

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

Muzaffar Rasool Mir[@], Chishti M.Z.^{}, Dar S.A.^{*}, Majidah Rashid^{*}, Rajash Katoch^{**},
Khajuria J.K. and Ashraf M.^{***}**

^{*}Department of Zoology, the University of Kashmir Srinagar-190006

^{**}Division of Veterinary Parasitology, SKUAST-J R. S. Pura Jammu

^{***}Veterinary Assistant Surgeon, J and K Government.

([@]E-mail: muzaffarmir2@gmail.com)

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 haemonshosis 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. Maraqa *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 maternal antibody or autogenous 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.

S. No.	Season	No. of animals examined	No. of animals positive	Prevalence
1	Summer	72	21	29.16%
2	Autumn	62	12	19.35%
3	Winter	67	11	16.41%
4	spring	56	17	30.35%
	Total	257	61	23.73%

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

sex	No. of animals examined	No. of animals positive	Prevalence
Males	113	31	27.43%
females	144	30	20.83%
Total	257	61	23.73%

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

Breed	No. of animals examined	No. of animals positive	Prevalence
Local	63	12	19.04%
Exotic	194	49	25.25%
Total	257	61	23.73%

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

Age group	No. of animals examined	No. of animals positive	Prevalence
Young	74	27	36.48%
Adult	183	34	18.57%
Total	257	61	23.73%

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

The authors are thankful to the Department of Zoology, University of Kashmir and Division of Veterinary Parasitology, SKUAST-J for providing the facilities to carry out the work.

REFERENCES

- Chakeraborty D. and Lodh C. (1994).** Studies on blood and biochemical profile in naturally infected goats. *Indian Vet. J.* **3**: 286-288.
- Bal H. S. (1976).** A survey of helminth parasites of sheep (*Ovis aries*) in Jammu and Kashmir. *J. Anim. Hlth. Prod.* **5**(4): 1-2.
- Dhar D. N., Sharma R. L. and Bansal G. C. (1982).** Gastrointestinal nematodes in sheep in Kashmir. *Vet. Parasitol.* **11**: 271-272.
- Nasreen S., Jeelani S.G. and Munir H. (2005).** Incidence of gastrointestinal nematodes in sheep in Kashmir valley. *J. Vet. Parasitol.* **19**(1): 27-29.
- Ahmad F., Tariq KA. and Chishti M.Z. (2007).** Epidemiological studies on haemonchosis of sheep in Kashmir valley. *Oriental Sci.* **12**: 43-47.
- Bhat M.S., Subhan N.A., Shahardar R.A. and Mir A.Q. (2007).** Prevalence of gastrointestinal nematodosis in sheep in Kashmir valley. *J. Vet. Parasitol.* **21**(1): 89-91.
- Kuchai J.A., Chishti M.Z., Zaki M.M., Ahmad J. Rasool M., Dar S.A. and Tak H. (2011).** Prevalence of nematode parasites in sheep of Ladakh-India. *J. Agricultural Extension Rural Develop.* **3** (13): 229-231.
- Soulsby E. J. L. (1982).** Helminths, Arthropods and protozoa of Domesticated animals, 7th Ed. The English Book society and Bailliere Tindall, London.
- Yamaguti S. (1985).** Systema Helminthum: *The Nematodes of Vertebrates, Volume III, Part I.*
- Makhdoomi D.M., Nasreen S., Banday S.D. and Moulvi B.A. (1995).** Incidence of different ovine gastrointestinal parasites in Kashmir. *Indian Vet. J.* **72**: 898-900.
- Pandit B. A., Shahardar R. A., Darzi M. M., Banday M. A. A. and Bhat A. S. (2003).** Survey of gastrointestinal nematodes in sheep of Kashmir valley. *Indian J. Small Ruminants.* **9**: 39-42.
- Yadav A., Khajuria J. K., Raina A. K. (2006).** Seasonal prevalence of gastrointestinal parasites in sheep and goats of Jammu. *J. Vet. Parasitol.* **20**(1): 65-68.
- Shahadat M. A., Karim M. J., Alam M. Z. and Majumder S. (2003).** Seasonal distribution of *Haemonchus contortus* in Bengal goats. *Bangladesh Veterinarian*, **20**: 72-76.
- Khajuria J. K. and Kapoor, P. R. 2003.** Prevalence of parasites in sheep and goats at Kathu- Jammu. *J. Vet. Parasitol.*, **17**: 121-126.
- Garg G., Sharma D. K., Agarwal R. D. and Raut P. K. (2003).** Epidemiology of *Haemonchus contortus* infection in goats in semi-arid region of India. *Journal of Veterinary Parasitology*, **17**: 57-60.
- Laha R., Ramakrishna C., Bhattcharya D. and Sikdar A. (2001).** Seasonal incidence of *Haemonchus contortus* infections in goats – a post mortem study. *Indian J. Animal Sci.* **71**: 345-346.
- Hawkins P.A. (1945).** Studies of sheep parasites VI. Observations on weather in relation to untreated nematode infections. *J. Parasitol.* **31**:17.
- Smeal M.G., Fraser G.C. and Robinson G.G. (1980).** Seasonal changes in the structure of nematodes population of cattle in New South Wales in relation to inhibited larval development. *Aust. Vet. J.* **56**: 80-86.
- Barger I. A. (1993).** Influence of sex and reproductive status on the susceptibility of ruminants to nematode parasitism. *Int. J. Parasitol.* **23**: 463-469.
- Gulland F. M. D. and Fox M. (1992).** Epidemiology of nematode infections of Soay sheep (*ovis aries L.*) on St. Kilda. *Parasitol.* **105**: 481-492.
- Courteny C. H., Parker C. F., McClure K. E. Herd R. P. (1985).** Resistance of exotic and domestic lambs to Experimental infection with *Haemonchus contortus*. *Int. J. Parasitol.* **15**: 101-109.
- Gorski P., Niznikowski R., Strzelec E., Gajewska A. and Wedrychowicz H. (2004).** Prevalence of protozoan and helminth internal parasite infections in goat and sheep flocks in Poland. *Arch. Tierz. Dummerstorf.* **47**: 43-49
- Maraqqa Anwar., Amr Zuhair., Rifai Lina and Al-MELHIM Walid. (2005).** An abattoir survey of liver and lung helminthic infections in local and imported sheep in Jordan. *Turk. J. Vet. Anim. Sci.* **29**: 1-2.
- Vlasoff A., Leathwick D. M., Health A. C. G. (2001).** The epidemiology of nematode infections of sheep. *New Zealand Vet. J.* **49**: 213-221.
- Richardson M., Beck C. C., Clark D. L. (1968).** Prenatal, immunization of the lambs to Brucella: dissociation of immune competence and reactivity. *J. Immunol.* **101**: 1363-1366.