FLEA INFECTION OF DOGS AND CATS IN SERBIA

I. PAVLOVIĆ1, DRAGANA PETKOVIĆ2, D. ROGOZARSKI3, DRAGICA STOJANOVIC4, IVANKA HADŽIĆ5, V. TERZIĆ6, SLAVONKA STOKIĆ-NIKOLIĆ3, M. RAJKOVIĆ7, GORDANA ANĐELIĆ-BUZADŽIĆ8

1Scientific Veterinary Institute of Serbia, Belgrade, V.Toze 14, Serbia,
2Veterinary Ambulance “Petwellness”, New Belgrade
3Veterinary Institute Pozarevac, 4Scientific Veterinary Institute Novi Sad,
5PKB Corporation, Husbandry Center, 6Sekretariat for Utilities and Housing Services, City of Belgrade, 7Veterinary Institute “Kraljevo”,
8High Specialist Agricultural School Šabac

Summary

Flea infestation is the most common ectoparasitic condition of dogs and cats with worldwide distribution. From an ongoing country-wide study on the spectrum, the epidemiology and the population dynamics of flea infestations in dogs and cats, important preliminary results from the areas of Belgrade, Novi Sad, Pozarevac, Kraljevo and Sabac are presented. Three flea species were found parasitizing dogs and cats. Ctenocephalides felis felis was the most abundant (79.21% of fleas identified), followed by Ctenocephalides canis (19.29.%) and Pulex irritans (1.50%).

Key words: fleas, cats, dogs, Serbia

Fleas are small, agile, usually dark colored, wingless insects with tube-like mouth-parts adapted to feeding on the blood of their hosts. Flea infestation is the most common ectoparasitic condition of dogs and cats with worldwide distribution (7). This wide distribution and the fact that fleas are major nuisance pests a matter of public health and the source of flea allergic dermatitis (FAD), one of the most common causes for the presentation of dogs to the veterinarian, make control definitely necessary (4,7). Prevalence of fleas of cats and dogs are examined worldwide. Concentrating on pets, particularly on cats and dogs, only a restricted number of flea species occur in large amounts with any regularity to be of importance as nuisance pests. Most abundant are Ctenocephalides felis felis, the cat flea, Ctenocephalides canis, the dog flea, Pulex irritans, the human flea, and Echidnophaga gallinacea as well as Ceratophyllus gallinae, fleas found on poultry (1, 2, 5, 6, 11, 12).

In order to gain current information on flea species (Siphonaptera: Pulicidae) infesting dogs and cats in Serbia area along with data on the factors that affect the presence, distribution and seasonality of infestation. Fleas were collected from dogs and cats presenting to private veterinary practices and Institute in Belgrade, Novi Sad, Pozarevac, Kraljevo and Sabac during 2009 and 2010.

Material and methods
A total of 1342 dogs and 1378 cats from 22 different veterinary practices or clinics in Belgrade, Novi Sad, Pozarevac, Kraljevo and Sabac areas of Serbia were systematically examined between January and December 2009 and 2010. All dogs and cats appearing for a clinical veterinary consultation on two regular working days per month, per practice, were clinically examined. Dogs and cats were examined irrespective of any kind of prior therapeutic or prophylactic insecticidal treatment. The fleas were preserved in 95% ethanol and identified using morphological criteria.

Results and discussions

Three flea species were found parasitizing dogs and cats. *Ctenocephalides felis felis* was the most abundant (79.21 % of fleas identified), followed by *Ctenocephalides canis* (19.29%) and *Pulex irritans* (1.50 %). *Ct. felis* was more abundant on dogs living in houses than in apartments, but the reverse was found for *P. irritans*. Overall flea abundance and *Ct. canis* abundance were highest in rural areas, whereas the presence of other pets sharing the abode was associated with higher overall flea abundance and *Ct. felis felis* abundance. Only *P. irritans* abundance was positively related to the activity of dogs. *Ct. canis* and *P. irritans* abundances were higher during the warm period of the year. Mean annual temperature was negatively correlated with overall, *Ct. canis* and *P. irritans* abundances, but positively related to *Ct. felis felis* abundance.

