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STUDIES ON THE PREVALENCE OF FASCIOLIASIS IN SLAUGHTERED GOATS IN BAUCHI NORTH SENATORIAL ZONE ABATTOIRS BAUCHI STATE, NIGERIA

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ABSTRACT

Fasciolosis is a snail-borne disease of medical and economic importance which is distributed worldwide. In this study, we aim at determining the prevalence of fascioliasis in slaughtered goats in Bauchi North Senatorial Zone Abattoirs Bauchi State, Nigeria. Two hundred and seventy (270) faeces samples were collected randomly from slaughtered goats in the selected abattoirs for a period of three months (March –May, 2020). The samples collected were examined using formal ether concentration technique and the data were analyses statistically using chi-square and simple percentage. Out of the samples collected and examined, 120 were females and 150 males. The overall prevalence of 74(29.6%) was observed with the female species had the highest prevalence of 51(42.5%) and male with 23(15.3%). The prevalence rates between the different sexes of goat with fascioliasis in the area were statistically significant ($P > 0.05$). Open grazing of animals in swampy areas where snails are presence and watering of animal using streams, lack of regular de-worming are all influencing the prevalence rate of the parasite in study area. Public enlightenment to the farmers/rarer on the importance of regular de-worming and watering of their animals using clean water for their economic benefit and health conditions of their animals and consumers are recommended with the aim of maximizing the welfare of the farmer, improvement on profit of meat sellers as well as health condition of the consumers.

Keywords: Bauchi North**,** Fasciolosis, Prevalence, Slaughtered Goats

INTRODUCTION

Fasciolosis is a snail-borne disease of medical and economic importance which is distributed worldwide. Two species are responsible causing these diseases to domestic and wild ruminants (most commonly, sheep, cattle, and goats; also, camelids, cervids, and buffalo) *Fasciola hepatica* and *Fasciola gigantic.* The snail intermediate hosts for *Fasciola* spp. are in the family Lymnaeidae, particularly species in the genera *Lymnaea, Galba, Fossaria,* and *Pseudosuccinea.* At least 20 snail species have been identified as intermediate hosts for one or more *Fasciola* spp. Snail species may differ with respect to their suitability to serve as intermediate hosts for *F. hepatica* versus *F. gigantica*; host ranges for both *Fasciola* spp. *Fasciola hepatica* infects more than 300 million cattle and 250 million sheep worldwide and together with *Fasciola gigantica*, cause significant economic losses to global livestock industry estimated at over USD 36 million annually through lost in productivity (Mas-coma *et al.*, 2005). Fascioliasis is cosmopolitan infection. Incidence of the infection has been reported in many countries including Nigeria, Pakistan, China, United States of America and Iran. (Valero *et al*, 201;WHO, 2006). It is commonly reported in ruminants; cattle, goat and sheep (Okaiyeto *et al*, 2012; Talukder *et al*, 2010; Ozung *et al*, 2011).

Open grazing of animals in swampy areas where snails are presence or around and watering of animal using streams, lack of regular de-worming are all influencing the prevalence rate of the parasite in the area. These are all tradition of farmers in the study area; the economic loss cause by fascioliasis on livestock is enormous de to lack of knowledge. Great loses are evident especially where farmers have little or no knowledge on the disease (Ozung *et al*., 2011; Hammond and Sewell, 1990). Loses are more encountered during raining season when most stocks are exposed to fluke challenge during grazing and watering in the swampy areas. In this study, we aim at determining the prevalence of fascioliasis in slaughtered goats in Bauchi North Senatorial Zone Abattoirs Bauchi State, Nigeria with the view of creating database information and awareness to the farmers or animal rearers in the study area.

MATERIALS AND METHODS

Study Area

Bauchi North Senatorial Zone comprised of seven (7) Local Governments out of the twenty Local Government of the State which includes Katagum, Shira, Jama'are, Itas/ Gadau, Zaki, Gamawa and Giade. The zone occupies a total land of 9717km representing about 20.2% of the State's total land area and according to the National Population Commission 2006 census, the zone has a total population of 1512677. In addition to rainfall, the zone has many water bodies which give the opportunity for irrigation farming as well as rearing of many domestic animals. During the dry season many of these animals are going to the water bodies' side to drink water which is a swapping areas with intermediate host of this parasite (Fasciolosis).This factor contribute to the spread of many diseases including fascioliasis in the area.

Sample Collection

The postmortem investigation was conducted for a period of three 3 months March-May, 2020, randomly examining 270 feacal samples of slaughtered goats at Bauchi North senatorial Zone. The faecal samples were collected directly from the rectum and bile from the gall bladder of the slaughtered goat. The samples collected in were labeled bottles base on their sex, locations and body condition then transported to the laboratory for analysis

Laboratory Analysis

Formol-ether concentration technique was used to analysis the collected samples as described by Arora and Brij (2010). Four ml of a well-mixed stool sample was put in a tube

containing 4 ml of 10% formalin. The suspension was sieved using a coffee strainer into a centrifuge tube. The filtrate was centrifuged at 2000 rpm for 2 min. The supernatant was discarded and the sediment resuspended in 10 ml of physiological saline. The sediment was suspended in 7 ml of formal saline, after which 3 ml of ether was added. The tube was closed with a stopper and shaken vigorously. The stopper was removed and the tube centrifuged at 2000 rpm for 2 min. Four layers became visible: The top layer of ether, the second layer of plugs of debris, the third layer of formalin, and the fourth layer of sediment. The plug of debris was detached from the side of the tube with the aid of a glass rod and the liquid was discarded leaving a small amount of formal saline for resuspending the sediment. A little was transferred to a clean glass slide at a time, covered with a coverslip and examined under the microscope at 10× and 40× objectives, respectively, to view for eggs and this was repeated until the whole sediment was examined and Identification of the fasciola egg was done using a key described by Cheesbrough (2005).

