

Prevalence of Bovine Fasciolosis in Bauchi State, Nigeria

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ABSTRACT

A total of 1600 faecal samples were collected from live cattle in five local government areas (LGAs) of Bauchi state, Nigeria, for a period of 12 months and analyzed using formol-ether sedimentation technique for the presence of *Fasciola* eggs. The study revealed an overall prevalence of 76.9 % in the state. Dass local government area (LGA) had the highest prevalence (83.6 %), while Ningi LGA had the least (74.2 %). Adult cattle had higher prevalence (64.1 %) than the young ones (35.9 %). This was statistically significant ($p < 0.05$). The distribution of *Fasciola* eggs was higher in the wet than in the dry season in all the local government areas sampled. The result infers a high prevalence of bovine fasciolosis in the study area, which may constitute a constraint to cattle production. The need for adequate control measures is indicated.

Key words: Prevalence, fasciolosis, cattle, Bauchi State, Nigeria

INTRODUCTION

Bovine fasciolosis, caused by *Fasciola hepatica* and *Fasciola gigantica*, is an important parasitic infection that affects the biliary duct of livestock in different parts of the world (Vercruysse and Clarebout, 2001). Fasciolosis is essentially a problem of young stock, morbidity cut across both young and adult animals (Malone *et al.*, 1985). In addition to its veterinary importance, it has recently been shown to be a re-emerging and widespread zoonosis affecting a number of human populations (Mas-coma and Bargues, 1997; Esteban *et al.*, 2003). Several reports around the world on bovine fasciolosis have shown that there exist a relationship between transmission and climatic factors (Ollerenshaw, 1971; Mzembe and Chaudhry, 1979; Malone *et al.*, 1985; Amato *et al.*, 1986; Manga-Gonzalez *et al.*, 1990). In Nigeria, several reports exist on the prevalence of fasciolosis in ruminants (Babalola, 1973; Babalola and Schillhorn van veen, 1976; Uzoukwu and Ikeme, 1978; Schillhorn van veen, 1980; Folorunso and Ogunusi, 2000; Ofukwu and Okwori, 2000; Uko and Ansa, 2002; Uko and Ansa, 2002).

The disease is a serious problem in the humid and sub-humid zones, while in the arid and semi-arid zones, where climatic conditions are less favorable for snail vector of liver flukes, the incidence is comparatively low (Ogunrinade and Ogunrinade, 1980). However, an increase in the number of dams and irrigation canals built to boost energy and food production in these areas has increased the number of potential snail habitat, thereby increasing the incidence of liver fluke infection (Ogunrinade and Ogunrinade, 1980). The economic impact of bovine fasciolosis which has to do with decline production, condemnation of affected parts, retarded growth and even death of animals is becoming more important due to the fact that infection often develops in a pernicious way, progresses slowly and not easily diagnosed (Hammond, 1973; Graber, 1976). This study was aimed at investigating the current prevalence of bovine fasciolosis in Bauchi State, Nigeria in order to assist in formulating effective control measures.

MATERIALS AND METHODS

Study area

Bauchi State is located in the Northeastern geographical region of Nigeria. The wet season is between May - September and the dry season spans from November - April. The inhabitants are made up of both sedentary arable farmers and migratory herdsmen mainly of the Fulani ethnic group. Five local government areas in Bauchi State

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namely: Bauchi, Dass, Toro, Ninge and Bogoro were surveyed for *Fasciola* eggs. The cattle sampled were from sedentary and nomadic herds.

Sample collection

One thousand six hundred (1600) rectal faecal samples were collected randomly from live cattle in five local government areas of Bauchi State during the wet and dry season. The age of the animals sampled was determined by examining the dentition of each sampled animal (Crane, 1997). Cattle under two years of age were grouped as young ($n = 574$), and those beyond two years were grouped as adult ($n = 1026$). Each sample was collected into a clean polythene bag and examined immediately in the parasitology laboratory, National Veterinary Research Institute, Vom, or stored at 4°C till the second day before examination.

Sample analysis

Collected samples were examined using formol-ether sedimentation technique described by Franklin and Harold (1994). The faecal sample was pulverized with water and the suspension strained through two layers of gauze, then washed twice by centrifugation (2000 rpm) for 2 minutes and the supernatant decanted. The faecal sediment was further mixed with 10mls of 10% formalin and 3mls of ether. This was corked and shaken vigorously. The formol-ether suspension was centrifuged for 2 minutes, the debris removed and the supernatant decanted. A drop of the concentrated sediment was mixed with a drop of 2% aqueous iodine for examination under a cover slip.

Statistical analysis

One way ANOVA in a General Linear Model (GLM) (Statistix 8.0 analytical software) was used to observe the variation of bovine *Fasciola* eggs with season and age groups. In all analysis, confidence level was held at 95%.

