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Dog flea (*Ctenocephalides canis*) infestation in horse

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Abstract

The horses were stable together with cattle and buffaloes. Among all animals only one horse diagnosed as being infested with dog flea *Ctenocephalides canis*, where as other animals and horse having no infestation of flea. Horse successfully treated with synthetic pyrethroid viz. cypermethrin by spraying.

Keywords: *Ctenocephalides canis canis*, horse, cypermethrin

Introduction

Flea transmits pathogens of numerous diseases that affect man and domestic animals. Fleas are well known as the intermediate host for *Dipylidium caninum*, and as a source of irritation and restless (Dryden and Rust, 1994)^[4], flea allergy dermatitis (Halliwell, 1984)^[8] and anaemia (Yeruham *et al.*, 1989)^[23]. Most flea infest their host temporarily then pass to another of the same kind, while others move from one to different host species. Flea infestations and associated hypersensitivity responses have normally been described as a major parasitic and clinical problem of companion animals (Rust and Dryden, 1997)^[21]. Consequently, they are not usually thought to be significant pest of large domestic animals. Nevertheless, there are reports of flea infestations on livestock including goats (Otesile, 1980; Opasina, 1983; Kilonzo and Khama, 1989; Kusiluka *et al.*, 1995; Yeruham *et al.*, 1997; McCrinde *et al.*, 1999)^[15, 16, 12, 13, 25, 14], sheep (Obasaju and Otesile, 1980; Dipelu and Ayoade, 1982; Yeruham *et al.*, 1997)^[15, 2, 25], cattle (Dryden *et al.*, 1993; Otake *et al.*, 1997; Araujo *et al.*, 1998; Kaal *et al.*, 2006; Rahbari *et al.*, 2008)^[3, 17, 1, 10, 19], Equines (Fletcher, 1962; Yeruham *et al.*, 1996)^[5, 24] and wild ruminants (Khayatnouri *et al.*, 2011)^[11]. This report describes dog flea (*Ctenocephalides canis*) infestation in horse.

2. Materials and Methods

The owner located at Ratanpur, Taluka- Palanpur, District- Banaskantha, Gujarat, India was called for treatment of pediculosis in horse on dated 22nd December, 2013. Owner having two horses (mare), five crossbred cattle and three buffaloes in one premises having no concrete floor. The observation was there is close association existed between horses, cattle and buffaloes. Among all animals only one horse having flea infestation. Infested mare was restrained and flea samples were collected using metal combs (12 teeth per cm). Collected fleas were placed in 70% ethanol; fleas were subsequently digested in 10% KOH for 24 hours; dehydrated in ascending grade of ethanol finally permanent fixed with DPX on glass slide and examined by stereoscopic microscope according to the keys (Furman and Catts, 1982; Segerman, 1995)^[6, 22].

The horse was treated with synthetic pyrethroid viz. Cypermethrin Cis 10% w/v at rate 2ml per liter of water by spray, same treatment given to shelter and horse appliances. Owner was advised repeat the treatment at weekly interval for three times.

Results and Discussion

Out of 10 animals only one horse was severely infested with dog fleas (Fig. 1), where as another horse (Fig. 2) including other animals having no flea infestation.

Since fleas cause considerable discomfort to their host. The clinical signs were restlessness and weakness, which accompanied with patchy alopecia and skin hardness (Fig. 3 & 4). The fore legs and neck up to wither area were most often bitten; characteristically more bites in a row (Fig. 3 & 4). A small red spot with a light colored center was appeared, where the mouth parts entered the skin; there were multi foci of swollen and erythematous skin with intense itching and self-excoriation (Fig.1).

