A survey of ectoparasite infestation in dogs in Tehran, Iran

Um levantamento da infestação de ectoparasitos em cães em Teerã, Irã

Shahram Jamshidi*; Nadi Maazi; Shahrokh Ranjbar-Bahadori; Mahdiyeh Rezaei; Pedram Morakabsaz; Morteza Hosseininejad

1Department of Clinical Sciences, School of Veterinary Medicine, University of Tehran, Tehran, Iran
2Department of Parasitology, School of Veterinary Medicine, Islamic Azad University, Garmsar branch, Garmsar, Iran
3School of Veterinary Medicine, Islamic Azad University, Garmsar Branch, Garmsar, Iran
4Department of Clinical Sciences, School of Veterinary Medicine, University of Shahrekord, Shahrekord, Iran

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Abstract

This survey was conducted to identify and estimate the frequencies of ectoparasites of dogs in Tehran, Iran. A total of 143 dogs attended at the Small Animal Hospital of the Veterinary School, the University of Tehran, were examined for the presence of ectoparasites and dermatological lesions. Ectoparasite specimens and blood samples were sent to parasitology and hematology laboratories, respectively. Ticks were the most frequent ectoparasite (36.4%, 52/143), followed by fleas (29.4%, 42/143), mites (25.9%, 37/143), and lice (8.4%, 12/143). Mixed infestations with two or more ectoparasites were detected in eight dogs. *Rhipicephalus bursa* was the most frequent ectoparasite in spring and summer. Ectoparasitic infestations were recorded mainly in large breeds and juvenile animals. Eosinophilia was more observed in dogs infested with *Sarcoptes scabiei*. The most common clinical sign, skin pruritus, was associated with mite and lice infestations. These results indicate that the tick *R. bursa* was the most prominent species of ectoparasite found in the evaluated group, followed by *Ctenocephalides canis* and *S. scabiei var canis*.

Keywords: Ectoparasites, *Rhipicephalus bursa*, dogs, *Ctenocephalides canis*, *Sarcoptes scabiei*, Iran.

Resumo

Esta pesquisa foi realizada para identificar e estimar a frequência de ectoparasitas de cães em Teerã, Irã. Um total de 143 cães, atendidos no Hospital de Pequenos Animais da Faculdade de Veterinária da Universidade de Teerã, foram examinados para a pesquisa de ectoparasitas e lesões cutâneas. Espécimes de ectoparasitas e amostras de sangue coletadas foram enviadas para exame em laboratório de parasitologia e hematólogos, respectivamente. Os carrapatos foram os ectoparasitas mais frequentemente encontrados (36.4%, 52/143), seguidos por pulgas (29.4%, 42/143), sarnas (25.9%, 37/143) e piolhos (8.4%, 12/143). Infestações mistas com dois ou mais ectoparasitas foram observadas em oito cães. *Rhipicephalus bursa* foi o ectoparasito mais frequente na primavera e verão. Infestações de ectoparasitas foram registradas principalmente em raças maiores e animais jovens. Eosinofilia foi mais observado em cães infestados com *Sarcoptes scabiei*. O sinal clínico mais comum, prurido na pele, esteve associado às infestações por ácaros e piolhos. Estes resultados indicam que o carrapato *R. bursa* foi o ectoparasito mais comum no grupo avaliado, seguido por *Ctenocephalides canis* e *S. scabiei var canis*.


Introduction

Ectoparasites live on, feed on and inhabit the external body surfaces of vertebrates, including dogs (WALL; SHEARER, 2001). They have considerable pathogenicity and may even cause death, according to parasitism intensity, nutritional status and the host’s immunological condition (SCOTT et al., 2001). They can also act as vectors for a wide variety of infectious agents such as: *Babesia* spp., *Ehrlichia* spp., *Anaplasma* spp., *Rickettsia* spp., *Borrelia* spp. and *Yersinia pestis*, and/or as intermediate hosts of filarids and cestodes, which cause serious diseases in dogs and people in contact with them (LITTLE, 2009). In addition, canine sarcoptic mange and fleas can directly cause pruritic skin lesions in humans (HEWITT et al., 1971). It has been reported that various zoonotic vector-borne diseases are endemic in different parts of Iran, such as plague, murine typhus, endemic typhus fever, cutaneous and visceral leishmaniasis, tick-borne relapsing fever and Lyme disease (FAULDE, 2010).