RESULTS

In this survey, 1600 faecal samples from live cattle in five local government areas (LGAs) of Bauchi State, Nigeria were analyzed by sedimentation method for *Fasciola* eggs. They included 286 (17.9 %) from Bauchi LGA, 335 (20.9 %) from Dass LGA, 326 (20.3 %) from Toro LGA, 310 (19.4 %) and 243 (21.4 %) from Ninge and Bogoro LGAs respectively. The overall prevalence (76.9 %) of bovine fasciolosis in Bauchi state is shown in Table 1. The age group prevalence of bovine fasciolosis is presented in Table 2. Adult cattle had higher prevalence 788 (64.1%) than the young 442 (35.9 %). The difference was statistically significant ($p < 0.05$). Figure 1 shows the seasonal prevalence of bovine fasciolosis in Bauchi State. The distribution of *Fasciola* eggs was significantly higher ($p < 0.05$) in the wet than the dry season in all the local government areas sampled.

Table 1. Prevalence of bovine fasciolosis in Bauchi State according to locations

Location	Total No of animals sampled	Total No. of animals positive	Prevalence (%)
Bauchi	286	215	75.2
Dass	335	280	83.6
Toro	326	245	75.2
Ninge	310	230	74.2
Bogoro	343	260	75.8
Total	1600	1230	76.9

Table 2. Age group prevalence of bovine fasciolosis in Bauchi State

Location	Total No. of Animals Sampled	Total No. of animals positive	Number and percentage of animals positive by age	
			Young*	Adult†()
Bauchi	286	215	85(39.5)	130(60.5)
Dass	335	280	90(32.1)	190(67.9)
Toro	326	245	93(38.0)	152(62.0)
Ninge	310	230	75(29.1)	155(67.4)
Bogoro	343	260	99(38.1)	161(61.9)
Total	1600	1230	442(35.9)	788(64.1)

() Percentage of animals positive; † Animals above 2 years of age; * Animals below 2 years of age

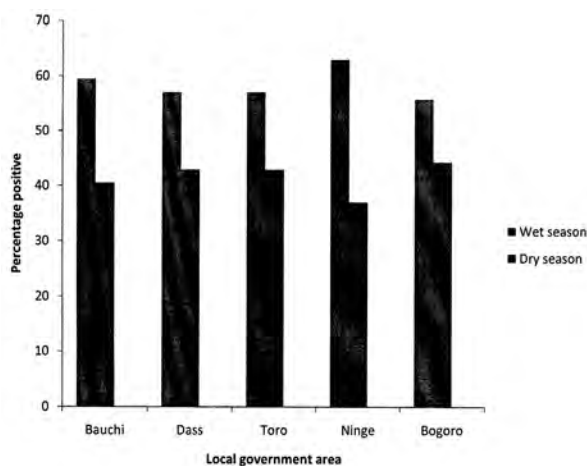


Fig. 1. Seasonal distribution of *Fasciola es* in Bauchi State cattle

DISCUSSION

The results showed a high prevalence (76.9 %) of bovine fasciolosis in Bauchi State. This is higher than previous reports by Babalola (1973) of 19.5% and Babalola and Schillhorn van veen (1976) of 31.7% - 40.7% in the same area studied who examined liver specimens in slaughtered cattle. Our finding of 76.9% prevalence was also higher compared to the 42.2% observed by Nwosu and Srivastava (1993) in their survey of the gallbladder of slaughtered ruminants in Borno State, Northeastern Nigeria. Although *Fasciola* eggs were detected in both wet and dry season of the year in cattle in Bauchi State, but it was higher in the wet season in all the local government areas sampled. This is in agreement with previous work in some parts of Africa (Vassiler and Jooste, 1991; Phiri *et al.*, 2005). Rangel-Ruiz *et al.* (1999) reported that since *Fasciola* can live for more than one year in cattle, producing eggs during such period, the determination of major risk period is complicated. Adult cattle had a significantly ($p < 0.05$) higher prevalence than young ones. This may be due to the fact that the adults have greater mobility in search of pasture and water which enables them to reach many habitats of the snail intermediate host (*Lymnaea natalensis*). It may also be attributed to the difference in sample size between the age group. Fasciolosis causes economic losses in livestock as a result of mortalities, abortions, retarded growth, emaciated carcasses, reduced meat and milk production and condemnation of infected liver. There is need to develop strategic programs to reduce the huge economic losses incurred due to liver fluke infection in cattle.

In conclusion, the prevalence of bovine fasciolosis in Bauchi State is high, and may constitute a constraint to cattle production if adequate control measures are not put in place. More studies on the influence of management and the significance of the grazing pattern of cattle on the prevalence of bovine fasciolosis is required in order to design a rational, economic and locally adoptable and sustainable parasite control programmes.

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