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A first Survey of Ectoparasite Ticks Inhabiting Traditionally Managed Livestock in Pattan Town of Kashmir Valley

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Abstract: **The current study was conducted in Pattan area of District Baramulla; ticks were collected randomly from different farms. A survey on the prevalence of ticks on different species of livestock viz; sheep, goat, and cow were carried out from April, 2021 to October, 2021. The identified species were *Rhipicephalus* spp., *Haemaphysalis* spp. Rhipicephalus *Decoloratus* and *Ornithodoros* spp. The most dominant species found during this study was *Haemaphysalis* spp. (45%) followed by *Rhipicephalus* spp. (35%), *Rhipicephalus Decoloratus* (33%) and *Ornithodoros* spp. (20%).**

***Keywords*— Pattan, Ticks, Livestock, Infestation, Diseases**

I. 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].

The tick- and tick-borne diseases are inflicting world-wide annual losses upto 700 million US Dollar [2]. 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.[3]. Ticks are obligate hematophagous ectoparasites that belong to class Arachnida [4]. Three main families, Ixodidae (hard ticks), Argasidae (soft ticks) and Nuttalleillidae [5]. have been still reported throughout the globe with more than 900 tick species [6].

However, in the state of Jammu and Kashmir, very few systematic studies on tick fauna of different species of livestock have been carried out [7]. These studies are mainly restricted to Jammu, Poonch, Kotli and Muzaffarabad districts, therefore don't reflect the tick fauna of entire state of Jammu and Kashmir. Since no such systematic study has been carried out in Pattan tehsil of Baramulla district of Kashmir. Therefore, the present study was undertaken to find out the species of ticks infesting commonly reared species of livestock of Pattan Kashmir.

II. MATERIALS AND METHODS

The current study was conducted in Pattan area of District Baramulla, ticks were collected randomly from different farms. A survey on the prevalence of ticks on different species of livestock viz; sheep, goat, and cow was carried out from April, 2021 to October, 2021. During the study period 150 specimens were collected from 150 animals (50 cows, 50 goats, and 50 sheep). For the collection of ticks, all body parts of animals were thoroughly searched for presence of ticks and the specimens were collected carefully. The method of tick collection and preservation follow these literatures [8]. Ticks were preserved in 70% Ethyl Alcohol and later on morphological identification to species level was done by using morphological keys.[9].

Figure 1. Map showing the study site Pattan.

III. RESULTS AND DISCUSSION

Table 1. Locations selected for sampling of Bumblebee species. (- indicates absence and + indicates presence.)

Tick species	Hosts			Total ticks	Prevalence (%)
	Cows	Sheep	Goat		
Haemaphysalis punctata	18	30	20	68	45
Rhipicephalus microplus	15	16	19	52	35
Ornithodoros spp.	5	18	7	30	20
Rhipicephalus Decoloratus	12	38	0	50	33

During this study, a total of 150 ticks were collected from examined animals and identified to species level. The different genera of ticks found during this study were Haemaphysalis, Rhipicephallus and Ornithodoros. The identified species were Rhipicephalus spp., Haemaphysalis spp. Rhipicephalus Decoloratus spp. and Ornithodoros spp. The most dominant species found during this study was Haemaphysalis spp. (45%)

followed by Rhipicephalus spp. (35%), Rhipicephalus Decoloratus (33%) and Ornithodoros spp. (20%). (Fig.1). The current study showed that Haemaphysalis spp. was the most common tick species. The hosts were sheep, cows and goats (Table 1). During the study, different infestation rates were recorded; infestation rates were 38/50 (76%), 28/50(56%) and 24/50 (16%) for sheep, goats and cows (Figure 2). In the present study, a total of 50 sheep were examined for tick prevalence, out of which 38 (76%) were found infested with ticks which can be correlated with observations of Sultana et al. (2015) who found 54% prevalence of ticks in sheep of District Poonch. Our observations vary from Sayyad et al. (2015) who found only 22.22% prevalence of ectoparasites (including ticks) infesting sheep of District Muzaffarabad. The sheep were found to be infested higher with Haemaphysalis spp. which differs from Sultana [9] who found only Haemaphysalis spp. in sheep of District Poonch.

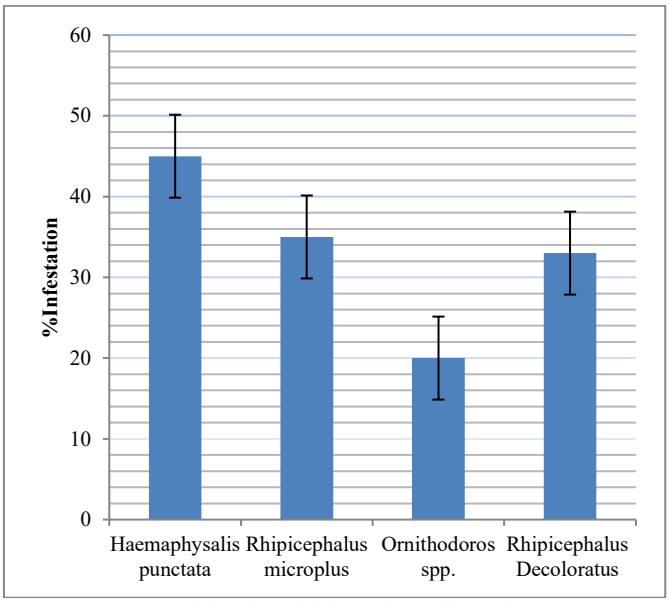

Figure 2. Percentage infestation of tick species on livestock.

