PREVALENCE OF OSTERTAGIA SPP., IN A SHEEP HERD

ZAHIDA TASAWAR*, FARAH. NAZ*, MUSHTAQ HUSSAIN LASHARI* and CHAUDHARY SIKARDAR HAYAT**

* Institute of Pure & Applied Biology, Bahauddin Zakariya University, Multan – Pakistan
** Faculty of Veterinary Sciences, Bahauddin Zakariya University, Multan – Pakistan
Email: mushtaqlashary@gmail.com

ABSTRACT

The present study was carried out at Governmental Research Centre for Conservation of Sahiwal Cattle (RCCSC) Jahangirabad, District Khanewal during 2007, to investigate the overall prevalence of Ostertagia spp., in sheep. Out of 300 hosts 231 were infected with Ostertagia spp. The overall prevalence of Ostertagia spp. was (77%). The males showed significantly (P<0.05) higher prevalence (81.4%) as compared to females (73.1%). Maximum prevalence (100%) was recorded in age group of (181-205 months) and minimum (62.0%) in age group of (106-130 months), showing the statistical significance (P<0.05). Maximum prevalence (100%) was recorded in body weight group of (73-82kg) while the weight group of (63-72kg) had minimum prevalence (61.5%) with statistical significance (P<0.05). The prevalence was statistically different (P<0.05) in different breeds of sheep; Lohi breed was more susceptible showing higher prevalence (87.09%) as compared to Awassi and Hisardale showing 76.9% and 74.2% prevalence, respectively. It was concluded that the Ostertagia species were more common in older and higher body weight groups of sheep. The males were more susceptible than females. In Lohi breed the Ostertagia spp., were more prevalent than Awassi and Hisardale. However, it is recommended that Ostertagia spp. infection in sheep might be controlled with regular treatment of anthelmintics.

Key Words: Ostertagia, age, sex, body weight, lohi, awassi, hisardale sheep


INTRODUCTION

With the rapid increase in human population and urbanization combined with modest increase in incomes in developing countries, the demand for meat and other animal products continue to grow. The unprecedented growth in demand for livestock products has recently acquired the label of the ‘livestock revolution’ (Delgado et al. 1999, 2001). It is therefore becoming increasingly important to optimize agricultural production through improved management practices and the control of production limiting diseases such as helminth infections. A lot of socio-economic importance is therefore attached to ownership of these animals that, in some cases, may be the only realizable wealth of a rural household (Omeke, 1988).

Infection by gastrointestinal trichostrongyles (Nematoda: Strongylida) is a major global threat for sheep production (Waller, 1997, 1999). These parasites impair animal health and welfare and cause significant economic losses. Infected animals normally fail to thrive, which in turn results in reduced wool and milk production but can also affect fertility (Marquardt and Demaree, 1985). The species of nematodes that affect sheep the most belong to superfamly Trichostrongylidea and include Haemonchus, Trichostrongylus, Cooperia, Ostertagia, and Oesophagostomum (Bowman et al. 2003). Among these parasites, Ostertagia spp., is one of the group which causes losses to livestock industry (Marquardt and Demaree, 1985). Although work has been done on the prevalence of Ostertagia spp., in sheep in Pakistan and other countries of the world (Pal and Qayyum, 1992 and 1993; Sajid et al. 1999; Chaudhry et al. 1984; Umur and Yukari, 2005; Craig et al. 2006) but so far research has not been conducted on Ostertagia spp., at Government Research Centre for Conservation of Sahiwal Cattle (RCCSC) Jahangirabad, District Khanewal. Project was designed to study the prevalence of Ostertagia spp., relationship between sex, age, body weight, sheep breed and Ostertagia spp in one mixed sheep herd of 300 animals.

MATERIALS AND METHODS

The study was conducted on three sheep breeds (Lohi, Hisardale and Awassi) to investigate the prevalence of Ostertagia spp., at Government Research Centre for Conservation of Sahiwal Cattle (RCCSC) Jahangirabad, Distt. Khanewal from February 2007 to June 2007. Three hundred fecal samples were collected early in the morning directly from the rectum of each sheep and were placed in air tight polythene bags. Along with fecal samples, information about sex, age, bodyweight and breed of each animal was also recorded. The collected fecal samples were brought to the Parasitology Research Laboratory, Institute of Pure and Applied Biology, Bahauddin Zakariya University, Multan in air tight temperature resistant ice pot. The fecal samples were preserved in 10% formalin and were examined by using direct smear method (Hayat and Akhtar, 2000).
Each positive sample was examined twice and negative sample thrice to achieve maximum accuracy. Results are expressed in percentages and the values between various groups were compared by Chi Square test.

