

Original Research Article

Study on the Prevalence of Demodectic Mange in Dogs in and Around Patna

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ABSTRACT

The prevalence of demodectic mange age, sex, breeds, months and seasons wise of suspected dogs were observed and recorded to determine the prevalence of canine demodectic mange accordingly, from all 649 dermatitis affected dogs. In month wise observation out of 649 samples examined, 158 (24.43%) were found positive for demodectic mange infection. The age wise study on the prevalence of demodectic mange in dogs were 55.55 % (5/9), 14.31 % (73/510) and 61.53 % (80/130) in young, adult and older aged dogs, respectively. The sex wise study on the prevalence of demodectic mange in dogs revealed that the percentage of male and female dogs affected with demodectic mange were 17.14 % (77/449) and 40.5 % (81/200), respectively. A total of 11 breeds of dogs belonged to long haired, short haired and mixed breeds were examined during the period of study. The breed wise prevalence of demodectic mange revealed the distribution of demodectic range in long haired breeds as 15.18% in Spitz 13.92 % in Pomeranian, 12.02 % in German Shephard and 0.63 % in St. Bernard prevalence of demodectic mange in short haired breeds were recorded as 12.65 % in Pug, 27.21 % in Labrador, 5.06 % in Doberman, 3.16 % in Mongrel (Desi), 1.89 % in Dachshund and 1.89% in Rottweiler. The prevalence of demodectic mange in mixed cross breed dogs were also found as 6.32 %. The season wise study on the prevalence of demodectic mange in dogs were 25.42 % (60/236), 25.09 % (66/263) and 21.33 % (32/150) in summer, monsoon and winter season, respectively.

Keywords

Demodectic
mange, Age, sex,
Breed, Season

Introduction

Canine dermatological disorder is severe and complex to resolve because various etiological factors are involved in its occurrence. In small animals, dermatological

affection constitute majority of cases and it may range 12-75% as per complaints raised by dog owners. Occurs when large numbers of Demodex canis mites inhabit in hair

follicles and sebaceous glands. Exists in localized and generalized forms.

Canine demodicosis is a common parasitic infection, exists in two clinical forms, localised and generalized. Huge population of canines regularly appearing in clinics with various dermatological disorders. The common dermatological problems came in notice with pruritis, itching, alopecia, crusting, scaling, otitis, pustules, non-healing wounds, nodules, tumours and ulcerative disorders. Out of which many of them were found affected with demodectic mange infection. Very limited options of the treatments of the mites are available. Various cases has been detected which found resistant to conventional allopathic drugs. Relapses were also noticed with severe skin problem after successful allopathic drugs therapy of demodex canis.

Materials and Methods

A total of 649 dogs including male and female having dermatological problems presented at Teaching Veterinary Clinical Complex (TVCC), Bihar Veterinary College (BVC), Patna were undertaken for study during the period of June, 2016 to May, 2017.

Collection of skin scrapings

A total of 649 skin scrapings were examined from cases suffering with dermatological problems as per standard protocol. The deep skin scrapings were collected with a blunt scarpel properly sterilized in 70% alcohol or over the gas flame. A drop of liquid paraffin was placed on the centre of the glass slide. The edge of the scarpel was dipped in liquid paraffin prior to collection. A fold of the skin was pinched keeping the lesions between thumb and forefingers and the crust of the fold was scraped thoroughly with a

blade or blunt scalpel until the blood oozed out.

Examination of skin scraping for demodectic mange by sedimentation method

The collected skin scraping samples were transferred into a 15 ml glass centrifuge tube and 5 ml of 10% potassium hydroxide (KOH) solution was added. Then the material was heated gently until the debris dissolved properly. Thereafter, the material was centrifuged at 3000 revolutions per minutes for 5 minutes. The supernatant fluid was drained off with a pipette and 1-2 drops of the sediment were transferred on a thin glass slide using a pasture pipette. The coverslip was then applied on the slide and examined for detection of mites under microscope using low power lens.

