First report of *Ctenocephalides felis felis* infestation of buffalo calves in Punjab, India

N. K. Singh · M. Haque · Jyoti · S. S. Rath ·
S. Ghosh

Published online: 13 May 2011
© Indian Society for Parasitology 2011

Abstract Two female buffalo calves of approximately 3 months of age from Hoshiarpur and Gurdaspur districts of Punjab state, India were found to be moderately infested with the cat flea *Ctenocephalides felis felis*. The calves were apparently healthy with no clinical signs and skin lesions. The calves were also found to be simultaneously infested with ixodid tick (*Rhipicephalus (Boophilus) microplus*). Infestations of buffalo calves by *C. felis felis* is reported for the first time.

Keywords *Ctenocephalides felis felis* · Buffalo calf · Punjab · India

Introduction

Ctenocephalides felis (Bouche, 1835) commonly called “cat’s flea” represents two recognized subspecies: *Ctenocephalides felis strongylus* (Jordan, 1925) observed in the African continent, and *Ctenocephalides felis felis* (Bouche, 1835) in the other regions (Menier and Beaucourmu 1999). Fleas are well known as vectors of pathogens such as typhus-like rickettsia, intermediate host for filarids and cestodes, and are cause of irritation and restlessness, flea allergy dermatitis, iron deficiency anaemia and even death in heavy infestation (Kaal et al. 2006). The cat flea is distributed worldwide and has been reported to parasitize

many species of wild and domestic animals viz. equines (Yeruham et al. 1996; Yeruham and Korean 2003); goats (McCrindle et al. 1999); cattle (Araujo et al. 1998; Kaal et al. 2006) and wild ruminants (Yeruham et al. 1999). In small ruminants the most frequently recognized flea species include *C. felis felis* (Yeruham et al. 1997); *C. canis* (Jain 1993) and *C. felis strongylus* (Fagbemi 1982). However, flea infestations had been less reported in cattle and *C. felis felis* has been reported from the USA, Japan and Brazil (Dryden et al. 1993; Otake et al. 1997; Araujo et al. 1998) and *C. felis strongylus* from Libya (Kaal et al. 2006). This flea can also infest other mammals, including humans (Rahbari et al. 2008) but reports on cat flea infestation in buffaloes are not available. The present report describes flea infestation in buffalo calves kept in small farms from two different districts of Punjab, India under a zero-grazing management system. The farms were also populated by stray cats and dogs.

Materials and methods

During the routine examination of animals for the assessment of type and magnitude of tick infestation in dairy farms of Punjab, India, two female buffalo calves of approximately 3 months of age from Hoshiarpur and Gurdaspur districts were found to be moderately infested with fleas. The farmers reported that it was the first time this problem had occurred on their farms. Fleas were infesting only calves and treatment with synthetic pyrethroids (deltamethrin) was unsuccessful. Fleas were collected from the infested calves after their proper restraining and were placed in labeled jars containing 70% ethanol. Animals were examined in detail and as many fleas as possible from infested animals were collected. Fleas collected were subsequently examined

N. K. Singh (✉) · M. Haque · Jyoti · S. S. Rath
Department of Veterinary Parasitology, College of Veterinary
Science, Guru Angad Dev Veterinary and Animal Sciences
University (GADVASU), Ludhiana 141004, Punjab, India
e-mail: nirbhayksingh@yahoo.co.in

S. Ghosh
Division of Parasitology, IVRI, Izatnagar, India

under light microscope and identified using the keys of Furman and Catts (1982).

Results and discussion

Physical examination of the two calves revealed a moderate infestation with fleas particularly on the chest, abdomen, axillae and inguinal region (Fig. 1). Adult buffaloes were not affected by fleas, but both adults and calves were infested by ticks (*Rhipicephalus (Boophilus) microplus*). Fleas collected from these calves had genal ctenidia consisting of seven to eight black teeth and pronotal ctenidia. The head was twice as long as wide and pointed. The first and second genal spines were of approximately equal length (Fig. 2). These morphological characteristics allowed the identification of the fleas as *Ctenocephalides felis felis*.

