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Occurrence of allergic dermatitis in dogs with special reference to canine atopic dermatitis in Kerala#

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Abstract

Allergic dermatitis is an inflammatory skin disease manifested as itchy skin rashes, caused as a result of hypersensitivity reactions elicited in the body due to exposure to various allergens. Canine atopic dermatitis (CAD) is a widespread skin condition characterized by an inherited propensity to develop pruritic inflammatory skin disease linked to IgE antibodies, which usually target environmental allergens. The study was conducted on 245 cases of allergic dermatitis in dogs presented to the small animal dermatology unit during the period from 2019 to 2021. Out of the total 2,032 dermatological cases in dogs presented to the clinics from different parts of Kerala, 245 cases were diagnosed as various allergies over a period of three years, and out of which, 63 cases were recorded as canine atopic dermatitis (CAD). All the 63 cases diagnosed as CAD were utilized for age-wise, gender-wise and breed-wise occurrence of disease. The occurrence of allergic dermatitis in the present study was recorded as 13 per cent. The highest occurrence rate recorded was that of flea allergy followed by atopic dermatitis, contact allergy dermatitis and food allergy. In the current study, higher incidence (66.7 per cent) of atopic dermatitis was found in dogs below 3 years of age, followed by dogs older than 5 years and of the age group >3 to 5 years. Gender-wise occurrence of atopic dermatitis revealed a male predominance with a sex ratio of 1.74: 1 in the present study. Labrador breed of dogs were more prone to atopic dermatitis followed

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by Beagle, Pomeranian, Shih Tzu, Pug, Pit bull, German Shepherd dog, Dachshund, Rottweiler and Golden Retriever.

Key words: *Atopic dermatitis, occurrence, dogs, allergic dermatitis*

Canine dermatology is gaining more and more importance in small animal clinical practice nowadays. Pet parents are very much concerned about the beauty or attractiveness of their pets, which may add to the aesthetic or commercial value of their pets. Allergic dermatitis is an inflammatory skin disease manifested as itchy skin rashes, caused as a result of hypersensitivity reactions elicited in the body due to exposure to various allergens. Canine atopic dermatitis (CAD) is a widespread skin condition characterized by an inherited propensity to develop pruritic inflammatory skin disease linked to IgE antibodies, which usually target environmental allergens (Olivry *et al.*, 2007). In clinical practice, a lot of dermatological cases are being presented on a daily basis and a significant number of cases are difficult to diagnose with a poor therapeutic response. More often, recurrence was noticed even in cases with optimum therapeutic response too. The role of underlying allergy was suspected which could be identified and addressed primarily together with effective management of secondary complications. With this back ground, the present study was undertaken for estimating the occurrence of allergic dermatitis in dogs and for evaluating the risk factors associated with atopic dermatitis in dogs of Kerala.

Dogs presented to the University Veterinary Hospitals, Mannuthy and Kokkalai with the characteristic clinical history of severe pruritus formed the subjects for the present study. The occurrence of allergic dermatitis was studied over a period of three years from January 2019 to December 2021. Diagnosis of various allergic dermatitis except that of CAD was made using standard dermatological examination procedures as described by Miller *et al.* (2013). The diagnosis of CAD was made based on Favrot's criteria developed by Favrot *et al.* (2010), which was accepted and recommended by International Committee of Allergic Diseases in Animals for facilitating diagnosis of CAD in clinical research, together with exclusion of other differentials. Data regarding age wise, breed wise and gender wise occurrence of atopic dermatitis were recorded to evaluate the risk associated with those factors in the current increased incidence of atopic dermatitis in dogs.

Out of the total 2,032 dermatological cases of dogs presented to clinics from different parts of Kerala, 245 cases were diagnosed as various allergies over a period of three years. In the present study, the occurrence of allergic dermatitis was 13 per cent, whereas Sharma *et al.* (2015) reported 9.23 per cent in their study, among the various dermatological affections recorded. The higher number of allergic dermatitis cases recorded in this study was during the monsoon season, *ie*., during September and October as reported by Brar *et al.* (2017). The reason might be due to favourable environment, which facilitate more moisture accumulation in the skin of animals, resulting in enhanced precipitation of dermatological affections as suggested by Dimri and Sharma (2004). Among the allergic dermatitis cases, the highest occurrence rate recorded in our study was that of flea allergy dermatitis (46.1 per cent) followed by atopic dermatitis (25.7 per cent), contact allergy dermatitis (15.1 per cent) and food allergy (13.1 per cent) (Table 1). This was in contrary to the findings of Sharma *et al.* (2015), who recorded

Table 1. Occurrence of allergic dermatitis in dogs over three years

Types of Allergic dermatitis	Dogs with allergic dermatitis (n = 245)	
	Number	Per cent
Atopic dermatitis	63	25.7
Flea allergy	113	46.1
Contact allergy	37	15.1
Food allergy	32	13.1

Table 2. Age wise occurrence of atopic dermatitis in dogs

Age (years)	Atopic dogs (n=63)	
	Number	Per cent
≤ 1	23	36.5
>1 to 2	8	12.7
>2 to 3	11	17.5
>3 to 5	10	15.8
>5	11	17.5

highest occurrence rates for atopic dermatitis followed by flea allergy dermatitis and contact allergy dermatitis in a study investigating occurrence pattern of allergic dermatitis in dogs of Jammu, India. The occurrence rate of atopic dermatitis in the study period was 25.7 per cent of the allergic dermatitis cases recorded, which was in accordance with the findings of Brar *et al.* (2017), in a study conducted in Ludhiana, India. However, the occurrence rate of atopic dermatitis was 3.1 per cent among the total dermatological cases presented during the study period.

