PREVALENCE OF TICKS INFESTING BUFFALOES IN AND AROUND JAMPUR DISTRICT RANJANPUR, PAKISTAN

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خلاصہ

پس منظر:

پاکستان کے ڈائری فارموں پر چیچڑوں کا حملہ بہت بڑا معاشی مسئلہ ہے۔ یہ چیچڑ گرم اور نیم گرم علاقوں میں رہنے والے پالتو جانوروں کا بہت بڑا اہم مسئلہ ہے۔ اور یہ ہمارے پالتو جانوروں کو بہت زیادہ نقصان پہنچاتے ہیں۔ یہ جانوروں کا خون چوستے ہیں جس کی وجہ سے ان کی کھال خراب ہو جاتی ہے۔ اور دوسرے بیماری پھیلانے والے بیکٹیریا اور وائرس ان پر حملہ کرنے کا سبب بنتے ہیں۔

طریقہ کار :

موجودہ تحقیق تحصیل جام پور و ضلع راجن پور کے مختلف پرائیویٹ فارمز پر موجودہ دو سو بھینسوں پر کی گئی ہے۔ مختلف عمر اور جنس کی بھینسوں سے اکٹھے کئے گئے چیچڑ 10% فارمالین کے محلول میں محفوظ کر کے ادارہ برائے نظریاتی و اطلاقی حیاتیات بہاؤالدین زکریا یونیورسٹی ملتان میں موجود طفلیات کی لیبارٹری میں لائے گئے۔ ان کو ایک ہفتہ پوٹاشیم ہائیڈرو آکسائیڈ کے محلول میں رکھا گیا۔ اس کے بعد ان کو الکوحل کے مختلف گریڈز کے ذریعے ان کی سلائیڈز بنائی گئیں اور ان کی مختلف انواع دیکھنے کیلئے مائیکروسکوپ میں مطالعہ کیا گیا۔

نتائج :

200 میں سے 89 بھینسوں میں چیچڑوں کی قسم/نوع ہایالوما پائی گئی۔ اس بیماری کی مجموعی شرح 44.5% پائی گئی۔ نر جانوروں میں شرح (55.17%) زیادہ پائی گئی۔ مادہ جانوروں میں یہ شرح 42.69% تھی۔ (1-5) سال تک کی عمر کے جانوروں میں 48.78% تھی اور (16-20) سال تک کی عمر کے جانوروں میں یہ شرح 23.52% تھی۔

اختتامیہ:

اس تحقیق سے یہ پتہ چلا کہ یہ چیچڑ ہمارے مادہ جانوروں کی نسبت نر جانوروں میں زیادہ پائے گئے اور اسی طرح بڑی عمر کے نسبت چھوٹی عمر کے جانوروں میں زیادہ دیکھے گئے ہیں۔ ہم پاکستان میں اپنے جانوروں کو ان چیچڑوں سے بچنے کیلئے کوئی اچھا لائحہ عمل تیار کر کے ان سے بچا سکتا ہے۔

Abstract

This study was carried out to examine the prevalence of ectoparasites infesting the buffaloes in South Punjab, Pakistan. A total of 200 buffaloes of both sex and age groups at private farms were examined in and around Jampur, district Rajanpur, Punjab, Pakistan. The collected ticks were preserved in 5% formalin solutions and slides were prepared through different alcohol grads. The mounted slides were identified. Out of 200 buffaloes only 89 were infested with *Hyalomma* spp. The overall prevalence of *Hyalomma* spp. was 44.5%. The *Hyalomma* spp. were more prevalent in males (55.17%) as compared to females (42.69%). The prevalence of *Hyalomma* spp. was the highest (48.78%) in age group of (1-5) years and the lowest (23.52%) in age group of (16-20) years.

Introduction

Domestic animals play an important role in the economy of the Pakistan. Domestic mammals contribute 53.2 % of the agriculture value and 11.4 % to total gross domestic product (Anonymous, 2014-2015). Water buffalo have important role in the public economy by producing milk, meat and by products like skins and hides. About 68 percent of milk produce in Pakistan is contributed by buffaloes, 27 percent by cattle and 5 percent by sheep/goats/camels. Their contribution in the beef is about 32 percent. Buffalo milk is highly thick than cow milk. More fat (more than 6.5percent) and solids-not-fat (10.5 percent) part of buffalo milk are one of the main reasons for its importance. The culture of taking tea and 'lassi' also makes buffalo milk a better selection (Bilal *et al*., 2006; Sultana *et al*., 2013).