The owner reported that the farm was also inhabited by stray cats. Attempts to identify the source of infestation by inspection of the stray cats on the farm were unsuccessful as it was not possible to catch and examine them, although

evidence was strong that these flea-infested cats could have been the source of infestation. Yeruham et al. (1989) reported heavy infestations of calves in Israel with *C. felis felis*, which were accompanied by severe anaemia and mortality. Similarly, Dryden et al. (1993) and Otake et al. (1997) described a severe *C. felis felis* infestation in calves kept in a paddock with sawdust litter of United States and Japan, respectively. However, the current report of infestations of *C. felis felis* in buffaloes appears to be first of its kind. Interestingly, although these animals were regularly treated with deltamethrin, the presence of fleas on the animals gives an indication of development of resistance against pyrethroids. However, further detailed study is required to establish the facts.

Acknowledgments The authors are grateful to Director of Research, Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana for providing necessary help for conduction of the work.

References

- Araujo FR, Silver MP, Lopes AA, Ribeiro OC, Pires PP, Carvalho CME, Baluena CB, Villas AA, Ramos JKM (1998) Severe flea infestation of dairy calves in Brazil. *Vet Parasitol* 80:83–86
- Dryden MW, Broce AB, Moore WE (1993) Severe flea infestation of dairy calves. *J Am Vet Med Assoc* 203:1448–1452
- Fagbemi BO (1982) Effect of *Ctenocephalides felis strongylus* infestations on the performance of West African dwarf sheep and goats. *Vet Quart* 4:92–95
- Furman DP, Catts EP (1982) *Manual of medical entomology*, 4th edn. Cambridge University Press, Cambridge
- Jain PC (1993) *Ctenocephalides canis* infestation in sheep treated with ivermectin. *J Bombay Vet Coll* 4:67–68
- Kaal JF, Baker K, Torgerson PR (2006) Epidemiology of flea infestation of ruminants in Libya. *Vet Parasitol* 141:313–318
- McCrindle CME, Green ED, Bryson NR (1999) A primary animal health care approach to treatment and control of flea (*Ctenocephalides felis*) infestation in indigenous goats kept on communal grazing. *J S Afr Vet Assoc* 70:21–24
- Menier K, Beaucouru JC (1999) Fleas of the genus *Ctenocephalides* Stiles et Collins, 1930. *Rev Med Vet* 8–9:675–680
- Otake O, Maehara K, Imai S (1997) Massive infestation of fleas in dairy rearing calves. *J Japan Vet Med Assoc* 50:92–94
- Rahbari S, Nabian S, Nourolohi F, Arabkhazaeli F, Ebrahimzadeh E (2008) Flea infestation in farm animals and its health implication. *Iran J Parasitol* 3:43–47
- Yeruham I, Koren O (2003) Severe infestation of a she-ass with the cat flea *Ctenocephalides felis felis* (Bouche, 1835). *Vet Parasitol* 115:365–367
- Yeruham I, Rosen S, Hadani A (1989) Mortality in calves, lambs and kids caused by severe infestation with the cat flea *Ctenocephalides felis felis* (Bouche, 1835) in Israel. *Vet Parasitol* 30:351–356
- Yeruham I, Rosen S, Braverman Y (1996) *Ctenocephalides felis felis* infestation in horses. *Vet Parasitol* 62:341–343
- Yeruham I, Rosen S, Perl S (1997) An apparent flea-allergy dermatitis in kids and lambs. *J Vet Med Assoc* 44:391–397
- Yeruham I, Rosen S, Hadani A, Braverman Y (1999) Arthropod parasites of Nubian ibexes (*Capra ibex nubiana*) and gazelles (*Gazella gazella*) in Israel. *Vet Parasitol* 83:167–173

Fig. 1 Flea present on the body of buffalo calf

Fig. 2 Head of *Ctenocephalides felis felis*