SECONDARY DETERMINANTS OF MICROFILARIOSIS IN DOGS – A RETROSPECTIVE STUDY

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Abstract

An attempt was made to analyse the effect of season, age sex and breed on the occurrence of microfilariosis in dogs scanning the records of Veterinary Hospital, Mannuthy for a 12 month period. Out of 8503 canine cases presented to the hospital, 145 were positive for microfilariae showing an overall prevalence of 1.70 per cent. The highest prevalence was recorded during winter months from December to February (2.07%). The prevalence rate was higher in males (1.90 %) than in females (1.50%) and common in adults (3.08%) than in puppies (0.03%). The difference in prevalence observed in different age groups was statistically significant (P<0.05). The infection was found more in Boxers (8.00 %) and less in Pugs (0.8%). The important symptoms recorded were pyrexia, conjunctivitis, dermatitis, anorexia, limb oedema, cough and vomiting.

Keywords: *Microfilaria, dog, season, sex, age*

Microfilariae are advanced embryos or infective larvae of filarial parasites. Important filarial parasites in dogs reported from Kerala are *Dirofilaria repens Dipetalonema reconditum, Brugia malayi and B.pahangi* (Radhika *et al.,* 2001; Ambily, 2009).

The occurrence of some diseases is strongly associated with host variables such as sex, breed or a disease may occur only in animals of certain age groups (Schwabe *et al.,*1997). The information on the prevalence of canine filariosis in relation to age, breed, sex and season may help clinicians to arrive at an early tentative diagnosis and to take appropriate managemental steps to prevent the occurrence of the same. The present study was undertaken to analyse the significance of some secondary determinants in the occurrence of microfilariosis in dogs.

Materials and Methods

Records of Veterinary College Hospital, Mannuthy for a period of twelve months from June 2009 to May 2010 were screened for determining the prevalence rate of microfilariosis in dogs.

The details of canine cases that were positive for microfilariae by routine wet blood film examination were recorded using an epidemiological data form. The total number of canine cases presented to the hospital, monthly was also recorded. The total number of dogs of different age groups and breeds were estimated using the general trend in percentages obtained by studying monthly case sheets and prevalence was calculated. Different age groups were classified as puppies and young adult (<1year), adult (1 year to 6 years) and aged (>6 years). Data

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were analysed using chi-square test. Season wise prevalence study was also conducted.

Owing to its diversity in geographical features, the climatic condition in Kerala can be divided into four seasons - Summer (March, April and May) , South-West monsoon (June, July, August and September) and North-East monsoon (October and November) and Winter (December, January and February).

Results and Discussion

Out of 8503 canine cases presented to the hospital during the twelve month period, 145 were positive for microfilariae by routine wet blood film examination. The overall prevalence was 1.70 per cent. The prevalence was highest in January (2.47 %) followed by February (2.20%) and July (2.07%).

The prevalence of microfilariosis during different seasons, sex and age is depicted in Table 1. The highest prevalence was recorded in winter (2.07%) followed by North-East monsoon (1.93%), South-West monsoon (1.63%) and the least in summer (1.31%).

The prevalence rate in males was 1.90 % while in females it was 1.50%. The prevalence was highest in adults (3.08%) and the least in puppies. The difference in prevalence observed in different age groups was statistically significant. Breed wise prevalence of microfilariosis is depicted in Table 2. The prevalence was highest in Boxers (8.00 %) followed by Cocker Spaniel (4.00%), Dalmatian (4.00 %), Labrador (3.10%) and Great Dane (2.87%) and least in Pug (0.8%).

The important symptoms recorded were pyrexia, conjunctivitis, dermatitis, anorexia, limb edema, cough and vomiting.

