SOME EPIDEMIOLOGICAL ASPECTS OF HAEMONCHOSIS OF SHEEP IN JAMMU- J AND K

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ABSTRACT
Epidemiological survey of prevalence of Haemonchosis in sheep was conducted in Jammu area of Jammu And Kashmir State. A total of 257 animals were examined of which 61 (23.73%) were found positive for Haemonchus contortus as revealed by necroscopic examination. The incidence of infection was maximum in spring and summer and lower in winter and autumn. Lower age groups were having more infection (36.48%). Males were found to harbor more infection (27.43%) than females (20.83%). Exotic breeds were found to have more infection than local ones. The present information could be useful for the development of strategic treatments for Haemonchosis in sheep of this area of Jammu And Kashmir State.

KEY WORDS: Epidemiology, Haemonchous contortus, Sheep, Jammu.

INTRODUCTION
Sheep suffers from many infectious diseases and heavy economic losses occur due to mortality as well as morbidity. Helminthes diseases alone are responsible for 5 percent mortality and 10 percent morbidity in sheep (Chakerborty and Lodh, 1994). These gastrointestinal nematodes have been recognized as a major factor limiting sheep production throughout the world. Jammu and Kashmir is primarily an agricultural state and sheep rearing is one of the major sources of economy to farming community and other nomads. Due to improper management and unhygienic conditions sheep suffers from various helminthic infections in which Haemonchosis is playing major role. A number of reports are available on haemonchosis in sheep of Kashmir valley (Bali, 1976; Dhar et al. 1982; Nasreen et al. 2005; Fayaz et al. 2007; Bhat et al. 2007; Kuchay et al. 2011.) but scanty of work has been done in Jammu area of Jammu And Kashmir State. Therefore, present study was planned to study comprehensive incidence picture of Haemonchus contortus in sheep of Jammu area, to enable the sheep breeders and veterinarians in planning the prophylactic measures well in advance.

MATERIALS AND METHODS
The investigation was carried out for a period of one year 2007-08 in which different parts of study area were surveyed for collection of 257 gastrointestinal tracts of slaughtered sheep for parasitological investigation. The gastrointestinal tracts were separated anatomically, then each organ was opened separately and its contents and mucosa were washed in water to remove all parasites. The nematodes collected were processed and preserved (70% alcohol) and were identified as per Solusby (1982) and Yamaguti (1959).

RESULTS AND DISCUSSION
The overall prevalence, season wise distribution, sex wise distribution, breed wise distribution and age wise distribution are tabulated (Tables 1-4). The highest incidence of haemonchosis was observed in spring (30.35%) followed by summer (29.16%). Winter recorded lowest infection rate (16.41%) and in autumn it was 19.35% as shown in Table 1. Nasreen et al. (2005) recorded the overall prevalence of Haemonchus contortus as 20.73% in the sheep of Kashmir valley and also observed the highest infection (33.18%) in summer and lowest in winter (15.25%). Makhdoomi et al. (1995) also observed highest infection of strongyloidosis in sheep from Kashmir valley in summer season. Pandit et al. (2003) also recorded the highest prevalence of Haemonchus contortus among the nematodes in sheep from Kashmir. Yadav et al., (2006) also reported maximum prevalence of nematodes in rainy season in sheep and goats of same study area. Shahadat et al (2003) in Bangladesh recorded the lowest prevalence (18.62%) of Haemonchus contortus in the month of January. Khajuria and Kapoor (2003) reported maximum infestation in sheep and goats by nematodes (Strongyles) in Jammu area of J&K state. Garg et al. (2003) recorded the lowest incidence of Haemonchus contortus in summer as compared to winter in goats from the semi-arid region of India. Laha et al. (2001) from Bengal recorded the highest percentage of infection with Haemonchus contortus during the rainy season. Heavy rainfall and high relative humidity predispose to heavy parasitic infections (Hawkins, 1945). The rainy season which started in the spring and earlier in summer made the environmental conditions more favorable for the development and survival of preparasitic stages and led to increased availability of infective larvae in the rainy and post rainy season. It is well documented that gastrointestinal parasitism in grazing animals is directly related to the availability of larvae on pasture and seasonal pasture contamination (Smeal et al., 1980).
Males were found to be more infected (27.43%) as compared to females (20.83%) with *Haemonchus contortus* (Table 2). The influence of sex on the susceptibility of animals to infections could be attributed to genetic predisposition and differential susceptibility owing to hormonal control. Further experimental studies are needed to confirm the assumption. Differences in susceptibility to infection between sexes have been observed by various workers. The observed disparity may not solely be due to differences in susceptibility but may also depend on sex related variation in behavior that results in differences in exposure (Barger, 1993). On St. Kilda prevalence of nematode infection of Soay sheep was higher in rams than in ewes (Gulland and Fox, 1992). Males (Ram) were found to be more infected (72.5%) as compared to females (64.07%) with *Haemonchus contortus* (Courteny et al., 1985). Our results are also in agreement with Gorski et al. (2004) who reported males more infected with the nematode species. Although sex plays a major and significant role in the preponderance of infection but environmental and climatic conditions have a greater role to play in the onset of helminthic infection in sheep, cattle despite the gender differences reports by several authors.

The breed wise investigation of helminths revealed that local (indigenous) breeds of study area were found to be resistant to helminths parasites as witnessed due to low prevalence of infection in them as shown in Table 3. Maraca et al. (2005) have reported a *Dictyocaulus filariae* prevalence of 12.8% in sheep originating from Australia and 3.8% prevalence among local sheep of Jordan. The low prevalence of some nematodes (*Oesophagostomum columbianum*) in local ruminants as compared to exotic ones may be attributed to the reason that the parasite mostly predominates in hot climates. The reason for high prevalence of helminths in exotic breeds of animals may be that the exotic animals which are grazed here before slaughtering pick up the infection at a higher rate. Because of less immunity and less exposure to these parasites they are easily infected.

