



PREVALENCE OF LIVER FLUKE INFECTIONS IN TRADE CATTLE SLAUGHTERED AT THE NSUKKA MUNICIPAL ABATTOIR, IKPA, ENUGU STATE

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Abstract

Fasciolosis and dicrocoeliasis are the commonest liver fluke infections encountered in cattle in Nigeria. This study investigated the prevalence of these diseases in 250 randomly selected trade cattle slaughtered at the Nsukka municipal abattoir, Ikpa, from February to June 2017. Gall bladders and faeces were examined for the presence of liver flukes and their eggs. Prevalence rates of 6.8%, 44% and 10.8% were recorded for fasciolosis, dicrocoeliasis and mixed infections (fasciolosis and dicrocoeliasis) respectively. White Fulani breed of cattle was the most infected of the cattle breeds examined, having prevalence rates of 6%, 35% and 8.8% for fasciolosis, dicrocoeliasis and mixed infections respectively. Adult cattle were more infected than the young ones. Findings also showed that bulls were more infected than cows. The present study reports the presence of these diseases in trade cattle in the study area and the need for appropriate control measures. Results generated in this study contribute to existing knowledge in the distribution of fasciolosis and dicrocoeliasis in Nigeria which will be helpful in future research, disease control and public health education.

Keywords: Fasciolosis, Dicrocoeliasis, Cattle, Nsukka, Prevalence

Introduction

Bovine fasciolosis is an important trematode disease of cattle worldwide. It has impacted negatively on global economy causing annual production losses exceeding 3 billion USD dollars (Elelu and Eisler, 2018). In addition, it is zoonotic and hence of public concern (WHO, 1995). In Nigeria, *Fasciola gigantica* infections is a major cause of liver condemnation with attendant cattle losses estimated to be £32.5 million pounds (Elelu and Eisler, 2018). Dicrocoeliasis, caused by *Dicrocoelium*, is another trematode infection which sometimes occurs concurrently with fasciolosis in Nigeria, though of lesser pathogenic importance. Dicrocoeliasis is also of public health importance (Roche, 1948; Herman and Oyerinde, 1976).

The presence of liver fluke infections in cattle has long been established from different parts of the country, especially in the north where these infections have been identified as the most economically important helminth disease in ruminants (Schillhorn van Veen *et al.*, 1980). Recent reports, e.g., from Onitsha (Ekwunife and Eneanya, 2006), Ondo (Omoleye *et al.*, 2012), Adamawa (Ardo *et al.*, 2013), Calabar (Abraham and Jude, 2014), Zaria (Ieren *et al.*, 2016), Ibadan (Oladele-Bukola and Odetokun, 2014) and Sokoto (Alayande *et al.*, 2015), still record high prevalence rates. Thus, there is need for continuous abattoir surveillance, public health awareness campaigns, as well as the intensification of appropriate control measures. States in the northern part of Nigeria are the major suppliers of cattle and beef to most parts of the country including the Nsukka area of Enugu State. This factor, in addition to the fadamah system of management as well as the process of cattle trade and the seasonal migration of cattle from northern Nigeria to other parts of the country, promote the spread of these diseases to areas with low or no prevalence. This study investigated the prevalence of liver fluke infections in trade cattle slaughtered at Nsukka municipal abattoir, Ikpa, Enugu State.

Materials and methods

250 trade cattle of different breeds were randomly selected and examined at post-mortem at Nsukka municipal abattoir between February and June 2017. Faecal samples from the rectum as well as gall bladders were collected in labelled containers. All samples were taken to the laboratory in the Department of Veterinary Parasitology and Entomology, University of Nigeria, Nsukka for coprological and gall bladder examination. Faecal samples were analyzed using the technique described by Urquhart *et al.*, (1996). Bile and gall bladder scrapings were analyzed using the method of Thienpont *et al.*, (1979).



Results and Discussion

Prevalence rates of 6.8% and 44% were recorded for fasciolosis and dicrocoeliasis respectively, thus confirming the presence of these diseases in the study area (Table 1). Also, the study observed the occurrence of both diseases in some cattle, with a prevalence of 10.8%.

Table 1. Overall prevalence (%) of liver fluke infections in trade cattle (n = 250) slaughtered at Nsukka municipal abattoir from February to June 2017.

