Prevalence of ectoparasites in dogs of Shimoga, Karnataka

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Abstract A study was carried out to ascertain the status of ecto-parasites infesting dogs of Shimoga region. A total of 120 dogs with the history of skin problems presented to the local hospitals and local pet clinics of Shimoga region were screened for different ecto-parasites. The ticks, fleas and lice were collected, processed and identified. The skin scrapings were also collected from the affected dogs and processed for identification of mites. Out of 120 dogs examined, 59 (49.1 %) had harboured ecto-parasites. Among 59 infested pet dogs, 22 (37.28 %) positive for Fleas, 18 (30.5 %) for ticks, 09 (15.2 %) for Lice, 07 (11.8 %) for *Sarcoptic* mange and 03 (5.0 %) were for *Demodectic* mange conditions. The two species of fleas were identified as *Ctenocephalides canis* 13 (59 %) and *Ctenocephalides felis* 9 (41 %). The ticks and lice species were identified as *Rhipicephalus sanguineus* and *Trichodectes canis* respectively. The mite species infecting dogs were identified as *Sarcoptes scabiei* and *Demodex canis* based on the morphological character. The Prevalence of ectoparasites was more in stray and adults dogs compared to pet dogs and puppies respectively.

Keywords Prevalence · Ecto-parasites · Dogs · Shimoga

Introduction

Dogs are the most successful pet animals adapted to human habitation worldwide. They have contributed to physical, social and emotional well-being of their owners, particularly children where they are associated with a higher level of self-esteem and have been used for hunting, as guards, draught animals and as companion animals. However, in spite of their beneficial effects, dogs remain major threat to public health, as most of them harbour a bewildering number of infective stages of parasites transmissible to man and other domestic animals like cutaneous and visceral larva migrans, mange, hydatidosis and tungiasis etc.

Ectoparasites are common and important cause of several diseases and skin diseases in dogs and cats. Ectoparasites cause life-threatening anemia and occasionally hypersensitivity disorders in young and debilitated animals (Scott et al. 2001; Soulsby 1982). Some ectoparasites of pet animals, notably fleas, can infest humans and may lead to the development of dermatitis and transmit vector-borne diseases (Scott et al. 2001).

In urban and suburban areas, people traditionally raise dogs as pets. Health check-ups protect pets from infestation by ectoparasites. Thus, knowledge of types of species, density and prevalence of ectoparasites is needed to effectively control them (Scott et al. 2001; Nuchjangreed and Somprasong 2007). Scarce information is available on the ectoparasites of dogs in Shimoga region of Karnataka. So the present work was undertaken to ascertain the actual status of ecto-parasites infesting companion dogs of Shimoga city, Karnataka.

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Table 1 Prevalence of ectoparasites in dogs of Shimoga, Karnataka

Ectoparasites species	Stray dogs				Pet dogs				Total positive	% incidence
	<1 year	>1 year	Total	Species wise % positive	<1 year	>1 year	Total	Species wise % positive		
Fleas	03	06	09	30.0	04	09	13	14.4	22	37.2
Ticks	02	05	07	23.3	03	08	11	12.2	18	30.5
Lice	02	03	05	16.6	–	04	04	4.4	09	15.2
Sarcoptes scabies	–	02	02	6.6	01	04	05	5.5	07	11.8
Demodocosis	–	01	01	3.3	–	02	02	2.2	03	5.0
Total positive	07	17	24	80.0	08	27	35	38.8	59	49.1
Total dogs examined	09	21	30		25	65	90		120	
Age wise % positive	77.7	80.9	80.0		32.0	41.5	38.8		49.1	

Materials and methods

The study was carried out for a period of 1 year from August 2012 to July 2013. The stray and pet dogs brought to the Government Veterinary hospitals; Local Veterinary Clinics and Veterinary Poly clinics in Shimoga city were included in the study. A total of 120 dogs (30 stray and 90 pet dogs) belonging to either sex and two different age groups (below 1 year age and above 1 year age) were examined.

The dogs were properly restrained and thoroughly examined the whole body for ticks, fleas and lice and the same were collected. Deep skin scrapings were also collected from the dogs with dermatological lesions. The ectoparasites so collected were transferred into properly labeled plastic containers having perforated stoppers and brought to the laboratory and processed as per the standard procedures (Soulsby 1982; Dwight 2009). The statistical analysis was made with Chi square test to determine the significance.