*Corresponding author: Shahram Jamshidi
School of Veterinary Medicine, University of Tehran, Qareeb Street, Azadi Av, P.O. Box: 14155-6453, Tehran, Iran
e-mail: shjamshidi@ut.ac.ir*
Identifying ectoparasites and understanding their distribution are fundamental for designing control programs and strategies. Despite the significant dog population in Tehran, information regarding ectoparasites on domestic dogs is still lacking (SHOORJEEH et al., 2008; BAHRAMI; DELPISHEH, 2010; TAVASSOLI et al., 2010). This study was carried out to identify and estimate the frequencies of ectoparasites occurring on dogs in Tehran.

Materials and Methods

Tehran lies at 35° 68' N and 51° 35' E and is at an altitude of 1191 meters above sea level. Its climate is largely defined by its geographical location, with the Alborz Mountains towering to its north and the central desert to the south. The city has a semi-arid, continental climate.

One hundred and forty-three dogs referred to the Small Animal Hospital of the Veterinary School, the University of Tehran, a reference center in Iran, were examined for the presence of ectoparasites in different seasons of the year (from September 2006 to September 2007). Information about age, sex, body weight, living environment, clinical signs and season were recorded. All the dogs were classified in one of two groups, juvenile (≤6 months) or adult (>6 months), and in one of two categories, small breeds (≤10 kg) or large breeds (>10 kg). They also were divided into outdoor and indoor, based on their access to the outdoor environment.

Ticks, fleas and lice were collected respectively by using forceps, combing or brushing. From dogs with dermatological lesions, four samples of deep skin scrapings were collected from the head, pinnae, thoracic-abdominal areas, and elbows or paws. The ectoparasite species were identified in accordance with the keys provided by Wall and Shearer (2001). After blood sample collection (in EDTA-coated tubes) from all the dogs by means of cephalic venipuncture, a complete blood cell count (CBC) was performed. A chi-square test was used to determine any significant associations between age, sex, body weight, season, hair shedding, pruritus and ectoparasite species (p ≤ 0.05). Furthermore, the Kolmogorov-Smirnov and independent t tests were applied to analyze the hematological parameters.

Results

Among the 143 dogs examined, 52 (36.4%) were found to be infested with ticks (Rhipicephalus bursa and Rhipicephalus sanguineus), while fleas (Ctenocephalides canis and Pulex irritans), mites (Sarcoptes scabiei var. canis, Otodectes cynotis and Demodex canis) and lice (Trichodectes canis and Linognathus setosus) were found on 42 (29.4%), 37 (25.9%), and 12 (8.4%) of the dogs, respectively. The most common ectoparasite species was the tick R. bursa, whereas D. canis was the parasite least frequently detected. Mixed infestations with two or more ectoparasites were detected on eight dogs (5.6%). In the spring and summer, ticks (45.6% and 51.7%), especially R. bursa (38.6% and 44.8%), were the most prevalent ectoparasitic species. During the fall, fleas were the most frequent parasites (55.6%), whereas mites (38.1%), especially S. scabiei var. canis (33.3%), prevailed in winter (Table 1). Ectoparasitic infestations were recorded on 82 male dogs (57.3%) and 61 female dogs (42.7%). Rhipicephalus bursa was the most abundant infesting species both on males (32.5%) and on females (24.6%). The least abundant ectoparasitic species found in this study were L. setosus on males (1.2%) and D. canis on females (1.6%).

Mites and ticks were the most frequently collected ectoparasites in 90 infested juvenile dogs (31.1%) and 53 infested adult dogs (47.2%), respectively. Flea and tick infestations were more common among outdoor animals (40.5%) than among indoor dogs (25.2%). Mite infestation was more frequent among indoor dogs. Large dog breeds were more frequently affected by all ectoparasites (ticks, fleas, mites and lice) than small breeds (67.1%, 96/143).

The most common clinical sign among the animals examined was pruritus (55.9%), followed by alopecia (30.8%). Pruritus was observed more among animals infested by mites (43.8%) and fleas (26.3%). Thirty infested dogs (20.9%) had eosinophilia and almost half of these were mite-infested. Low hematocrit levels were detected in forty infested dogs (27.9%).

Discussion

In the present study, nine distinct species of ectoparasites were collected from dogs in Tehran, Iran (Table 1). The most common ones were ticks (R. bursa), fleas (C. canis) and mites (S. scabiei var. canis). These results are in agreement with those of González et al. (2004) in Argentina, Nithikathkul et al. (2005) in Thailand, Aldemir (2007) in Turkey and Ghosh et al. (2007) in Bangladesh, India and Pakistan.

Ctenocephalides canis was reported as the most prevalent flea species on dogs in countries such as Ireland (WALL et al., 1997), New Zealand (GUZMAN, 1984), Thailand (NUCHJANGREED;
The authors declare that they have no conflicts of interest.

References