Among many limitations, parasitism is thought to be a major difficulty in the development of domesticated animals including buffaloes. In Pakistan, parasitism is a crucial problem which causes health problems in farm animals production, based on weather, water availability, land use and physiographic areas of Pakistan have suitable climatic conditions for ticks, which can infest a various hosts and transmit disease to human being and farm animals (Durrani and Shakoori, 2009).

Ticks are vital vector after mosquitoes (Le Bars, 2009), in various disease distribution originate in tropical and subtropical areas around the world. Tick causes harmful effect to livestock via blood loss, irritation and misery of immune function (Ghosh *et al*., 2007).

Ticks feed on blood and tissue fluids of human and animals and also they pass on a many microbial, protozoan and viral diseases than any other arthropods (Hussain *et al*., 2006). Protozoan diseases caused by ticks affect 80% of the total large animal population particularly in tropical and subtropical areas including India, Pakistan and Bangladesh (Ghosh *et al*., 2003). Ticks produce main economic losses to farm animals in many ways. Blood loss is a direct effect of ticks acting as potential vector for haemo-protozoa and helminth parasites. Blood sucking by many ticks causes reduction in live body weight and anemia among farm animals, while their bite also decreases the quality of skins (Rajput *et al*., 2006). Owing the seasonal variations ticks have a vectorial potential. The rate of tick infestation is estimated to be varying which more bound to livestock production worldwide generally and particularly in tropical regions (Kabir *et al*., 2011).

Although considerable work has been done on ticks prevalence in various parts of world and Pakistan (Minzauw and Mc Leod (2003): Rony *et al*., 2010; Kabir *et al*., 2011; Rezaei *et al*., 2011; Tasawar *et al*., 2014), but not a single study was conducted on tick prevalence in the area. Therefore, present study was designed with the objective to study the overall prevalence of ticks infesting buffaloes and their relationship with sex and age of hosts.

Table:1 Relationship between sex and ticks infesting buffaloes.

Name of Parasite	**Female hosts**			**Males hosts**		
Ticks (*Hyalomma* spp.)	(No. of animals examined	No. of animals infested	Prevalence	No. of animals examined	No. of animals infested	Prevalence
	171	73	42.69%	29	16	55.17%

Table 2: The relationship between age and ticks infesting buffaloes.

Name of Parasite	**No. of animals examined**	**Age (Months)**						
		1-36 (n=113)	37-72 (n=39)	73-108 (n=16)	109-144 (n=08)	145-180 (n=07)	181-216 (n=13)	217-240 (n=04)
Hyalomma spp.	200	49(43.36%)	24(61.53%)	6(37.5%)	2(25%)	4(57.14%)	3(23.07%)	1(25%)

Materials and Methods

The present work was conducted to examine the prevalence of ticks in buffaloes. For this purpose various local livestock farms were selected in and around Jampur, District Rajanpur, Punjab, Pakistan. Ticks were collected from 200 water buffaloes. The collected ticks were placed in vials containing 70% alcohol and transported to the Parasitological Laboratory, Institute of Pure & Applied Biology, B.Z. University, Multan. The age and sex of animals were also recorded.

Procedure

The ticks were cleaned with fresh water to remove the fixative. The cleaned samples were kept in 10% potassium hydroxide (KOH) until they became clear. Then the ticks were cleaned to remove the KOH. After cleaning, the specimens were dehydrated through a graded series of alcohol 30, 50, 70, 90 and 100% for twenty minutes. After dehydration the samples were transparent in xylene and mounted in canada balsam (Soulsby, 1982). The mounted specimens were made identified according to the key given by Walker *et al.* (2003).

Statistical analysis: The collected data was examined statistically by using MINITAB statistical package, 2013. Results were written in %ages and the values among different age and sex groups were evaluated by χ^2 test.