The highest degree of flea infestation was seen in farms practicing an intensive management system (Kaal *et al.*, 2006)^[10]. Housing play an important role in the development of dog fleas since it favors eggs to develop in shelter containing organic matter with many hosts available on emergence. The condition allows manure to accumulate in animal houses results in increased warmth and humidity, which favors the proliferation of fleas (Dipelu and Ayoade, 1982; Obasaju and Otesile, 1980)^[2, 15] and abundance of organic matter, provides nutrition and protection for the developing larvae. The clinical signs have been seen in infested horse, emaciation, intense itching and self-excoriation (Fig. 1), these observation were similar to those reported by Kaal *et al.* (2006)^[10] and Garedegi Y (2011)^[7]. In a flea infested horse show sever irritation from bites; whereas others may not even realize fleas were present (Palmer *et al.*, 1998)^[18]. The result showed that only one horse was attractive to fleas and most often, their fore leg and neck region had been bitten, Characteristically, they suffered from irritation, itching and restlessness, probably due to immunological factors, skin odor or skin quality (Yeruham *et al.*, 1989)^[23].

Fleas were identified as *Ctenocephalides canis canis* (Dog flea) having anterior margin of head strongly rounded, first spine of genal ctenidium being only about half as long as the second spine and interval between posterior median apical long bristles of the dorsal

margin of hind tibia with 2 small notches each with a short stout bristle (Fig. 5, 6, 7 & 8) according to the keys (Furman and Catts, 1982; Segerman, 1995)^[6, 22]. Apparently, thermal and humidity conditions favoring the reproduction and survival of dog flea existed in shelter of animals, resulting in massive infestation of horse. Alternatively the fleas which were identified morphologically as dog fleas could actually have been several different genetic strains, each with an affinity to a different host(s). Our observation were similar to those reported by Fletcher, (1962)^[5]; Hopkins and Rothschild (1953)^[9]; Yeruham *et al.*, (1996)^[24]. The dog flea's diverse choice of hosts may lead to the conclusion that it has low host specificity and that different host species may serve as a potential source of dog flea infestation in horse, or that there were several genetically different strains.

Treatment with synthetic pyrethroid *viz.* cypermethrin Cis 10% w/v by spraying controlled dog flea infestation in horse and environment within week similar to those reported by Garedegi, 2011; Rahbari *et al.*, 2008; Rajapakse *et al.*, 2002^[7, 19, 20].

In conclusion, dog fleas are approximately a wide spread ectoparasites of farm animals including horse in India and successfully treated with synthetic pyrethroid *viz.* cypermethrin by spraying.



Fig 2: Horse having no flea infestation

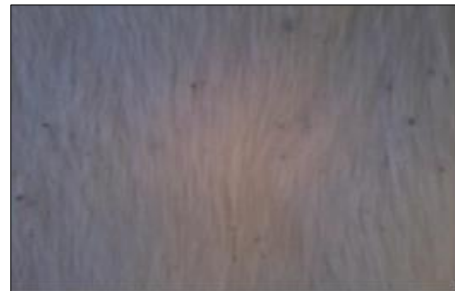


Fig 3: Multi foci of swollen and erythematous skin



Fig 4: More bites in a row



Fig 5: Interval between posterior median apical long bristles of the dorsal margin of hind tibia with 2 small notches each with a short stout bristle



Fig 1: Flea infestation in horse Showing itching and self-excoriation



Fig 6: Anterior margin of head strongly rounded, first spine of genal ctenidium being only about half as long as the second spine



Fig 7: Anterior margin of head strongly rounded, first spine of genal ctenidium being only about half as long as the second spine



Fig 8: Interval between posterior median apical long bristles of the dorsal margin of hind tibia with 2 small notches each with a short stout bristle

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References

1. Araujo FR, Silver MP, Lopes AA, Riberio OC, Pires PP, Carvalho CME, *et al.* Severe flea infestation of dairy calves in Brazil. *Vet Parasitol.* 1998;80:83-86.
2. Dipeolu OO, Ayoade GO. Various hosts of *Ctenocephalides felis* strongylas. *Vet. Q.* 1982;4:191-192.
3. Dryden MW, Broce AB, Moore WE. Severe flea infestation of dairy calves. *J Am. Vet. Med. Assoc.* 1993;203:1448-1452. PMID: 7186810
4. Dryden MW, Rust MK. The cat flea; biology, ecology and control. *Vet. Parasitol.* 1994;52:1-19.
5. Fletcher TB. In: S.K. Sen and T.B. Fletcher (Editors), *Veterinary Entomology and Acarology for India*. Indian Council of Agricultural Research, New Delhi. Chapter XII, Siphonaptera; c1962. p. 378-379.
6. Furman DP, Catts PE. *Manual of Medical Entomology*, 4th Edn., Cambridge University Press; c1982. p. 44-51. ISBN: 0521299209
7. Garedaghi Y. Prevalence of *Linguatula serrata* Nymph in Goat in Tabriz, North-West of Iran. *Vet. Research Forum.* 2011;2:129-133.
8. Halliweli REW. Factors in the development of flea bite allergy. *Vet. Med.* 1984;10:1273-1278.
9. Hopkins GHE, Rothschild M. *An illustrated catalogue of the Rothschild collection of fleas (Siphonaptera) in the British Museum (Natural History)*. British Museum (Natural History), London; c1953, I.