Results and discussion

In the present study, a total of 120 dogs (30 stray dogs and 90 pet dogs) were examined, of which 59 (49.1 %) dogs were harboured different ecto-parasites. Almost similar findings were made by Adamu et al. (2012) who reported 47.0 % canine ectoparasitism in slaughtered dogs in Maiduguri, Nigeria and Raote et al., (2007) reported 41.6 % from Parbhani district of Maharashtra. On contrary Raut et al. (2006) reported relatively high incidence of 81.36 % ectoparasites in dogs from the eastern zone of Maharashtra state. The discrepancy between above findings can be attributed to the warm and humid climate prevailing in the eastern zone of Maharashtra state.

Fig. 1 *Ctenocephalides canis* (×40) **Fig. 2** *Ctenocephalides felis* (×40)

Out of 30 stray dogs examined, 24 (80 %) dogs were found positive for different arthropods (Table 1). The prevalence of ectoparasites was more in stray dogs compared to pet dogs. The reason may be due to social practice of keeping pet dogs under better management in comparison to stray dogs which have free wandering behavior and close contact with other street dogs.

In the present study, out of different ectoparasites, among 59 infected dogs, 22 (37.28 %) dogs were infected with fleas (Figs. 1, 2), 09 (15.2 %) were infected with lice

Fig. 3 *Trichodectes canis* (×40)

Fig. 5 *Sarcoptes scabiei* var. *canis* (×40)

Fig. 4 *Rhipicephalus sanguineus* (×40)

Fig. 6 *Demodex canis* (×40)

(Fig. 3), 18 (30.5 %) dogs infected with ticks (Fig. 4), 07 (11.8 %) were found positive for Sarcoptic mites (Fig. 5) and 03 (5.0 %) were positive for Demodectic mites (Fig. 6) infection (Table 1). On contrary higher incidence of ectoparasitism of dogs viz., ticks (36.4 %) followed by fleas (29.4 %), mites (25.9 %), and lice (8.4 %) was reported by Jamshidi et al. (2012) in a survey of ectoparasite infestation in dogs. In contrast Raut et al. (2006) reported an overall low incidence of ectoparasitism of dogs viz., tick (21.5 %), fleas (4.74 %), lice (3.8 %), Sarcoptic mites (3.75 %) and Demodectic mites (2.76 %) in dogs. This high incidence may be attributed due to presence of ectoparasites on dogs throughout the year and they were more prevalent in spring.

On contrary, Harkirat et al. (2011) reported very high incidence of *Demodex canis* and *Sarcoptes scabiei* var. *canis* of 19.40 and 8.96 % respectively in dogs. The discrepancies in the above findings may be attributed to number of

samples included in the present study and environmental and climatic conditions prevailing in study area.

Likely, higher incidence (58.33 % in stray dogs and 29.20 % in pet dogs) of tick infestation was reported by Sahu et al. (2013). The variation in the rate of incidence between stray and pet dogs recorded in this study might be due to the better living environment of pet dogs and regular application of acaricidal agents by the conscious pet owners.

On the basis of age group, among 30 stray dogs, 7 young ones (77.7 %), and 17 adults (80.9 %) were infested with ectoparasites. Similarly among 90 pet dogs, 8 young ones (32.0 %) and 27 adults (41.5 %) were infested with different arthropod parasites (Table 1). The higher incidence of ectoparasitism was recorded in stray and adult dogs when compared to pet dogs and young puppies respectively. The reason may be due to the protection by innate immunity in young puppies <1 year of age and in adult dogs the better living environment of pet dogs compared to street dogs.

Conclusion

It is concluded that, an overall prevalence of 49.1 % ectoparasitism was recorded in dogs of Shimoga. The prevalence is high (80.0 %) in stray dogs, whereas low (38.8 %) in pet dogs. Comparison based on age groups revealed adult dogs being more prone for ectoparasitic infection than young ones. High prevalence of ectoparasites is an indicative of existence of many tapeworms' infections and Sarcoptic and Demodectic mites will contribute for many skin problems in the community, which is alarming for zoonotic importance.

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