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Incidence of Bovine Fasciolosis and its Economic Implications at Trans-Amadi Abattoir Port-Harcourt, Nigeria

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Abstract: This study evaluated the prevalence and socio-economic consequence of bovine fascioliasis at Tran-Amadi abattoir, Port-Harcourt, Rivers State, Nigeria. The Study revealed an incidence rate of 0.88% - 2.36% (average 1.72%) over the six month period. A total of 382 livers were found to be infected with fasciolosis. The overall financial loss was estimated at ₦269,295 ($1683.09) accruing from a total of 635.2 Kg of liver condemned. The study advocates that livestock farmers should be educated on effective control of fasciolosisand encouraged to maintain good husbandry practices that reduces the exposure of cattle to the encysted metacercariae (infective stage). The public should also be enlightened on the mode of transmission of the infective stage of *Fasciola* and the control measures in order to minimize economic losses.

Key words: Prevalence · Fascioliasis · Bovine · Abattoir · Nigeria

INTRODUCTION

In Sub-Saharan Africa, as in other tropical and sub-tropical regions of the world livestock farming is one of the major sources of animal protein, cattle serves as one providing beef during festivities around the world, flexible income for family units, employment, farm energy and manure [1]. It accounts for as much as one third of Nigeria's agricultural gross domestic product (GDP), it also provides hide and skin as a raw material in the leather industries [2, 3]. A significant proportion of these animals are reared under the semi-intensive management system with little supplementation, this result in low productivity and high pre-weaning mortality. Fasciolosis of cattle; caused by *Fasciola gigantica* a digenetic parasite which belongs to the family Fasciolidae, is common and worldwide in distribution and occur in some parts of Nigeria [4, 5]. The adult worms inhabit the bile ducts and gall bladder of the infected animals, causing severe damage which may lead to death [6]. The disease is characterized by anemia due to severe liver damage caused by immature fluke tunneling through the liver parenchyma with extensive hemorrhage that culminates in severe clinical disease [7]. Several complication including weight loss, drop in milk production, submandibular edema, significant morbidity, mortality and diarrhea have been reported [8] in liver fluke infection. Parasitic diseases in the tropics are responsible for great losses in the meat industry than any other infectious or metabolic disease [9]. Fasciolosis is mainly observed in chronic form, either in young animals during the rainy season due to recently acquired infections or in the dry season in older animals which are in poor condition and may not be able to withstand the effect of relatively small number of flukes. Irrigation activities during the dry season have been reported to be one of the common sources of infection to animals grazing in areas contaminatedwith metacercaria [10, 11]. The larger proportion of these animals' population are however largely concentrated in the northern region of the country than the southern region. Specifically, about 90 percent of the country's cattle population and 70 percent of the sheep and goat populations are concentrated in northern regions of the country.

Cattle get infectednormally in the rainy season, but in the dry season, the herdsmen migrate in search of water and grazing such that thousands of cattle often converge on the few ponds that fail to dry up. In such

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locations, snail intermediate hosts are found and they reinforce the *Fasciola*infection that has beenalready obtained by the cattle during the rainy season [12, 13]. Fasciolosis gained attention not only due to its prevalence and economic significance to animals but also due to its zoonotic aspectand public health importance [14-16]. This study therefore, was under-taken to determine the prevalence of fasciolosisin cattle slaughtered in Trans- Amadi abattoir in Obio- Okpor Local Government Area Port-Harcourt, River State Nigeria.

MATERIALS AND METHODS

Study area and Animals: Trans-amadi abattoir is located at Oginigba in Obio LGA of Rivers state (latitudes 4° 45'E and 4°60'E and longitudes 6° 50'E and 8° 00'E). It is the largest abattoir in the state and receives ruminants from various parts of Nigeria, mainly northern Nigeria and from other countries bordering Nigeria including Chad, Niger, Mali and Cameroon [17, 18]. The abattoir provides cow meat to a cosmopolitan population of the city of Port-Harcourt, the choice of this abattoir as a point for data collection is therefore considered representative for monitoring animal diseases trends. Slaughtered cattle were inspected by trained veterinary technical officers and supervised by a veterinarian.

Data Collection: The data were collected everyday between 06:00hr and 11:00hrs GMT, for a period of six months (Sept 2012-Feb 2013). Data on the number of male and female cattle slaughtered and the number of liver infected partially or totally condemned wererecorded. The results were analyzed to determine the prevalence of fasciolosisin slaughtered cattle. Post-mortem examination was carried out by visual inspection, palpation, incision and olfaction. The breeds of inspected cattle included White Fulani (Bunaji), Red Bororo, Keteku, Muturu, Ndama and Sokoto Gudali. Prices of meat and offals were determined through interviews periodically conducted with cattle traders at Trans- Amadi livestock market where Tran-Amadi Abattoir is located at different periods.

