Prevalence of Liver Fluke in Sheep and Goat Slaughtered at Abattoirs in Zaria, Kaduna State, Nigeria

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ABSTRACT

A survey on the prevalence of liver fluke in sheep and goat slaughtered at abattoir in Zaria is conducted. A total of 247 animals is slaughtered and picked randomly in abattoir within Zaria which undergoes examination to determine the presence of liver fluke. The samples were examined between the periods of three month on daily basis. The bile samples of the sheep and goat were analyzed using the sedimentation method to determine the presence of liver fluke. Generally the presence of liver fluke in sheep was 11.9% in ram and 17.3% in ewe while in goat the prevalence was 5.6% in billy goat and 15.4% in nanny goat. The prevalence of the disease is low in both sheep and goat; there is also no significant difference in the prevalence of parasite with sex in sheep (0.415) same also goes to goat (0.062). It is concluded that the prevalence of liver fluke is not high in sheep and goat but high in other ruminant (cattle) which could be one of the major sources of economic losses in livestock industries. Hence, waste material which can contaminate pasture should also be properly disposed to prevent animal from getting infection during grazing.

Keywords: Prevalence, liver fluke, abattoir, slaughter, sheep, goat

INTRODUCTION

Liver fluke diseases are helminthiasis caused by trematode of the genus Fasciola and Dicrocoelium, these are alarming parasites affecting ruminant (cattle, sheep, and goat) population in Nigeria. The infection rates are variable depending upon different intrinsic and extrinsic epidemiological and biological factors, but their impact is greater in sub Saharan Africa due to the availability of a wide range of agro economic factors suitable for diversified host and parasites. The economic losses may be in the form of lowered fertility, reduced work capacity, involuntary culling, reduction in food intake and lowered weight gains, low milk production treatment cost and mortality in heavy parasitized animals (Lebbie, Rey and Irungu, 1994). Parasitism is a type of symbiotic relationship between organisms of different species in which the parasites benefits from prolonged close association with the host which is harmed. However, pastoralist may not easily detects the effects of intestinal parasites on their animal because of the generally sub-clinical or chronical nature of the helminthes infection (Soulby, 1982; Urquhart, Armour,
Thus the sub clinical parasitic infection are responsible for significant economic loss, because once clinical disease is noticed in a group of animals, much economic loss in terms of animal productivity has occurred (Kaplan, 2006). Although the causes of helminthes parasitism in ruminant livestock are multiple and often interactive, the vast majority of cases are due to any of the following basic reasons: an increase in the number of the infective stages in pasture; an alteration in host susceptibility; the introduction of infection into an environment and ineffective parasites removal from the host animals due to poor administration technique, the use of substandard anti helminthic drugs or the development of anti-helminthic resistance (Sissay, 2006; Urquhart, Armour, Duncan, Dunn and Jennings, 1996). Based on the foregoing, the aim of this study is to determine the prevalence of liver fluke in sheep and goat slaughtered in Zaria town abattoir, Kaduna State. The findings of the investigation would provide some data that could be used to monitor the level of infection of sheep and goat that were slaughtered in Zaria abattoir.

MATERIALS AND METHOD

The study was carried out at Hayin Dogo abattoir within Zaria metropolis, Kaduna State. Zaria is a major city in Kaduna State in Northern Nigeria located at latitude 11.0667°N, 7.7000°E. It was one of the seven Hausa city-States. The population according to 2006 census was estimated at 408,198. The study was carried out between the months of May to July, 2013. Samples were collected randomly directly from the sheep and goat after being slaughtered into a sample container and labelled according to sexes. The samples were collected on daily basis and carried to the hydrobiology laboratory for analysis. Analysis was done on the day of collection but on few occasions where not possible, the samples were preserved in normal saline and then refrigerated for at most a day.

To detect the presence of liver fluke and generally trematode in sheep and goat, the sedimentation method was used as described by Taylor in 1964 (Schweger, 2008). The bile was rinsed in normal saline then cut for the content to be examined. The content where poured into centrifuge tube and then centrifuged for about 30 minutes. After centrifuging the supernatant was poured away leaving the sediment which was pipettes using a Pasteur pipette. Few drops were smeared in clean slide and examined under the microscope using a lower magnification of x10. The process was repeated until all the samples were examined positively or negatively for the presence of the liver fluke in both sheep and goat. The record was kept according to sexes. Chi-square analysis was used to determine the prevalence of parasite with sex in both sheep and goat.