During the present study it was found that young ones of sheep are having more infection (36.48%) than adults as shown in Table 4. The high rate of infection with Haemonchosis in young ones has been observed by Vlasoff et al. (2001). Yadav et al. (2006) also reported maximum infection in Lamb and Kid from the same study area. Low resistance to infectious diseases in young ruminants appears largely due to immunological hypo responsiveness, and is not simply a consequence of their not having been exposed sufficiently to pathogens to develop active immunity. Nor can this hypo responsiveness be due entirely to the suppressive effects of passively acquired material antibody or autogenic immunity, although this is unquestionably an important factor in the neonate at least 6-8 weeks after birth (Richardson et al., 1968).

### Table 1: Season wise prevalence of *Haemonchus contortus* infection in sheep.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Season</th>
<th>No. of animals examined</th>
<th>No. of animals positive</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Summer</td>
<td>72</td>
<td>21</td>
<td>29.16%</td>
</tr>
<tr>
<td>2</td>
<td>Autumn</td>
<td>62</td>
<td>12</td>
<td>19.35%</td>
</tr>
<tr>
<td>3</td>
<td>Winter</td>
<td>67</td>
<td>11</td>
<td>16.41%</td>
</tr>
<tr>
<td>4</td>
<td>Spring</td>
<td>56</td>
<td>17</td>
<td>30.35%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>257</td>
<td>61</td>
<td>23.73%</td>
</tr>
</tbody>
</table>

### Table 2: Sex wise prevalence of *Haemonchus contortus* infection in sheep.

<table>
<thead>
<tr>
<th>sex</th>
<th>No. of animals examined</th>
<th>No. of animals positive</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>113</td>
<td>31</td>
<td>27.43%</td>
</tr>
<tr>
<td>females</td>
<td>144</td>
<td>30</td>
<td>20.83%</td>
</tr>
<tr>
<td>Total</td>
<td>257</td>
<td>61</td>
<td>23.73%</td>
</tr>
</tbody>
</table>

### Table 3: Breed wise prevalence of *Haemonchus contortus* infection in sheep.

<table>
<thead>
<tr>
<th>Breed</th>
<th>No. of animals examined</th>
<th>No. of animals positive</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>63</td>
<td>12</td>
<td>19.04%</td>
</tr>
<tr>
<td>Exotic</td>
<td>194</td>
<td>49</td>
<td>25.25%</td>
</tr>
<tr>
<td>Total</td>
<td>257</td>
<td>61</td>
<td>23.73%</td>
</tr>
</tbody>
</table>

### Table 4: Age wise prevalence of *Haemonchus contortus* infection in sheep.

<table>
<thead>
<tr>
<th>Age group</th>
<th>No. of animals examined</th>
<th>No. of animals positive</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>74</td>
<td>27</td>
<td>36.48%</td>
</tr>
<tr>
<td>Adult</td>
<td>183</td>
<td>34</td>
<td>18.57%</td>
</tr>
<tr>
<td>Total</td>
<td>257</td>
<td>61</td>
<td>23.73%</td>
</tr>
</tbody>
</table>
CONCLUSION
Keeping in view the present findings, it can be concluded that there is urgent need for chemotherapeutic and prophylactic strategies for the control of Haemonchosis in this region of Jammu and Kashmir State.

ACKNOWLEDGEMENT
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REFERENCES
Some epidemiological aspects of fascioliasis among cattle of Ladakh. Global Veterinaria 7(4) 342-346. Hossain MM, Paul S, Rahman MM, Hossain MA, Hossain MT and Islam MR (2011). Seasonal prevalence of gastrointestinal parasites in sheep and goats of Jammu. Journal of Veterinary Parasitology 20(1) 65-68. In haemonchosis, Haemonchus contortus may cause severe damage to the mucosa of the abomasum of ruminants, or the third compartment (only one stomach, but three compartments) of camelids, resulting in gastric hemorrhage. Heavy infections may result in sudden death. Type I ostertagiasis is caused by the smaller abomasal nematodes of the genus Ostertagia. Since anemia is a prominent feature of haemonchosis, pallor of the conjunctiva and mucous membranes is an excellent indicator of the severity of H. contortus infections. Francois Malan noticed the association between anemia and eyelid pallor in parasitized sheep in South Africa. He subsequently developed a laminated card that depicted five illustrations of ocular membrane colors. Sheep pulmonary adenomatosis (SPA) is a contagious lung tumour of sheep and, rarely, goats which manifests itself clinically as a progressive pneumonia. Two secretory epithelial cells are involved... Sharp J.M., Angus K.W. (1990) Sheep Pulmonary Adenomatosis: Clinical, Pathological and Epidemiological Aspects. In: Pétursson G., Hoff-Jørgensen R. (eds) Maedi-Visna and Related Diseases. Developments in Veterinary Virology, vol 10. Springer, Boston, MA. DOI https://doi.org/10.1007/978-1-4613-1613-8_9. Key words: Haemonchus contortus, epidemiology, goats, sheep, Benin. INTRODUCTION. In Benin, the population of small ruminants is approximately 3 million of sheep and goats. The West African Dwarf and the Fulani are the two predominant breeds. Widely, small ruminant’s productions involve small holders living under poor conditions (traditional system with mainly family farms). Animals were identified by an individual number and some of their characteristics (species, origin, age, sex and general condition) are recorded. Eye examination. The colour of each animal’s conjunctiva were examined and characterized.