Our results are similar like results of examination by Beck et al. (1), Bond et al. (2) Kalvelage end Münster (6) and Rinaldi et al.(12) who occurred that *Ct. felis felis* was most abundance at dogs and cats. At same time examination performed by Farkas et al. (5) induced that *Ct. canis* was most abundant fleas species in dogs and cats in Hungary.

Cats were more often flea-infested than dogs. The highest infestation rates for dogs were detected between Jun and October, and for cats between July and September, the lowest infestation rates for dogs and cats were observed between November and May. Although the prevalence was generally higher during the summer months, no statistical differences were detectable when looking at the pattern between the four seasons, neither for dogs, nor for cats. Interestingly, the highest prevalence in dogs was detected in June and comparatively, in cats in August. The lowest detection rates in dogs were seen in March and in cats in January. The preliminary results did not indicate any tendency for a relationship between climatic conditions and flea infestation rates.

Results of our examination of season distribution of fleas were similar like results of examination performed in various parts of Europe. In Germany the highest infestation rates for dogs were detected between July and October, and for cats between July and September, the lowest infestation rates for dogs were
observed between November and May, and for cats between November and April (1). In southern Italy the prevalence was higher during the period between June and October (12). In Hungary, the highest prevalence of infestation on dogs occurred in August and the lowest in May. Prevalence of fleas on cats was the highest in July and lowest prevalence occurred in April (5). Similarly results are occurred in Mexico (3), and other parts of world (7).

In general, the abundance of adult cat fleas fluctuates with seasonal changes. The warm months of spring and summer give rise to the highest numbers, whereas few are found during the cold months of late fall and winter. Infestations of cat fleas consistently recur during the warm months of the year. No life stage of the cat flea can survive extended periods of subfreezing temperatures, and no reports of a diapausing stage exist. Furthermore cat flea populations are rarely detected on domestic hosts during winter months, but reinfestation of unknown origin are nevertheless common in spring and summer.

Fleas serve as the vectors of many diseases dangerous to humans. Apart from this, the veterinary aspect of flea parasitism is also very important, with fleabite allergies and hypersensitivity being serious problems for both humans and pets. This induced vital importance of fleas’ control.

Flea control can be challenging because of all the different places that must be treated. The goal of flea control is to eliminate existing adult fleas on pets; then take actions to eliminate larval fleas that develop off the animal. The first action is to treat the animal to kill adult fleas. The second part of managing fleas is to control the larval stage in the pet’s environment by disrupting the flea life cycle and preventing the recurrence of adult fleas. This step begins by laundering and steam cleaning/vacuuming: Wash pet bedding in hot water to kill flea larvae. If animals sleep with family members, all bedding must be washed. Steam clean or vacuum carpets thoroughly everywhere the infested pet is allowed to roam. After laundering and vacuuming, it will be necessary to treat with an insect growth regulator (IGR) where pets spend time. When pets spend time outdoors, it may be necessary to treat outdoor areas, especially shady locations. Effective products which effectively control flea larvae with little to no negative impact on human or pet health include insect growth regulators (IGRs) (8, 9, 10, 13, 14).

**Conclusion**

A survey was conducted in order to gain current information on flea species (Siphonaptera: Pulicidae) infesting dogs and cats living from the areas of Belgrade, Novi Sad, Pozarevac, Kraljevo and Sabac, along with data on the factors that affect the presence, distribution and seasonality of infestation. From obtain results we concluded:

1. The most abundant was *Ctenocephalides felis felis* (79.21 % of fleas identified), followed by *Ctenocephalides canis* (19.29%) and *Pulex irritans* (1.50 %).
2. Cats were more often flea-infested than dogs.
3. The highest infestation rates for dogs were detected between Jun and October, and for cats between July and September.

4. The lowest infestation rates for dogs and cats were observed between November and May.

References

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