RESULTS AND DISCUSSION

A total of two hundred and forty seven (247) bile samples of sheep and goat were analyzed in all. One hundred and eleven (111) of the total sample were sheep out of
from the result, it can be inferred that the average prevalence rate of liver fluke infection during the study is 11.9% in male sheep and 17.3% in female sheep while in male goat it is 5.6% and 15.4% in female goat. This clearly indicates that the prevalence of naturally acquired liver fluke remains relatively low in the study area. The study of liver fluke in cattle remains high from studies recorded earlier in parts of Nigeria (Dipeolu A., Dipeolu M. and Erubetine, 1998). The finding in the study of prevalence of liver fluke infection suggest that helminthosis is one of the major problem which affects livestock production tremendously. The prevalence rate of this liver fluke however comparatively is lower than that reported by Ulayi, Umar Sule and Adamu (2007) in Zaria in which the overall prevalence rate of fluke was 37.1%. In the present study, the overall prevalence rate of Fasciola infection is higher than the prevalence of Dicrocoelium infection. This may be inferred that their differences arouse due to the higher abundance of the intermediate host of Fasciola Spp. However, Fasciola Spp have only one intermediate host snail (Lymnea Spp) in its life cycle as compared to Dicrocoelium Spp which utilizes two intermediate host which are the snail (Cionelalubrica) and an ant (Formica fusca). The prevalence rate of mixed liver fluke infection recorded in this study was (3.3%) according to report made by Nwosu and Srivastava (1993).

Table 1: Total number of animal examine with sex

<table>
<thead>
<tr>
<th>Animal</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep</td>
<td>59</td>
<td>52</td>
<td>111</td>
</tr>
<tr>
<td>Goat</td>
<td>71</td>
<td>65</td>
<td>136</td>
</tr>
</tbody>
</table>

Source: Survey, 2013

Table 2: Prevalence of infection

<table>
<thead>
<tr>
<th>Total no of sample</th>
<th>NAI</th>
<th>NANI</th>
</tr>
</thead>
<tbody>
<tr>
<td>247</td>
<td>30</td>
<td>217</td>
</tr>
</tbody>
</table>

NAI: Number of animal infected  
NANI: Number of animal not infected

Source: Survey, 2013
Table 3: Prevalence rate of infection in sheep

<table>
<thead>
<tr>
<th>Gender</th>
<th>No. of sample</th>
<th>No. of positive (%)</th>
<th>No. of negative (%)</th>
<th>X²</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>59</td>
<td>7(11.9)</td>
<td>52(88.1)</td>
<td>0.664</td>
<td>0.415</td>
</tr>
<tr>
<td>Female</td>
<td>52</td>
<td>9(17.0)</td>
<td>43(82.7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey, 2013

Table 4: Prevalence rate of infection in goat

<table>
<thead>
<tr>
<th>Gender</th>
<th>No. of sample</th>
<th>No. of positive (%)</th>
<th>No. of negative (%)</th>
<th>X²</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>71</td>
<td>4(5.6)</td>
<td>67(94.4)</td>
<td>3.494</td>
<td>0.062</td>
</tr>
<tr>
<td>Female</td>
<td>65</td>
<td>10(15.4)</td>
<td>55(84.6)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey, 2013

Plate 1: A specimen with infection in sheep

Plate 2: A specimen with infection in goat
CONCLUSION AND RECOMMENDATIONS

The purpose of this work was to determine the prevalence of liver fluke in sheep and goat slaughtered in Zaria town abattoir, Kaduna State. The findings have provided some information that would be useful in monitoring the level of infection of sheep and goat that were slaughtered in the abattoir. In conclusion, it can be seen that the prevalence is not high in sheep and goat but high in other ruminant and could be the source of economic losses to livestock industries. Therefore the information obtain from this studies will help to harness finding the possible and more effective ways of controlling and treating of these infection to reduce the economic losses. Based on the results of the findings it is recommended that better animal husbandry should be encourage which include regular veterinary inspection and deworming. Also waste material which can contaminate pasture should also be properly disposed to prevent animal from getting infection during grazing.

REFERENCES