In the current study, a higher incidence of atopic dermatitis was found in dogs below 3 years of age (66.7 per cent), followed by >5 years (17.5 per cent) and age group >3 to 5 years (15.8 per cent). The present finding was in accordance with Griffin and De Boer (2001), Favrot *et al.* (2010) and Brar *et al.* (2017), who reported a higher occurrence of atopic dermatitis in dogs below 3 years of age followed by older dogs. Even though the onset of atopic dermatitis was more common between six months to three years, the disease was also observed in dogs below six months and above seven years of age (Saridomichelakis *et al.*, 1999). Among the dogs below 3 years of age, the highest number of cases were recorded in dogs below one year of age (36.5 per cent) followed by dogs of >2 to 3 years (17.5 per cent) and >1 to 2 years (12.7 per cent) age group (Table 2). The highest number of cases recorded in dogs below one year of age in this study was explained by the poor epithelial development together with lack of specific immunity acquired after having first allergen exposure (Hay,1992). The age of dogs with atopic dermatitis in this study, ranged from 6 months to 10 years with a mean age of 2.97 ± 0.32 and the median age of 2.5 years, whereas Sharma *et al.* (2015) reported that atopic dermatitis was common in dogs aged between 2 to 4 years.

Table 3. Gender wise occurrence of atopic dermatitis in dogs

Gender	**Atopic dogs (n=63)**	
	Number	**Per cent**
Male	40	63.5
Female	23	36.5

In the present study, the occurrence of atopic dermatitis in male and female dogs were 63.5 and 36.5 per cent, respectively (Table 3). Male predominance with a sex ratio of 1.74:1 was observed for atopic dermatitis in the present study. This observation was in accordance with the findings of Sharma *et al.* (2015), who reported CAD in 63.8 per cent of male dogs which is on par with 63.5 percent of affected male dogs in the present study. This was in contrary to the observations made by Shaw *et al.* (2004) and Brar *et al.* (2017), who reported a similar distribution of CAD in both genders. Favrot *et al.* (2010) noticed no gender predilection for atopic dermatitis in a fairly large population of atopic dogs, but observed some gender predisposition associated with certain breeds like Labrador retrievers, where more females were affected and *vice versa* for Boxer

Table 4. Breed wise occurrence of atopic dermatitis in dogs

Breeds	Atopic dogs (n=63)	
	Number	Per cent
Beagle	9	14.3
Dachshund	1	1.6
German Shepherd dog	1	1.6
Golden Retriever	1	1.6
Labrador	35	55.6
Pit bull	2	3.2
Pomeranian	6	9.5
Pug	3	4.8
Rottweiler	1	1.6
Shih Tzu	4	6.3

breed of dogs, in contrary to the observation of male predominance in Labrador and other breeds in the present study.

Out of 63 dogs diagnosed with atopic dermatitis, Labrador (55.6 per cent) dogs were more prone to atopic dermatitis, followed by Beagle (14.3 per cent), Pomeranian (9.5 per cent), Shih Tzu (6.3 per cent), Pug (4.8 per cent), Pit bull (3.2 per cent), and, 1.6 per cent each for German Shepherd, Dachshund, Rottweiler and Golden Retriever (Table 4). Higher incidence of atopic dermatitis in Labrador breeds followed by other breeds was observed by Brar *et al.* (2017), with the Labrador breeds representing less than fifty per cent in their study.

Schick and Fadok (1996) observed a strong predilection for atopic dermatitis with Labrador retrievers and Golden retriever breeds, in a study conducted in the United States, whereas Jaeger *et al.* (2010) reported that breed predilections for this disease may vary with geographic location. No breed predilection in dogs affected with atopic dermatitis was noticed by Shaw *et al*. (2004), even though genetic background contributed 50 per cent risk of developing atopic dermatitis in Labrador and Golden retrievers of the UK. More than fifty per cent of dogs with atopic dermatitis in this study belonged to Labrador breed and this might be due to genetic risk factor together with over presentation of these breeds to the hospital.

Summary

In the present study, 245 cases were diagnosed as various allergic dermatitis over a period of three years, and out of which, 63 cases were recorded as canine atopic dermatitis. Higher incidence of atopic dermatitis was recorded in dogs below 3 years of age, followed by dogs older than 5 years with male predominance with a sex ratio of 1.74: 1. Labrador breed of dogs were the most affected breed in the present followed by Beagle, Pomeranian, Shih Tzu and other breeds.

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Conflict of interest

The authors declare that they have no conflict of interest.

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