Haryana Veterinarian (Dec., 2025) **64(2),** 30-33 ISSN 0033-4359 (P)

Research Article

CLINICO-EPIDEMIOLOGICAL STUDIES ON PARASITIC SKIN DISEASES IN CATS

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Received: 12.05.2024; Accepted: 30.08.2024

ABSTRACT

Dermatological issues are common in cats and various types of parasitic agents are often responsible for these problems. Cats presented to the Small Animal's Clinic, Department of Veterinary Medicine, Out patient Unit, Veterinary College Hebbal, Bengaluru from June 2023 to January 2024, were screened for parasitic skin diseases with an objective to document the incidence of parasitic skin diseases in cats in relation to the risk factors such as breed, age and gender. In our study, the incidence of skin infections was 32.33% and out of that the incidence of parasitic skin diseases was 67.10%. The incidences of flea infestation, ear mite infestation, scabies, lice and ticks were 47.3%, 37.1%, 11.0%, 1.5% and 3.0%, respectively. Higher incidence of parasitic skin diseases was observed in Persian cats, cats of <1 year and in male cats.

Keywords: Cats, Clinico-epidemiological, Parasitic skin diseases

How to cite: Kaveri, N.E., Lathamani, V.S., Ramesh, P.T., Rathnamma, D., Dhanalakshmi, H. and Chetan Kumar, G.K. (2025). Clinico-epidemiological studies on parasitic skin diseases in cats. *Haryana Veterinarian.* **64(2)**: 30-33.

Dermatological issues are very common in cats. Ectoparasites such as fleas, lice, ticks and mites are frequent and significant causes of both pruritic and non-pruritic skin conditions in cats. However, the majority of dogs and cats with ecto-parasites don't show any symptoms at all (Akucewich *et al.*, 2002).

The The most common ectoparasite found on cats is the flea, specifically Ctenocephalides felis (Rust, 2017). Ticks are another type of ecto-parasite that feed on blood and can infest both cats and dogs. Cats may also be affected by various mite species, including Notoedres cati, Sarcoptes scabiei, Otodectes cynotis, and Demodex species. Additionally, the cat-specific louse Felicola subrostratus can infest feline hosts (Pollmeier *et al.*, 2024). The present study was taken up with an objective to document the incidence of ecto-parasitic skin diseases in cats with respect to the risk factors such as breed, age and gender.

MATERIALS AND METHODS

Cats presented to the Small Animal's clinic, Department of Veterinary Medicine, Outpatient Unit, Veterinary College Hebbal, Bengaluru during the period of June 2023 to January 2024 (n=2134) were screened for parasitic skin diseases based on history, clinical examination and diagnostic tests. The cats with the clinical signs suggestive of parasitic skin diseases, such as the presence of fleas and flea dirt, ticks, lice, black dry ear discharge, persistent scratching, crusty skin lesions, hair loss, scaling and erythema were included. Incidence was recorded with respect to the age, breed and gender of the cats which were confirmed for parasitic skin diseases.

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Various diagnostic tests, including trichogram, coat brushing, ear swab, tape impression, and skin scraping, were used to diagnose various parasitic skin diseases. Coat brushing with a fine-toothed flea comb was done for diagnosing flea infestations, as per the methods suggested by Scott *et al.* (2001). Ear swabs were used to identify ear mite infestations. *Notoedres cati* and *Sarcoptes scabiei* were diagnosed with skin scraping examination. Trichogram and tape impressions were used to detect lice and lice eggs. The data obtained was analyzed using SPSS 16 (Statistical Package for the Social Sciences) software package.

RESULTS AND DISCUSSION

During the study period of June 2023 to January 2024, the incidence of skin infections in cats was 32.33% Skin infections were more prevalent in Persian breeds (64.1%), cats of <1year (73.2%) age group and male cats (54.6%). The highest incidence of skin infections was observed in August (17.97%) while the lowest was recorded in June (7.97%).