Results and Discussion

Age wise prevalence of demodectic mange

The age wise (Table 1) study on the prevalence of demodectic mange in male and female dogs were 55.55 % (5/9), 14.31 % (73/510) and 61.53 % (80/130) in young, adult and older aged dogs, respectively.

Sex wise prevalence of demodectic mange

The sex wise (Table 1) study on the prevalence of demodectic mange in dogs revealed that the percentage of male and female dogs affected with demodectic mange were 17.14 % (77/449), 40.5 % (81/200), respectively.

Breed wise prevalence of demodectic mange

A total of 11 breeds (Table: 2) of dogs belonged to long haired, short haired and

mixed breeds were examined during the period of study. The breed wise prevalence of demodectic mange revealed the distribution of demodectic mange in long haired breeds as 15.18% in Spitz, 13.92 % in Pomeranian, 12.02 % in German Shephard and 0.63 % in St. Bernard.

The prevalence of demodectic mange in short haired breeds were recorded as 12.65 % in Pug, 27.21 % in Labrador, 5.06 % in Doberman, 3.16 % in Mongrel (Desi), 1.89 % in Dachshund and 1.89% in Rottweiler. The prevalence of demodectic mange in mixed cross breed dogs were also found as 6.32 %.

Month wise prevalence of demodectic mange

The month wise (Table: 3) observation was recorded from Jan, 2016 to May, 2017. The microscopic examination of the skin scraping of the samples showed that out of 649 samples examined, 158 (24.43%) were found positive for demodectic mange infection.

Season wise prevalence of demodectic mange

The season wise (Table: 1) study on the prevalence of demodectic mange in male and female dogs were 25.42 % (60/236), 25.09 % (66/263) and 21.33 % (32/150) in summer, monsoon and winter season, respectively.

The microscopic examination of 649 skin scraping samples collected from the dermatological cases presented at TVCC, BVC, Patna showed the prevalence of 24.43% demodectic mange infection among dogs. This is in accordance with Chen *et al.*, (2012) studied the prevalence of demodex infection and found 13.31 % prevalence of

demodex mange among 24.57 % dermatosed dogs.

The overall percentage of *Demodex canis* infection among the dermatosed dogs were higher in older age followed by young and adult. Against the finding of present study a higher incidence of demodectic mange in young age group of dogs was reported by Reddy *et al.*, (1992); Kim and Kim, (1997); Nayak *et al.*, (1997) and Chatterjee, (2007). The present investigation reflects about the high susceptibility to the infection of older age groups (>8 years) as compared to young and adult because of high maintenance, production stress in female and low immunity against the infection due to older age.

The reason behind it might be due to the underdeveloped immune system in young ones and lesser immune status in older dogs as compared to the adult ones.

In this study, the prevalence of demodectic mange infection in female was found more than double as compared to the male. In agreement with this study other workers also reported the higher occurrence of demodectic mange infection in female than male dog (Chakrabarti and Pradhan, 1985; Yathiraj *et al.*, 1990; Chatterjee, 2007). In contrast to the findings of this study, Cai, *et al.*, (2014), who reported *Demodex canis* infection in males was twice as that in females. However, Kim and Kim, (1997) and Nayak *et al.*, (1997) postulated that the sex of dogs had no direct effect on demodectic mange. The increased prevalence of demodectic mange in female dogs as compared to the male dogs might be possible due to stress factors like puberty, estrus, pregnancy, parturition, lactation, and maintenance stress lead to less immunity to the infection (Nesbitt, 1983; Muller *et al.*, 1989).

Table.1 Season, age, sex wise prevalence of demodectic mange infection in male and female dogs through skin scraping examination

No. of sample examined and Prevalence of demodectic mange	SEASON			AGE			SEX		
	Summer (Mar-Jun)	Monsoon (Jul-Oct)	Winter (Nov-Feb)	Young (Up to 1yrs.)	Adult (1.1-8 Years)	Old (>8 Years)	Male	Female	
Total cases of skin infection	649	236	263	150	9	510	130	449	200
Total cases positive for demodectic mange	158	60	66	32	5	73	80	77	81
	(24.34)	(25.42)	(25.09)	(21.33)	(55.55)	(14.31)	(61.53)	(17.14)	(40.5)

*Value in parenthesis indicates percentage.