Data Analysis

The data collected were subjected to Chi-square test as the relationships between two variables were compared and simple percentage to determine the prevalence rate. $p<0.05$ was use to determined the level of significance. The data were all analyzed in Microsoft Office Excel Version 2010.

RESULT

Out of the 270 samples examined 74(27.4%) were positive with fasciolosis eggs. The prevalence of fasciolosis on the slaughtered goat base on their body conditions, show low prevalence rate on animals with good body condition 9(6.4%) when compare with the 43(43.9%) of the moderate and 22(68.4%) of animal with bad body condition. The prevalence rate in relation to the body condition among the slaughtered goats in the study area was statistically significant as shown in table 1. The prevalence rate was higher in female goats 51(42.5%) than male 23(15%) and the prevalence rate in relation to sex of the slaughtered goats in the study area was statistically significant as shown in table 2. Prevalence rate in different location in the study area was higher in Shira 29.3%, followed by Jama'are 27.4% then Katagum 15.3%, and the prevalence rate between different locations of the study area was not statistically significant as shown in table 3.

Table 1: Prevalence of Fasciolosis in Slaughtered Goat in Relation to Body Conditions

Body Condition	No Examined	No Infected	Prevalence Rate (%)	P Value	X^2
Good	140	9	6.4		
Moderate	98	43	43.9	8.49	5.991
Bad	32	22	68.7		
Total	270	74	27.4		

Table 2: Prevalence of Fascioliasis in Goat in Relation to Sex

Sex	No Examined	No Infected	Prevalence Rate (%)	P Value	X^2
Male	150	23	15.3		
Female	120	51	42.5	24.73	3.84
Total	270	74	27.4		

Table 3: Prevalence of Fasciolaliasis in Slaughtered Goats base location in the study

Study Area	No. Examined	No. Infected	Prevalence Rate (%)	P Value	X^2
Katagum	117	31	26.5		
Shira	58	17	29.3	0.01	5.991
Jama'are	95	26	27.4		
Total	270	74	27.4		

DISCUSSION

Fasciolosis is a snail-borne disease of medical and economic importance which is distributed worldwide. Haridy *et al.,* (2002) reported fascioliasis as a serious infectious parasitic disease infecting domestic ruminants and humans, tops all the zoonotic helminthes worldwide. In the present study, an overall prevalence of 27.4% was recorded which indicate the presence of the snail intermediate host of the parasite in the area. This is in accordance with the findings of Karshima *et al.,* (2016) who revealed a prevalence of 29.8% among cattle slaughtered in Bauchi and Magaji *et al.,* (2014) who reported 27.68% on cattle slaughtered in Sokoto but slightly low when compare the with the finding of Abraham and Jude (2014) in Calabar that reported a prevalence of 36% in goat slaughtered and Aliyu *et al.,* 2020 that reported 31.4% prevalence of *Fasciola gigantica* on goat slaughtered at Lafia, Nasarawa State. This is possible because of the nature of the environment of the animals which may be swampy or the animal were been watering in an open water bodies as well as lack of routine de-worming. This may contribute to the abundance of the intermediate host and the parasite in the areas. WHO, 2018 reported that north-eastern Nigeria, as a zone of rampant uncontrolled grazing, with no clean water sources for their animals, except open ditches and ponds which are factors aiding transmission of the disease.

The disease prevalence was found to be more in females 42.5% than in males 15.3% in the present study. This is in accordance with the findings of Karshima *et al*, (2016) in same study area and Aliyu *et al*. (2014) in Zaria. The difference in infection rate between two sexes was statistically significant. The higher prevalence observed in females than male may be attributed to more stress and hormonal imbalances during the pregnancy in female animals which usually increase their susceptibility to infections. Also, the male are usually more expensive than the female and for that reason male animals are usually given special care than the female animals because are sale early and frequently than

female which are usually keep for long period of time in herds for the breeding purpose.

The prevalence rate was higher in Shira local government 29.3 % follow by Jama'are 27.4% then Katagum local government 26.5% but the infection rate between the different locations in the study area were not statistically different. The high prevalence in Shira and Jama'are is not surprise because most of their system of rearing is less intensive management where most of the animals will be rooming about in the environment and get there water from streams around were snail intermediate host of the parasites are presence. Presence of rivers Jama'are and many other small water bodies in the two local governments more than katagum local government may also be attributed to this as observed by Usman (2019). High prevalence of fasciolosis was observed among animals with poor body condition which is not unexpected because of the poor grazing wet pasture which usually increase the risk of fasciolosis and other diseases as Karshima *et al.,* (2016).

In conclusion, the disease reminds endemic in the study as reported and is causing high economic loss to the people rearing the animals. This is due to the system of rearing in the study area extensive management which influenced the risk of fasciolosis grazing animals in swampy areas, where there is availability of snail intermediate hosts, watering animals using open water bodies as well as lack of routine de-worming. Public enlightenment to the farmers/rarer on the importance of regular de-worming and watering of their animals using clean water for their economic benefit and health conditions of their consumer are recommended with the aim of maximizing the welfare of the farmer, improvement on profit of meat sellers as well as health condition of the consumers.

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CONFLICT OF INTEREST

None

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