The prevalence rate obtained in the present study (1.70) was less compared to Radhika (1997) who got 7.95%. The disparity may be due to the fact that the present study is a retrospective one, purely based on analysis of case records. The prevalence was highest in winter while Radhika *et al. (*2001) reported higher prevalence in summer. The prevalence was more in males compared to females which is in agreement with previous reports (Radhika *et al.,*2001; Ambily, 2009). The prevalence rate was highest in the age group of 1 to 6 years is similar to other reports (Anup *et al.,* 2006). Though the occurrence rate in the present study was highest in Labrador (33.10 %), the prevalence rate in this breed was only 3.10 %, which was less than Boxer (8%), Dalmatian (4%), and Cocker Spaniel (4%). Important clinical symptoms recorded were in accordance with previous report by Ambily (2009).

The number of circulating microfilariae of *D. immitis* in dogs increases in warm ambient temperatures. The rate of development of L1 larvae to L3 in mosquitoes can be as short as eight days at 30°C or as long as 28 days at 18°C. After a mosquito acquires the microfilaria L1, adequate exposure to warm temperature must occur during the relatively short life span (one month) of that mosquito. In animals, L3 larvae moult and develop to L5 approximately 100 days after infection. They develop to sexually mature adults and produce microfilariae in six to seven months after infection (Dillon, 2000). The temperature requirements vary with different species of filariae. *Dirofilaria repens* is the most common filarial parasite reported from Kerala. Temperature requirement of the species has not been studied. In Kerala, the average temperature during different seasons are as

Table 1: Season wise, sex wise and age wise prevalence of microfilariosis in dogs

	Season wise				Sex wise		Age wise		
	Summer	South west Monsoon	North east Monsoon	Winter	Male	Female	<1 year	1-6 year	>6year
No. of cases recorded	2517 March 862 April 760 May 895	2570 June 643 July 674 August 608 September 645	1244 October 486 November 758	2172 December 807 January 647 February 718	4252	4251	3573	3746	1184
No. of cases positive	33 March 12 April 12 May 9	43 June 7 July 14 August 11 September 11	24 October 9 November 15	45 December 13 January 16 February 16	81	64	1	115	29
Prevalence %	1.13 March 1.39 April 1.57 May 1.00	1.67 June 1.00 July 2.07 August 1.80 September 1.70	1.93 October 1.85 November 1.97	2.07 December 1.61 January 2.47 February 2.20	1.9	1.5	0.03	3.08	2.44
Chi-Square Value	4.46				3.84		1942**		

***Significant at 1 % level*

Table 2: Breed-wise prevalence of microfilariosis in dogs

Breed	No. of cases recorded	No. of cases reported	Prevalence rate (%)	Occurrence rate (%)	Chi-square value
GSD	1596	15	0.93	10.34	
Labrador	1546	48	3.10	33.10	
Non descript	1297	16	1.20	11.03	
Rottweiler	997	9	0.90	6.20	
Pomeranian	923	14	1.51	9.65	
Dachshund	673	14	2.08	9.65	
Pug	500	4	0.80	2.75	
Dobermann	199	4	2.00	2.75	16278.39**
Great Dane	174	5	2.87	3.44	
Cocker Spaniel	100	4	4.00	2.75	
Bull Mastiff	100	2	2.00	1.37	
Dalmatian	75	3	4.00	2.06	
Rajapalayalam	49	1	2.04	0.69	
Boxer	25	2	8.00	1.37	

***Significant at 1 % level*

follows: S-W Monsoon 30^0 C Max /19^0 C Min, N-E Monsoon 35^{0}C/19^{o}C, Winter 28^o C/18 ^{o}C and Summer 36^{o}C/32^{o}C. In temperate countries, ambient temperature of 30^o C will be attained only in summer months, but in Kerala even in winter months temperature will be around 30^o C. In the present study, maximum prevalence is reported in winter season which vary from the finding of Radhika *et al.,* 2001.

In the present study, puppies and young adults (> 1 year) had shown least prevalence rate. This may be due to the fact that it will take L3 larvae approximately 10 months to become adults and produce microfilariae.

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