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Prevalence of ticks infesting livestock of Kashmir valley

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Abstract

In the present study, the prevalence of ticks infesting livestock of Kashmir valley was carried out from March to August 2016. A total of 479 animals (including 230 sheep, 112 equines, 70 goats, 61 cattle and 6 dogs) were screened out of which, 200 (41.75%) animals were found infested with ticks which included 121 sheep (52.61%), 23 equines (20.53%), 38 goats (54.28%), 15 cattle (24.59%) and 3 dogs (50.00%). The different genera of ticks encountered during this study were *Haemaphysalis*, *Rhipicephalus* and *Ornithodoros*. The sheep were found to be infested with *Haemaphysalis* spp. (73.68%) and *Ornithodoros* spp. (26.32%); goats with *Haemaphysalis* spp. (85.74%) and *Rhipicephalus* spp. (14.26%); cattle and equines with *Haemaphysalis* spp. only (100%) and dogs with *Haemaphysalis* spp. (88.88%) and *Rhipicephalus* spp. (11.12%).

Keywords: Kashmir. Livestock. Prevalence. Ticks

Introduction

The ticks are the important ectoparasites of livestock which apart from causing direct pathogenic effects like blood sucking, tick worry, tick toxicosis and tick paralysis also act as vectors of various bacterial, viral, rickettsial and protozoan diseases [1, 2, 3]. The tick and tick borne diseases are inflicting world-wide annual losses up to 700 million US Dollar [4, 5, 6]. Since the occurrence of these ticks is greatly influenced by varying climatological and ecological factors, therefore, the tick fauna of each and every region mapped out accurately forms a fundamental information on which further epidemiological studies of tick borne infections can be based upon [7, 8]. This necessity has been adequately recognized by parasitologists and extensive studies on tick fauna of different species of livestock in different agroclimatic zones of the world have been carried out. However, in the state of Jammu and Kashmir, very few systematic studies on tick fauna of different species of livestock have been carried out [9, 10, 11, 12]. These studies are mainly restricted to Jammu, Poonch, Kotli and Muzaffarabad districts and, therefore, do not reflect the tick fauna of entire state of Jammu and Kashmir. Since no such systematic study has been carried out in Kashmir valley in particular, therefore, the present study was undertaken to find out the various species of ticks infesting commonly reared species of livestock in Kashmir valley.

Materials and Methods

A survey on the prevalence of ticks on different species of livestock *viz*: sheep, goats, cattle, horses and dogs in different villages of Anantnag, Srinagar, Ganderbal, Budgam and Bandipora districts representing south, central and north Kashmir was carried out from March, 2016 to August, 2016. For the collection of ticks, all body parts of animals were thoroughly searched for presence of ticks and the specimens were collected carefully without damaging their mouth parts. They were fixed in mixture of 30% alcohol and ether before preparing their permanent mounts. For preparing the permanent mounts of ticks, they were first boiled in 10% KOH solution for about 10-20 minutes followed by washing in water and removing of internal contents carefully, dehydration in ascending grades of alcohol, clearing in the lactophenol and mounting in Canada Balsam or DPX mountant. The gross as well as the mounted specimens were examined under stereoscopic dissection and compound microscope and identified on the basis of keys and descriptions given by Walker *et al.* [13]

Results and Discussion

In the current study, a total of 479 animals including 230 sheep, 112 equines, 70 goats,

61 cattle and 6 dogs were randomly examined for tick infestation. Out of them 200 (41.75%) animals were found infested with ticks. Our findings are in correlation with Khajuria *et al.* [9] who found 42.18% prevalence of ticks infesting livestock of District Jammu. The different genera of ticks encountered during this study were *Haemaphysalis* [Fig.1] followed by *Rhipicephalus* [Fig. 2] and *Ornithodoros* [Fig.3].

In the present study, a total of 230 sheep were examined for tick prevalence, out of which 121 (52.61%) were found infested with ticks which can be correlated with observations of Sultana *et al.* [10] who found 54.66% prevalence of ticks in sheep of District Poonch. Our observations vary from Sayyad *et al.* [11] who found only 22.22% prevalence of ectoparasites (including ticks) infesting sheep of District Muzaffarabad in the month of July, 11.11% in the month of August and September and 0% in the month of October, November and December. The sheep were found to be infested with *Haemaphysalis* spp. (73.68%) and *Ornithodoros* spp. (26.32%) which differs from Sultana *et al.* [10] who found only *Haemaphysalis* spp. in sheep of District Poonch. A total of 112 equines were examined for tick prevalence, out of which 23 (20.53%) were found infested with ticks. The equines were found to be infested with *Haemaphysalis* spp. (100%). No study on prevalence of ticks in equines of Kashmir division has been conducted so far. A total of 70 goats were examined for tick prevalence, out of which 38 (54.28%) were found infested with ticks which can be correlated with 48.33% prevalence found by Sultana *et al.* [10] in goats of District Poonch. The goats were found to be infested with

Haemaphysalis spp. (85.74%) and *Rhipicephalus* spp. (14.26%) which differs from Sultana *et al.* [10] who found only *Haemaphysalis* spp. in goats of District Poonch. A total of 61 cattle were examined for tick prevalence, out of which 15 (24.59%) were found infested with ticks. which is less than that reported by Sultana *et al.* (55.45%) [10] in cattle of District Poonch and Khajuria *et al.* [9] (47.08%) in cattle of District Jammu. Our studies regarding prevalence of ticks in cattle of Kashmir division can be correlated with results of Sayyad *et al.* [11] in the month of September and October who found 37.5% and 31.25% prevalence of ectoparasites (including ticks) in cattle of District Muzaffarabad in these two months respectively. The cattle were found to be infested with *Haemaphysalis* spp. (100%) which is less than that reported by Sultana *et al.* [10] who found 17.8% prevalence of *Haemaphysalis* spp. in cattle of District Poonch. A total of 6 dogs were examined out of which 3 (50.00%) dogs were found to be infested with ticks of *Haemaphysalis* spp. (88.88%) and *Rhipicephalus* spp. (11.12%). No study has been reported in dogs of Kashmir division so far. Only two genera of ticks (*Haemaphysalis* spp. and *Rhipicephalus* spp.) were found prevalent on different animals (sheep, equines, goats, cattle and dogs). *Haemaphysalis* spp. was found to be more prevalent as compared to *Rhipicephalus* spp. which was found in very less number of cases. The reason may be attributed to the topographical and climatic conditions of the valley. Some additional ticks found by Sultana *et al.* [10] (*Hyalomma* spp. and *Otobius* spp.) and Khajuria *et al.* [9] (*Boophilus microplus*) were not found in our study.



Fig 1: *Haemaphysalis* (male)



Fig 1: *Haemaphysalis* (female)



Fig 2: *Rhipicephalus*



Fig 3: *Ornithodoros*

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