Parasitic skin diseases in cats accounted for 67.10%. Co-infection with two species of ectoparasites was 5.8% and with three species of ectoparasites was 0.21%. Similar findings were observed by El-Seify *et al.* (2016) and Lefkaditis *et al.* (2015). However, the findings of the present study are in contrast with those of Beugnet *et al.* (2014), Siagian and Siregar (2021), Fauziyah *et al.* (2020). The incidence of flea infestation was found to be 47.35% among parasitic skin disease. Similar findings were observed by Salant *et al.* (2014), and Yakhchali *et al.* (2017), which contrast with studies conducted by Thomas *et al.* (2016), Fauziyah *et al.* (2020) and Azarm *et al.* (2023). The incidence of ear mite infestation was 37.1%

Table 1. Breed, age and gender wise incidence of total parasitic skin diseases

Risk factors	No. of cases (463)	%	OR	95% CI	P-value	
			0.000*			
Breed	Persian	277	59.82	2.998	1.810-4.965	0.000*
	Local	160	34.55	1.355	0.826-2.223	0.229
	Mixed	26	5.61	1	-	-
			0.662			
Age	<1year	329	71.05	1.189	0.805-1.757	0.384
	1-3 years	98	21.166	1.131	0.734-1.742	0.576
	>3years	36	7.77	1	-	-
Gender	Male	246	53.13	1.073	0.873-1.319	0.503
	Female	217	46.86	1	-	-

*P<0.05, significant

Table 2. Logistic Regression (Multinomial): Breed wise incidence of different parasitic skin diseases

Risk factors	No. of cases	%	OR	95% CI	P-value	
			0.010*			
Flea infestation (n=219)	Persian	92	42.00	1.878	0.354-9.964	0.459
	Local	113	51.5	3.229	0.572-18.235	0.185
	Mixed	14	6.33	1	-	-
			0.273			
Ear mite infestation (n=172)	Persian	117	68.02	9.440	1.458-61.134	0.019*
	Local	49	28.48	2.800	0.453-17.299	0.268
	Mixed	6	3.48	1	-	-
			0.423			
Scabies (n=51)	Persian	36	70.5	3.600	0.518-25.003	0.195
	Local	11	21.56	0.786	0.112-5.489	0.808
	Mixed	4	7.84	1	-	-
			0.571			
Lice (n=7)	Persian	5	71.42	2.000	0.134-29.808	0.615
	Local	1	14.2	0.286	0.012-6.914	0.441
	Mixed	1	14.2	1	-	-
Ticks (n=14)	Persian	5	35.71	1	-	-
	Local	7	50	1	-	-
	Mixed	2	14.2	1	-	-

*P<0.05, significant

Table 3. Logistic Regression (Multinomial): Age wise incidence of different parasitic skin diseases

Risk factors	No. of cases	%	OR	95% CI	P-value	
			0.011*			
Flea infestation (n=219)	<1year	157	71.68	5.233	1.187-23.074	0.029*
	1-3 years	47	21.46	1.880	0.401-8.812	0.423
	>3years	15	6.84	1	-	-
			0.011*			
Ear mite infestation (n=172)	<1year	129	75.00	4.333	0.981-19.139	0.053
	1-3 years	28	16.27	1.080	0.226-5.162	0.923
	>3years	15	8.72	1	-	-
			1.000			
Scabies (n=51)	<1year	31	60.78	5.167	0.834-32.000	0.078
	1-3 years	17	33.33	3.400	0.516-22.406	0.203
	>3years	3	5.88	1	-	-
			0.000*			
Lice (n=7)	<1year	5	71.42	3.414E8	4.510E7-2.584E9	0.000*
	1-3 years	2	28.57	1.639E8	1.639E8-1.639E8	0.000*
	>3years	0	0	1	-	-
Ticks (n=14)	<1year	6	42.85	1	-	-
	1-3 years	5	35.71	1	-	-
	>3years	3	21.42	1	-	-

*P<0.05, significant

Table 4. Logistic Regression (Multinomial): Gender wise incidence of different parasitic skin diseases

Risk factors	No. of cases	%	OR	95% CI	P-value	
			0.000*			
Flea infestation (n=219)	Male	112	51.14	0.785	0.264-2.338	0.664
	Female	107	48.85	1	-	-
			0.000*			
Ear mite infestation (n=172)	Male	97	56.39	0.993	0.330-2.986	0.990
	Female	75	43.60	1	-	-
			0.001*			
Scabies (n=51)	Male	24	47.05	0.667	0.202-2.198	0.505
	Female	27	52.94	1	-	-
			0.327			
Lice (n=7)	Male	4	57.14	1.000	0.160-6.255	1.000
	Female	3	42.85	1	-	-
Ticks (n=14)	Male	8	57.14	1	-	-
	Female	6	42.85	1	-	-