RESULTS AND DISCUSSION

Overall Prevalence of Ostertagia spp. in Sheep

Out of 300 samples collected from both male and female sheep of different age and bodyweight groups, 231 were infested. The percentage of overall prevalence was 77%. The prevalence of Ostertagia spp., is also reported by different researchers from Pakistan and different parts of the world. Chaudhry et al. (1984) reported 64.6%, prevalence of Ostertagia ostertagi in cattle’s in Azad Kashmir. Pal and Qayum (1992) reported 73.58% prevalence of Ostertagia spp., in upper Punjab, Pakistan. Fernandez et al. (1999) reported 94.8% prevalence of Ostertagia ostertagi, in cattle. Sajid et al. (1999) reported 64.6% prevalence of Ostertagia in sheep. Umur and Yukari (2005) reported 80%, prevalence of Ostertagia in sheep in Turkey, and Craig et al. (2006) reported 75% prevalence of Ostertagia in sheep. The differences reported by these studies could be accounted on the basis of differential management practices (Lindquist et al. 2001), natural resistance based on genetic background and drug treatment (Soulsby, 2005), local geoclimatic factors (Pal and Qayum, 1992) and nutritional status (Data et al. 1999).

Prevalence Rate of Ostertagia spp., in Sheep as affected by Breed, age and Sex

The male hosts showed 81.4% significantly (P<0.05) higher prevalence than female hosts 73.1% (Table I). The same aspect of present study is also reported by different researchers. The results of the present study are supported by (Hussain et al. 1986; Sajid et al. 1999; Gulland and Fox, 1992; Craig et al. 2006). Male sheep appear to be more susceptible to parasitic infection when compared to female sheep. Courtney et al. (1985) also reported the same results in sheep after puberty. Barger (1993) and Bilbo and Nelson (2001) reported that such differential prevalence of gastrointestinal nematodes in sheep may be due to stimulatory effects of estrogens and inhibitory effect of androgens on immune responses. The same factors might be responsible for the higher prevalence of Ostertagia spp., in male sheep than female sheep during the present study.

Table I  Relationship between sex, breeds and Ostertagia spp., in sheep

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of sheep examined</th>
<th>No. of sheep infected</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>140</td>
<td>114</td>
<td>81.4</td>
</tr>
<tr>
<td>Female</td>
<td>160</td>
<td>117</td>
<td>73.1</td>
</tr>
<tr>
<td>Breed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lohi</td>
<td>62</td>
<td>54</td>
<td>87.09</td>
</tr>
<tr>
<td>Hisardale</td>
<td>225</td>
<td>167</td>
<td>74.2</td>
</tr>
<tr>
<td>Awassi</td>
<td>13</td>
<td>10</td>
<td>76.9</td>
</tr>
</tbody>
</table>

Prevalence Rate of Ostertagia spp., in Sheep as affected by Breed, age and Sex

The samples were collected from three breeds of sheep (Table I) which were Lohi, Hisardale, and Awassi. Among these 3 breeds maximum infection (87.09%) was present in Lohi followed by Awassi and Hisardale which was (76.9%) and (74.2%) respectively. The results of present study indicated that breed of host seems to have influence on the prevalence of Ostertagia spp., infection. Natural resistance based on genetic background and genetic variations might be responsible for the differential prevalence of Ostertagia spp., among different breeds of sheep (Baker et al. 1999; Soulsby, 2005).

Prevalence Rate of Ostertagia spp., in Sheep as affected by Breed, age and Sex

The relationship between age groups and Ostertagia spp., infection in sheep was examined (Fig. 1) and the maximum infection was recorded in age group of 181-205 month followed by age group of (6-30 months) which was 100% and 82.7% respectively. The minimum prevalence was recorded in age group of (106-130 months), which was 62.0%. Results of present study revealed that age of the host seems to have influence on the prevalence of infection. Similar results have been reported by (Hussain et al. 1986; Hafeez 1996 and Sajid et al. 1999). Low immunity in younger and older sheep could be responsible for the high prevalence of Ostertagia spp., in these animals.
Relationship between body weight and Ostertagia spp., infection in sheep was recorded (Fig. 2). Maximum infection (100%) was observed in the weight group of (73-82 kg) while the minimum infection (61.5%) was recorded in the weight group of (63-72 kg). The results of present study showed that as the weight of animal increases, the prevalence decreases. This might be due to development of acquired immunity with gradual increase in weight along with age. Maximum (100%) prevalence was observed in body weight group of (73-82 kg) which could be due to the fact that sheep belonging to this weight group represents the older age group which is more susceptible to parasitic infection due to decreased immunity. Similar findings have been reported by Horak (2003) and Tasawar et al. (2010) that the hosts having higher body weights are more prone to parasitic infections.

CONCLUSION AND RECOMMENDATIONS

It is concluded that the Ostertagia spp., were more prevalent in male as compared to female. The parasitic burden increased as the age and body weight of sheep increased. The Lohi breed of sheep was more susceptible than Awassi and Hisserdle. However, it is suggested that the planned use of suitable vermicide and good management could improve the control of Ostertagia spp. infection in sheep.

REFERENCES

References:


