young (<1Y)	189	47.37	0.008
	Adult (1- 4Y)	39	9.77	
	Middle age (4.1-8Y)	15	3.76	
	Old (<8Y)	156	39.10	
Sex	Female	180	45.11	0.388
	Male	219	54.89	
Coat color	Ash	102	25.56	0.582
	Black	30	7.52	
	Calico	27	6.77	
	Ginger	165	41.35	
	Mixed	51	12.78	
	White	24	6.02	
Rearing system	Extensive	3	0.75	0.221
	Intensive	159	39.85	
	Semi-intensive	237	59.40	
Deworming	No	210	52.63	0.927
	Yes	189	47.37	
Regular skin care	No	255	63.91	0.760
	Yes	144	36.09	

3.2.4. Coat color

This study showed different color varieties among the diseased cats. Most of them were ginger color (41.35%) followed by ash color (25.56%), mixed color (12.78%), black cats (7.52%), calico cats (6.77%) and white cats (6.02%) respectively.

3.2.5. Rearing system:

Regarding rearing system, most of the cases found in semi-intensively reared cats (59.40%) compare to intensively (39.85%) and extensively (0.75%) reared cats (Table 2).

3.2.6. Deworming and regular skin care

In case of health care, skin disorders were highly susceptible in cats that did not dewormed (52.63%) and did not care the skin regularly (63.91%) (Table 2).

4. Discussion

Cats are frequent household pets, contributing to the physical, social and emotional development of children as well as the well-being of their owners in both developed and developing countries [3, 17]. Ectoparasites are a widespread and significant source of skin problems in cats. They have a global spread and can transmit illness. Ectoparasites can cause life-threatening anemia and occasionally hypersensitivity issues in young and elderly animals [4]. In this study, different types of skin problems found among the cats visited in the hospital. Varity of skin disease like feline psychogenic alopecia, feline acne, different types of dermatitis (eg. bacterial, fungal, allergic, atopic), mite, flea and worm infestation, mixed infection (bacterial & fungal) and nutritional deficiency were commonly found in those pet cats. In some cases bacterial and fungal dermatitis were found along with mixed infection (bacterial & fungal). Bacterial infections in cats may arise when their immune system has been weakened or compromised. Fungal infections arise when a cat has inhaled or come into contact with fungal spores. If the fungal spores take over a large enough area of the cat's body, it can overwhelm their immune system and result in common dermatitis signs, such as inflamed skin, crusting and hair loss. There were found fair amount of allergic and atopic dermatitis patients. An allergy at its root is caused by the immune system reacting inappropriately to things that are not viruses or bacteria. When cat has an allergy, immune system thinks that a benign protein is a virus or parasite trying to attack it, which causes inflammation [7]. On the other hand, feline atopic dermatitis, sometimes called feline atopy or allergic dermatitis, is one of the most commonly diagnosed feline allergies. Unlike food or flea allergies, atopic dermatitis occurs when cats are exposed to environmental allergens like pollen, mold spores, and dust particles [22].

There was presence of good number of skin diseases due to nutritional deficiency. The health of a pet's skin and hair coat can be affected by a variety of nutrients most importantly protein, vitamin A, vitamin E, the essential fatty acids (EFAs) and zinc. Any imbalance in these can disrupt the barrier function and immune protection provided by the skin. Polyunsaturated fatty acids such as omega 6 and omega 3 are found to be an important dietary essential. Omega 3 fatty acids had more effect on pruritic skin disorders compared to omega 6 due to its more anti-inflammatory effect. For improvement of both quality and quantity of fur, supplementation of lysozyme, Zn along with linoleic acid can be done [20].

Presence of mite and flea infestation was also higher in those affected cats. Mites were found in both fur and ear of the affected cats. For confirmatory diagnosis skin scraping, ear wax samples were taken and examined under the microscope. In case of fleas, the principal way that a cat catches fleas is by coming into contact with another animal that's currently carrying fleas. Fleas can hop from one animal to the next. Additionally, flea eggs can also be present in carpets and furniture, especially if an infestation is not properly managed [14]

Feline Psychogenic alopecia and feline acne were also found in our study. Cat acne is found almost exclusively on the chin and lower lip of a cat, where the hair follicles become plugged with a greasy material called sebum [18]. In case of feline psychogenic alopecia, most veterinary dermatological texts describe the condition in cats as uncommon, although feline behaviorists believe that psychogenic aspects may also be a factor in some chronic pruritic conditions. Alopecia without inflammation of the skin is characteristic. However, with severe over-grooming eosinophilic plaques and secondary pyoderma may develop [8].

In this study, variety in different factors found which are associated with various skin diseases of the cats visited in the hospital. Here, age is an important risk factor (P value<0.05). Most susceptible cats were between 0 to 1 year and this means that they are more susceptible than the other age ranges. In Abdul kareem's study, it also revealed that the

intensity of infestation was higher in 0–6 month's old pets which may be due to the gradual acquisition of immunity and the close proximity of the young dogs to the ground. Mosallanejad et al. and Abdulkareem's study substantiate our findings too [1, 16]. This study shows no big difference in number of male and female cats in case of having skin problems. That suggests there is not much impact of sex in skin disorders. In Malaysia, Kamaruddin et al. also did not find any significant difference between the sexes [12].

In this study, it is found that most of the susceptible coat color is ginger and ash is the second highest susceptible coat color. But Abdulkareem et al. found that ectoparasite occurrence varied with the coat color of the host and in his study, brown coated were more susceptible [1]. Cats that are reared in intensive and semi-intensive system are the most susceptible. In our study, extensive rearing system is found in only one cat and which is positive. Therefore, it is found that cats which got exposure to outside environment are the most susceptible. In case of intensive rearing system, it is less susceptible than semi-intensive rearing system. In a previous study found that the majority of the pets seen in the research region were free-roaming, and this management style exposes pets to the greatest number of parasitic illnesses which was similar to our findings [1]. It is proved that extensive rearing system is responsible for the skin problems. Because when cats are roaming outside, they get in touch of other cats and from them cats get infected. But most cases in semi-intensive and intensive system in our study may be due to maximum patient in the hospital from semi intensively and intensively reared owners. Deworming is another important factor and cats that were not dewormed were more susceptible than the dewormed cat that was found in a separate study supporting our findings [2]. Cats were not done regular skin care and eventually their susceptibility rate was also higher. Therefore, regular skin care is a very important factor. The regular deworming and skin care reduce improve the proper utilization of nutrition, increase immunity, improve circulation in skin and maintaining integrity of skin. Ultimately reduce the chance of skin disorders.

5. Conclusion

Nowadays, in Bangladesh tendency of rearing pet animals has increased significantly specially in Dhaka. But scarcity in knowledge of the pet owners about skin diseases is a big factor for increasing number of skin problems of cats. Moreover, there has hardly been any research on this matter in Bangladesh. Lack of regular skin care of the cats, improper nutritional balance, contact with infected individuals are some other major reasons behind these various skin diseases of the pet cats in Dhaka city. In addition, during young age regular skin care and deworming should be maintained to reduce skin problems in cats.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The authors declare there is no conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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