RESULTS AND DISCUSSION

A total of 22, 259 cattle were slaughtered at the abattoir during the study period, 18, 027 were bulls and 4232 were cows. During the study period the rate of infection with fasciolosis ranged between 0.88% and 2.36% with averageof 1.72% (Table 1). The highest number of cases was observed in the month of September and October which coincided with the rainy season that supported the survival of more viable encysted metacercaria for ingestion during grazing. The average rate of 1.72% of cases of fasciolosis was lower than other observed rates ranging from 2.31%- 23.41% reported by Oladele-Bukola and Odetokun [19], Ogunrinade and Ogunrinade [20], Ibironke [21], Raji *et al.* [22], Alawa *et al.* [23] and Elkanah [24]. The reason for the rates observed was due to the extensive system of farming by the cattle farmers in the northern part of the country, where the animals werepurchased with little or no veterinary services rendered to the animals by the farmers. Poor control of the disease, high cost of fasciolosisdrugs, self-medication by most livestock rearers, failure of farmers to schedule deworming programmes for their animals at the appropriate time and possibly development of resistance to commonly used anti-*Fasciola*drugs werealso other factors that were responsible for the observed rates. All these factors accounted for the high incidence of fasciolosis in the bovine liver at slaughter [21]. Bovine fasciolosis is enzootic in Nigeria and it's the leading cause of liver condemnation in most abattoirs. This calls for improved control and preventive measure such as regular deworming of the cattle and also avoidance of fadama area for grazing [22]. The incidence was higher in the month of September (2.36%), Fulani nomadic herdsmen are known to move their cattle down south during this period in search of green pastures and water. This makes it possible for the cattle to ingest infective stageof *Fasciola* on the available pasture during their movement [19].

Table 1: Total number of cases of bovine fasciolosisat Trans-Amadi Abattoir Sept 2012-Feb 2013

Period	Number of cattle slaughtered	Number of bulls Slaughtered	Number of Cows Slaughtered	Cases of Fascioliasis	Prevalence (%)
Sept 2012	3722	3402	320	88	2.36
Oct 2012	3711	3000	711	81	2.18
Nov 2012	3625	2625	1000	58	1.60
Dec 2012	3751	3000	751	72	1.92
Jan 2013	3700	3000	700	50	1.35
Feb 2013	3750	3000	750	33	0.88
Total	22,259	18,027	4232	382	1.72

Table 2: Monetary losses resulting from bovine fasciolosis in cattle slaughtered at Trans-Amadi Abattoir Sept 2012- Feb 2013

Period	Price Per Kg of Liver (₦)	Number of Liver condemned Partially(Average weight 1.3Kg)	Financial losses (₦)	Number of Liver condemned Totally(Average weight 3.5Kg)	Financial Losses (₦)
Sept 2012	450	60	35,100	28	44,100
Oct 2012	500	69	44,850	12	21,000
Nov 2012	500	49	31,850	9	15,750
Dec 2012	550	65	46,475	7	13,475
Jan 2013	520	45	30,420	5	9,100
Feb 2013	500	31	20,150	2	3,500
Total		319	162,370	63	106,925

The number of condemned bovine livers and degree of their condemnation were observed and recorded during this study. The prices per kg of liver and its associated financial losses were summarized in Table 2. A total of 382 liverswere found to be infected with fasciolosis. The overall financial loss was estimated at ₦ 269,295 ($1683.09) accruing from a total of 635.2Kg ofcondemned liver. The highest financial loss was recorded in September ₦ 79,200 ($495) with the lowest financial loss obtained in February ₦ 23,650 ($147.8). The financial losses recorded in this study werelower than that reported by Oladele-Bukola and Odetokun [19], Ogunrinade and Ogunrinade [20] and Biu *et al.* [25].

CONCLUSION

This study hadshown that bovine fasciolosis was prevalent in the study area and could be responsible for production losses and reduced meat production. Livestock farmers should be educated on effective control of fasciolosis and encouraged to maintain good husbandry practices that reduced the exposure of cattle to the encysted metacercariae. If strict husbandry practices are adhered to, the economic losses accrued due to condemnation of the liver will be minimized. The public should be enlightened on the mode of transmission of the infective stage of *Fasciola*and the control measures in order to minimize economic losses.

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