Table 2. The preference site of tick infestation on domestic animals

Body site	sheep	Cow	Goat
Ear	√	×	×
Head	√	×	√
Tail	√	√	×
Abdomen	√	√	√
Thorax	×	×	√
Neck	√	√	√
Back	√	√	×
Hooves	×	×	×

It was observed that ticks were found on all examined sites of cows while no tick was seen in head of cows. Tail was found the most preferable site for tick infestation followed by thorax, ear, head and abdomen. The neck, back, hooves, testes and abdomen were recorded as the least favorite sites for tick infestation [10]. (Table 2). All the species of ticks identified were found on sheep (Table 2). The result showed that Haemaphysalis species was most dominant and reoccurring tick on all livestock. Male ticks of species Rhipicephalus simus were not found on goat and cow. However, all the three of tick species were found on sheep. Rhipicephalus Decoloratus tick species was found absent in goat and Ornithodoros species was found absent in cow. From the entire study it was recorded that the female tick species were more dominant as compared to male tick species infesting the livestock of the particular area.

Table 3. Prevalence of ticks on sheep in Pattan

Species of Ticks	Male%	Female%	Total (%)
Haemaphysalis	3(5.45)	52 (94.5)	55(69.62)
Rhipicephalus simus	5(71.42)	2(28.5)	7(8.86)
Ornithodoros	1(14.28)	6(85.71)	7(8.86)
Rhipicephalus decoloratus	3(30.00)	7(70.00)	10(12.65)
Total	12(15.18)	67(84.81)	79

Table 4. Prevalence of ticks on goat in Pattan.

Species of ticks	Male%	Female%	Total (%)
Haemaphysalis	2(5.88)	32(94.12)	34(68.00)
Rhipicephalus simus	0(0:00)	14(100)	14(28.00)
Ornithodoros	2(100)	0(0.00)	2(4.00)
Total	4(8.00)	46(92.00)	50

Table 5. Prevalence of ticks on cow in Pattan

Species of ticks	Male%	Female%	Total (%)
Haemaphysalis	2(2.08)	94(97.92)	96(93.21)
Rhipicephalus simus	0(0:00)	2(100)	2(1.94)
Rhipicephalus Decoloratus	4(80.00)	1(20.00)	5(4.85)
Total	6(5.83)	96(93.21)	103

IV. CONCLUSION

As blood feeding ectoparasites, ticks are vectors of various pathogens to animals and humans. There is a need to adopt some control measures against this creature throughout the world. Thefore, these findings will help to guide tick control programmes for the region, perhaps by notifying farmers of which species need to be targeted with some form of control mechanism. However more studies are required to validate the findings of this study and perform similar surveys in this and other regions of Kashmir where ticks and tick-borne diseases are decimating the agricultural industry and the livelihood of many residents.

REFERENCES

[1] Aftab J, Khan MS, Pervez K, Avais M, Khan JA. Prevalence and chemotherapy of ecto and endo parasites in Rangers horses at Lahore-Pakistan. Journal of Veterinary Sciences. 2005; 6(4): 327-334.

[2] Afzal M, Nagvi AN. 2004. Live stock resources of Pakistan: Present status and future trends. PARC. 2004; 9(2):3-4.

[3] Shahardar RA, Narsapur VS. 2003 Studies on host preferences and preferred feeding sites of ixodid ticks in bovines. Indian Veterinary Journal. 2003; 80:736-738.

[4] Wang, X. (2017) Investigation of ticks and tick-borne pathogens in deciduous forests of Eastern Central Alabama. Master thesis, 123 pp.

[5] Guglielmone, A.A., Robbins, R.G., Apanaskevich, D.A., Petney, T.N., Horak, I.G., Shao, R. &Barker, S.C. (2010) The Argasidae, Ixodidae and Nuttalliellidae (Acari: Ixodida) of the world: a list of valid species names. Zootaxa, 2528(6), 1-28.

[6] Mehlhorn, H. & Armstrong, P.M.(2010) Encyclopedic Reference of Parasitology. Berlin, Germany, Springer, 2010

[7] Tramboo SR, Shahardda RA, Allaie IM, Wani ZA. 2018. Prevalence of ticks infesting livestock of Kashmir valley.Journal of Entomology and Zoology Studies 2018; 6(6):877-879.

[8] Ramzan, M., Naeem-ullah, U., Saba, S., Iqbql, N. & Saeed, S. (2020a) Prevalence and identification of tick species (Ixodidae) on domestic animals in district Multan, Punjab Pakistan. International Journal of Acarology, 46(2), 83-87.

[9] Sultana N, Awan MS, Shamim A, Iqbal A, Ali U, Minhas RA, et al. 2015. Prevalence of Ticks infesting selected Domestic Livestock Population of Azad Jammu and Kashmir. Scholars Advances in Animal and Veterinary Research. 2015; 2(2):98-106.

[10] Jones KE, Patel NG, Levy MA, Storeygard A, Balk D, et al. Global trends in emerging infectious diseases. Nature. 2008; 45:990-993.