Liver fluke infections	No infected (Prevalence)
Total No infected	144 (57.6%)
Fasciolosis	17 (6.8%)
Dicrocoeliasis	110 (44%)
Mixed infections	17 (10.8%)

Findings agree with previous studies by Ngwu *et al.* (2004) who reported a prevalence rate of 10% for fasciolosis in Nsukka. This higher prevalence could be attributed to the more sensitive method of examination, post-mortem liver examination, used in their study. Findings also agree with results of Nwosu and Srivastava (1993) and Ieren *et al.* (2016) who also reported prevalence of fasciolosis, dicrocoeliasis and mixed infections in cattle in Borno State (21.1%, 18.3%, 3.3%) and Zaria (13.27%, 36.22%, 50.51%) respectively. Prevalence rate for fasciolosis in the present study was lower than the rates reported from previous studies in other parts of the country, especially northern Nigeria: Onitsha -10.51% (Ekwunife and Eneanya, 2006), Borno –21.1% (Nwosu and Srivastava, 1993), Zaria - 13.27% (Ieren *et al.*, 2016). Thus, fasciolosis is still of lower prevalence in south eastern Nigeria than in northern Nigeria, and this could be as a result of the cattle management practices employed in the latter area. Higher prevalence rate was reported for dicrocoeliasis in the present study than in previous studies by Nwosu and Srivastava (1993) and Ieren *et al.*, (2016). This could be as a result of the climatic conditions in south eastern Nigeria which favours the survival of the intermediate hosts of *Dicrocoelium*, especially the brown ants. Generally, reports of abattoir surveys from southern Nigeria reflect the disease situation in northern Nigeria from where the trade animals are bought and/or transported (Schillhorn van Veen, 1980), even though the exact origin of these animals are difficult to identify (Ogunrinade *et al.*, 1981).

White Fulani cattle breed was the most infected of the five cattle breed sampled in the study having prevalence rates of 6%, 35.2% and 8.8% for fasciolosis, dicrocoeliasis and mixed infections respectively (Table 2). This could be because white Fulani cattle breed is the predominant breed of trade cattle in south eastern Nigeria.

Table 2. Breed-specific prevalence of liver fluke infections in trade cattle (n = 250) slaughtered at Nsukka municipal abattoir from February to June 2017.

Breed	No sampled	Fasciolosis	Dicrocoeliasis	Mixed infections
White Fulani	206	15 (6%)	88 (35.2%)	22 (8.8%)
N'dama	22	1 (0.4%)	10 (4%)	3 (1.2%)
Sokoto Gudali	19	1 (0.4%)	10 (4%)	1(0.4%)
Muturu	2	0 (0)	2 (0.8%)	0 (0)
Red Bororo	1	0 (0)	0 (0)	1(0.4%)

Results of the present study also showed that adult cattle (3 years and above) were more infected than the young ones (below 3 years) (Table 3), and this could be due to maternal immunity which the latter age group still possess. This finding agrees with that of Ardo *et al.* (2013). Bulls were more infected than cows in this study (Table 4). In practice, cows are reserved for reproductive purposes while bulls are slaughtered for meat. Thus, more bulls than cows were sampled in the study.

Table 3. Age-specific prevalence of liver fluke infections in trade cattle (n = 250) slaughtered at Nsukka municipal abattoir from February to June 2017.

Age	No sampled	Fasciolosis	Dicrocoeliasis	Mixed infections
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Young cattle (< 3 years)	90	6 (2.4%)	40 (16%)	13 (5.2%)
Adult cattle (≥ 3 years)	160	11 (4.4%)	70 (28%)	14 (5.6%)

Table 4. Sex-specific prevalence of liver fluke infections in trade cattle (n = 250) slaughtered at Nsukka municipal abattoir from February to June 2017.

Sex	No sampled	Fasciolosis	Dicrocoeliasis	Mixed infections
Male	221	13 (5.2%)	98 (10.2%)	25 (10%)
Female	29	4 (1.6%)	12 (4.8%)	2 (0.8%)

Conclusion and Recommendations

This study confirms the presence of fasciolosis and dicrocoeliasis, as well as the occurrence of mixed infections in trade cattle in Nsukka municipal abattoir, Ikpa, Enugu state. Based on the economic challenges and health problems associated with these disease conditions, the following measures are recommended: public health education of butchers and the populace, proper disposal of condemned meat, modernization and sanitization of abattoirs, restricted grazing to prevent undue exposure to diseases and intermediate hosts and strategic anthelmintic treatment of cattle to reduce worm burden, environmental contamination and prevent transmission of infection to humans.

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