Table.2 Breed wise prevalence of demodectic mange infection in dogs (male and female)

Group of dogs	Breeds	Breed wise prevalence of demodectic mange (%)
Long Haired	Spitz	24 (15.18)
	Pomeranian	22 (13.92)
	German Shephard	19 (12.02)
	St. Bernard	1 (0.63)
	Total	66 (41.77)
Short Haired	Pug	20 (12.65)
	Labrador	43 (27.21)
	Doberman	8 (5.06)
	Mongrel (Desi)	5 (3.16)
	Total	82 (51.89)
Mixed	Cross Breed	10 (6.32)

*Value in parenthesis indicates percentage.

Table.3 Month wise recording of the cases with skin lesion presented at TVCC, BVC, Patna

Months	No. of Dogs with skin lesions	No. of bitch with skin lesions	Total dogs & bitches affected with skin lesions
Jan., 2017	35	14	49
Feb., 2017	29	21	50
Mar. 2017	50	26	76
Apr., 2017	17	11	28
May, 2017	41	20	61
June 2016	55	16	71
July, 2016	46	11	57
Aug., 2016	54	25	79
Sept. 2016	50	19	69
Oct., 2016	41	17	58
Nov., 2016	17	11	28
Dec., 2016	14	09	23
Total	449	200	649

Table.4 Prevalence of demodectic mange infection in dogs (male and female) through skin scraping examination

Samples	Total dogs (male & female) affected with skin infection	Prevalence of demodectic mange
Skin Scraping	649	158 (24.43%)

*Value in parenthesis indicates percentage.

In contrast to breeds the similar findings were also reported by other workers (Chakrabarti and Mishra, 1979; Folz *et al.*, 1984; Reddy *et al.*, 1992; Kim and Kim, 1997; Chaterjee, 2007). They concluded that the higher incidence of demodectic mange in short haired breeds of dogs might be possible due to well-developed sebaceous glands in these breeds. The present investigation proves that the short haired breeds are more susceptible to infection of demodectic mange as compared to the long haired breeds, because besides the Labradore, short haired Pug followed by Doberman, Mongrel (Desi), Dachshund and Rottweiler was also found prone to the infection of demodex due to corrugation of the skin especially in Pug. Kuznetsova *et al.*, (2012) also recorded that the pug was more predisposed to the infection of demodectic mange.

In present study, the highest prevalence of demodectic mange was found in summer season followed by monsoon and winter season and can be correlated with the high temperature and humidity which is a favourable factor for the development and prevalence of the infection. The lowest rate of the infection was noted in winter season.

In accordance with the finding of this study a high prevalence of demodectic mange in summer season was also reported by Kumar *et al.*, (2006) and Chaterjee, (2007). However, Neog *et al.*, (1995) reported the highest incidence of mange infections in dogs in post monsoon season (22%) with moderately high temperature and humidity.

Out of 649 dermatitis affected dogs 158 samples (24.34%) were found positive for demodectic mange infection. The prevalence of infections was found high in monsoon season followed by summer season as compared to the winter season. High susceptibility to the infection of demodex were observed in older age groups (>8 years) as compared to young and adult.

The prevalence of demodectic mange infection in female dogs is more as compared to the male. Highest prevalence was observed in Labrador breeds (27.21 %) followed by Spitz (15.18 %), Pomeranian (13.92 %), Pug (12.65 %) and German Shephard (12.02 %).

Highest prevalence was noted in short haired breed as compared to long haired breed.

The present investigation proves that the short haired breeds are more susceptible to infection of demodectic mange as compared to the long haired breeds, besides the Labradore, short haired Pug followed by Doberman, Mongrel (Desi), Dachshund and Rottweiler was also found prone to the infection of demodex due to corrugation of the skin especially in Pug.

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