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No record of lice (Pthiraptera) distribution and abundance in traditionally managed Buffalo and Cattle in Rawalakot Azad Kashmir Pakistan

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Abstract

The present study intention was to ascertain the information regarding distribution and abundance of louse infestation in cattle and buffaloes managed traditionally at domestic levels in Tehsil Rawalakot of District Poonch, Azad Kashmir during winter season. Simple random sampling method was followed to collect louse specimen from cattle and buffaloes with the prior consent of owners. Approximately 200 animals of both cattle and buffaloes were screened during the study period but no animal was found louse infested that resulted zero percent prevalence of louse in the study area. This is probably first attempt to report on louse distribution and abundance in cattle and buffaloes raised traditionally in the area representing that the area climate is not suitable for the survival of louse in cattle and buffaloes. Further, detail investigative cross sectional studies are suggestive in the area.

Keywords: cattle, buffaloes, louse, Prevalence, distribution

1. Introduction

Lice (Pthiraptera) cause Pediculosis a skin infection of warm blooded animals including cattle and buffaloes globally [27]. Louse affect host directly by causing irritation, alopecia, damaged skin, change in behaviour that causes self-wounding [29] and indirectly inflict weight loss [1], reduced production [28], decreased feed utilization [21], anaemia in case of heavy infestation [19], and transfer pathogen of zoonotic significance [18]. The major drawback associated with louse infestation is the basis of reduced hide and skin quality [4, 16] which impact tanner industry [30] thus influence country economy. Numerous studies from various part of the world have reported different prevalence rates i.e. in the range of 1.9% to 94% of louse infestation in cattle and buffaloes raised under different managmental system [2, 10, 13, 23]. But not a single documentary proof is available regarding louse distribution and abundance from the probed study area. Therefore, the present study was intended to report status quo of louse distribution and infestation in cattle and buffaloes and its connection with climatic settings of the study area.

2. Materials and Methods

2.1. Study Area

The present preliminary survey was undertaken in the Tehsil Rawalakot of District Poonch Azad Kashmir from November, 2014 to March 2015. Rawalakot has subtropical climate located at latitude 33° 51' to 33° 85' north and longitude 73° 48' to 73° 80' east. Rawalakot is a hilly and mountainian area and position 1638 meters above sea level. The annual rainfall range recorded was 800 mm to 1500 mm with minimum 10 °C to maximum 20 °C temperature. The area is very picturesque and attractive for tourist from the adjoining part of the Rawalakot Azad Kashmir.

2.2. Sampling Method

A close ended questionnaire was designed to get information on management of animals and knowledge about louse before the start of study and this questionnaire was filled up on the visit day and information provided by the owners and farmer of the area were recorded on the questionnaire serially. Simple random sampling technique [25] was used for the collection of louse specimens from cattle and buffaloes. Prior to collection of louse cattle and buffaloes were restrained with the help of owner and then thoroughly searched for the presence of louse on the body of cattle and buffaloes. In addition to this, animal sheds were also searched for the presence of lice.

3. Results & Discussion

A total of 200 animals comprised of 80 cattle and 120 buffaloes were screened during November, 2014 to March, 2015. Among the screened cattle 50 animals were young and remaining 30 were adult of more than 4 years of age and all the screened cattle were female. Likewise 70 buffaloes were fall in the young age group and leftover 50 were adult with more than five years of age and were females. During this survey 10 cattle and 20 buffaloes were found in the gestation stage and all leftover were lactating. During this pilot survey no animal was found infested with louse. Therefore, shows zero percent prevalence in tehsil Rawalakot of District Poonch, Azad Kashmir. Reporting of disease or disease causing pathogen is very important for planning control measure strategies to minimize economic and production losses associated with pathogen and disease they cause. Pediculosis, dermatological problem of homeothermic animal caused by different host specific [28], species of louse including; *Bovicola bovis*, *Haematopinus quadrpertusis*, *Haematopinus eurysternus*, *Haematopinus tuberculatus*; *Linognathus vituli*; *Solenopotes capillatus* have been reported [10, 14, 21] which infested cattle and buffaloes. Some of the infections are principally associated with environmental factors [9], includes: topography, altitude [11], climate temperature, humidity, rainfall [12], Season [24] of the particular area. Whereas host related factors including age, sex, breed, nutrition [22], and husbandry and housing practices [3] exercised by the farmers of that area also influence the distribution and abundance of louse infestation. This is probably the first report which shows the negative result of louse distribution and infestation in cattle and buffaloes, however various studies undertaken in other parts of the world reported minimum 1.9% to maximum 94% prevalence [10, 14, 21, 23], of louse infestation in cattle and buffaloes. In study area winter season started from mid-November to March usually but sometime extended to April-May. During this period the temperature falls continuously and reached up to zero °C. Louse are much vulnerable to environmental influences, growth and development of all the stages of louse are extremely temperature reliant requiring a fairly constricted temperature ranges between 30 °C to 40 °C [8], whereas [7] reported that louse species can survive better at 25 °C. The range of this temperature is higher than the temperature of study area elucidated temperature is one of important risk factors associated with the abundance and distribution of louse in cattle and buffaloes. These negative finding depicted that the study area climate is not appropriate for the existence and propagation of lice, however some of the reports have shown that the maximum distribution and abundance of louse has been recorded in colder months [4, 5, 6, 10, 21]. This variation of results in present study with study conducted earlier may be due to the following basis (a) the area climate and topography which may limit survival/biology of lice during winter season (b) proper care with more attention and regular grooming of the cattle and buffaloes during winter season (c) proper use of anti-parasitic drugs for other ecto and endoparasites before start of winter season in the area (d) clipping of the hair at the start of winter season as hair coat provides shelter and easy attachment to lice. Clipping reduced louse population on animals [16], (e) areas where louse infestation found more in winter may have different winter temperature compare to the study area temperature provides optimum conditions for the survival of louse (f) another possible reason of absence of louse in the study area could be due to lack of cold tolerance ability of louse as this phenomena is present in some insect and arthropods. Native climatic parameters play significant role in defining abundance and

dispersal of vector organisms [15]. A better understanding of distribution and abundance of louse infestation on buffaloes and cattle in the study area demanding a complete randomized surveillance study with expanded area, season and large sampling frame to be covered in order to make more reliable justification on louse abundance and distribution in the area infesting cattle and buffaloes.

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