Result and Discussion

The overall prevalence of ticks infesting buffaloes: The prevalence of ticks was studied in 200 buffaloes from private farms around Jampur. The parameter studies were overall prevalence of ticks and relationship between age and sex of hosts. Out of 200 buffaloes 89 were infested. The overall prevalence of ticks was 44.5%. Manan *et al.* (2007) examined the prevalence of Ixodids in farm animals in Bedelle district, Southwestern Ethiopia. The overall prevalence of infestation was 95.2%. Tasawar *et al.* (2014) described the overall prevalence of infestation was 20.4% in cattle, 12.8% in sheep, 12.1% in goats 11.3% in buffaloes and 6.4% in donkeys in Peshawar. Kakar and Kakar (2008) determined the prevalence of ticks in cow 10.14% and buffaloes 6.99% in Quetta, Pakistan. The overall prevalence of infestation was in cows and in buffaloes. Ramzan *et al.* (2008) carried out a survey to examine the prevalence of ecto-parasites in cattle in Dera Ghazi Khan (Pakistan). The overall prevalence of tick infestation was 36%. Sajid *et al.* (2008) conducted a survey to study Ixodids in farm animals of lower Punjab, Pakistan. The tick infestation was 40.08% in buffaloes. Abadi *et al.* (2010) reported the prevalence of tick species was detected as: *Hyalomma dromedarii* (55.92%), *H. marginatum* (13.20%), *H. anatolicum* (9.78%), *H. detritum* (4.98%), *H. asiaticum* (3.94%), *Rhipicephalus sanguineus* (11.84%), and *Dermacentor marginatus* (0.34%) in Yazd Province, Iran. Idris and Umar (2007) conducted a survey to study the prevalence of ectoparasites (*Capra aegagrushircus*) in goats in Gwagwalada area Abuja, Nigeria. The overall prevalence of infestation was 10%.
Rony *et al.* (2010) studies 206 cattle, 132 (64.07%) were reported to be prevalence with several species of ticks and lice. Kabir *et al.* (2011) conducted a survey to study tick infestations in cattle at Chittagong District, Bangladesh. The overall prevalence of infestation was 36.31% in cattle's. Rezaei *et al.* (2011) carried out a survey to study Ixodidae ticks in domestic ruminants in East-Azerbaijan (Northwest of Iran). The prevalence of infestation was 12.96% in cattle's, 13.17% in sheep and 18.91% in goats.
Above comparison shows that the dissimilarity between the results of present and previous studies might be due to differences in the geographical places, seasonal conditions of the experimental sites, methods of experiments, collection of sampling animal and hosts resistant to ticks.

The relationship between sex and ticks infesting buffaloes: During the present study, the prevalence of *Hyalomma* species was higher in male hosts as compared to female hosts (Table 1). Similar findings were reported by Tsai *et al.* (2011). Sex related differences in prevalence of ticks were not found. Abera *et al.* (2010) reported that the sex of host species did not show significant association with infestation rates in Bedelle district, Southwestern Ethiopia. The studies conducted in Bhawal forest area in Chittagong and Gazipur district in Bangladesh found the contradict results with present study that the females (59.37%), prevalence was significantly ($P< 0.005$) higher than that of male (35.83%) hosts (Rony *et al*., 2010; Kabir *et al*., 2011)

During the present study, the prevalence was higher in male hosts as compared to female hosts. It may be due to that male defenses against disease may be weaker than those of females, the male steroids hormone testosterone is known to slightly stop the immune system, allowing bacteria and other parasites to more easily flourish. The same factor could be responsible for the higher prevalence of ticks in buffaloes (Tsai *et al*., 2011).

The relationship between age and ticks infesting buffaloes: During the present study, the prevalence of *Hyalomma* spp., was found highest in adult buffaloes and lowest in older age animals Table 2). The prevalence of *Hyalomma* spp., was highest (48.78%) in age group of 1-5 years and lowest in age group of 16-20 years (23.52%.). The age wise prevalence of ticks has been studied by various researchers in different parts of the world. Robestson *et al.* (2000) conducted a survey to study the prevalence of ticks in animals in England. The effect of age was not found significant. Manan *et al.* (2007) carried out a survey to study the prevalence of tick infestation in farms animals in Frontier Region Peshawar. The effect of age was not found significant. Rony *et al.* (2010) conducted a survey to study prevalence of ectoparasitic prevalence of large ruminants in and around the Bhawal forest region in Gazipur, Bangladesh. Adult cows in age group > 8 years are greater (71.11%) susceptible than that of cattle age group> 2-8 years (67.74%) and little age group ≤ 2 years (47.05%). Islam *et al.* (2009) reported contradiction with the present study. The prevalence was more in aged cattle (61.5%) followed by calves (56%) and adult (38.5%). Abera *et al.* (2010) carried out a survey to study prevalence of hard ticks in large ruminants in Bedelle district, Southwestern Ethiopia. Age of host species did not show significant association with infestation rates. Kabir *et al.* (2011) conducted a survey to study tick infestations in cattle at Chittagong District, Bangladesh. Prevalence was significantly ($p<0.01$) higher in cattle of 1.5 years of age (46.28%) than in cattle of >1.5 years of age (27.80%). The differential prevalence of ticks in buffaloes may be due to acquired immunity against these parasites.

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