10. Kaal JF, Baker K, Torgerson PR. Epidemiology of flea infestation of ruminants in Libya. *Vet Parasit.* 2006;141:313-8.
11. Khayatnouri M, Garedaghi Y, Arbati AR, Khalili H. The effect of ivermectin pour-on administration against natural *Heterakis gallinarum* infestation and its prevalence in native poultry. *Am. J Anim. Vet. Sci.* 2011;6:55-58. DOI: 10.3844/ajavsp.55.58.
12. Kilonzo BS, Khama IRS. The effects of goat (*Capra hircus*) age and sex on flea infestation in Tanzania. *Bull An Health Prod Afr.* 1989;37:61-66. DOI: 10.1016/J.VETPAR.1909.11.023
13. Kusiluka LJM, Kambarage DM, Mathewman RW, Daborn CJ, Harrison LJS. Prevalence of ectoparasites of goats in Tanzania. *J Appl. Res.* 1995;7:69-74. DOI: 10.1080/09712119.1995.9706052
14. McCrindle CM, Green ED, Bryson NR. 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.* 1999;70:21-24. PMID: 10855818
15. Obasaju MF, Otesile EB. *Ctenocephalides canis* infestation of sheep and goats. *Trop An Health Prod.* 1980;12:116-118. DOI: 10.1007/BF02242620
16. Opasina BA. *Ctenocephalides canis* infestation of goats. *Trop A Health Prod.* 1983;15:106. DOI: 10.1007/BF02239805
17. Otake O, Maehara K, Imi S. Massive infestation of fleas in dairy rearing calves. *J jpn. Vet. Med. Assoc.* 1997;50:92-94. DOI: 2485679131
18. Palmer SR, Soulsby EJJ, Simpson DIH. *Zoonoses*, Oxford Medical Publication. 1998, 873-879. ISBN-13: 978-0192623805
19. Rahbari S, Nabian S, Nourolahi F. Flea infestation in farm animals and its health implication. *Iranian J Parasitol.* 2008;3:43-47. PMID: 284755614.
20. Rajapakse CN, Meola R, Readio J. Comparative evaluation of juvenoids for control of cat fleas (Siphonaptera: Pulicidae) in topsoil. *J Med. Entomol.* 2002;39:889-894. PMID: 778432475
21. Rust MK, Dryden MB. The biology, ecology, and management of the cat flea. *Annul Rev. Entomol.* 1997;42:451-473. DOI: 10.1146/annurev.ento.42.1.451
22. Segerman J. *Siphonaptera of Southern Africa Handbook for the Identification of Fleas*. Publication of the South African Institute for Medical Research, Johannesburg, South Africa. 1995, 112-115. DOI: 849751365
23. Yeruham I, Rosen S, Hadani A. Mortality in calves, lambs and kids caused by severe infestation with the cat flea *Ctenocephalides felis felis* (Bouche, 1835) in Israel. *Vet. Parasitol.* 1989;30:351-356.
24. Yeruham I, Rosen S, Braverman Y. *Ctenocephalides felis* flea infestation in horses. *Vet. Parasitol.* 1996;62:341-343. PMID: 9360467
25. Yeruham I, Rosen S, Perl S. An apparent flea-allergy dermatitis in kids and limbs. *J Vet Med Ser A.* 1997;44:391-397.