*P<0.05, significant

with similar findings observed by Acar and yipel (2016) and Siagian and Siregar (2021). The incidence of feline scabies was 11% of parasitic skin diseases which are in close agreement with the Siagian and Siregar (2021) and Cahya *et al.* (2022). Lice infestation was found in 1.5% of cats with findings in close agreement with the Mendes-de-Almeida *et al.* (2011) and Azarm *et al.* (2023). In the present study the incidence of tick infestation was found to be 3% in cats, with similar findings observed by Kamaruddin *et al.* (2020). The variation in the incidence may be due to defferences in demographic and environmental factors that influences the development, survival and reproduction of ectoparasites.

Significantly (P<0.05) higher incidence of parasitic skin diseases and ear mite infestation was observed in Persian cats. Atlthough no significant difference was seen among the breeds, the local cats were at higher risk (OR>1) for flea and tick infestations. Persian cats showed a higher risk of scabies and lice infestation compared to local cats and mixed breed cats, with similar findings observed by Cahya *et al.* (2022). The difference in the findings may be due to the fact that Persian cats are more likely to be kept together when compare to the local cats and due to less efficient grooming behaviour of the long-haired cats (Salonen *et al.*, 2019).

Though significant difference was not seen between the age groups, cats of <1year and those 1-3 years old were at high risk (OR>1) for the parasitic skin diseases. A significantly higher incidence of flea and lice infestation was observed in cats of <1year age group compared to other age groups and similar findings were observed by Rahman *et al.* (2009) and Salant *et al.* (2014). While no significant difference was observed among various age groups, cats <1year age were at higher risk (75%) for the ear mites, feline scabies and tick infestation. The variation in the findings of the present study could be attributed to the underdeveloped immune system in kittens, contact with the infected mother while feeding (Pereira *et al.*, 2023) and less efficient grooming in young cats.

Though significant difference was not observed with respect to the gender wise incidence of different parasitic skin diseases, male cats were at high risk (OR>1) for various parasitic skin diseases compared to female cats. This difference may be due to the over representation of male cats in our study and social behaviour of the male cats, which increases their contact with other cats.

Among all months, August showed the greatest occurrence of parasitic skin conditions (19.65%). Higher incidence of Flea, ear mite, lice and tick infestation in cats were also noted during august month, with similar findings observed by Al-Hosary *et al.* (2022). The difference in findings may be due to variation in the climatic conditions affecting the life cycle of the ecto-parasites. Additionally, a higher incidence of feline scabies was observed in October followed by August and similar findings were reported by Cahya *et al.* (2022).

The clinical examination, cats affected by flea infestation showed clinical signs including presence of fleas with pruritus (84.47%), presence of fleas without pruritus (15.52%), miliary dermatitis (36.52%) and alopecia (22.83%) as the most commonly observed symptoms. Scratching with coffee ground waxy discharge (93.02%) followed by pruritus and dermatitis (58.13%) are the most commonly observed clinical manifestations of ear mite infestation. Similar findings are observed by Acar and Yipel (2016). Cats with scabies exhibited clinical signs such as scaled pruritus and scabs on the ear pinnae (100%)

followed by alopecia (94.11%). Similar findings were observed by Galdhar *et al.* (2020) and Ashwini and Chetan Kumar (2023). Cats affected with lice infestation had clinical signs such as presence of lice and lice eggs and pruritus in all cases (100%) and alopecia was observed in 71.42% cases. Cats with tick infestation had ticks present in all cases (100%), 71.42% had pruritus and 29.41% had alopecia.

CONCLUSION

The parasitic skin diseases are responsible for the most of the skin infections in cats. Clinic-epidemiological factors regarding the parasitic skin diseases in cats will be helpful for the successful management and prevention of the skin diseases. In our study we found that fleas are the most prevalent ecto-parasites affecting cats followed by ear mites, scabies, ticks and lice.

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