

Prevalence Of Paramphistomiasis Among Goats Slaughtered In Some Selected Abattoirs In Imo State, Nigeria

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ABSTRACT: Tropical diseases of ruminants of which Paramphistomiasis is one have been of serious veterinary concern particularly in the eastern part of Nigeria. The current study investigated the prevalence of this disease among Sokoto red Hausa goats, in selected abattoirs in Imo State, Nigeria between 2004 and 2005. The objective of the study was to determine the prevalence and distribution of paramphistomiasis in both sexes of the goats imported from northern states of Nigeria. Direct smear, formol ether concentration and sodium chloride floatation methods were used to harvest the eggs and adult parasites. Of 128 animals examined, 30 (23.4%) of the goats had serious infection with *paramphistomum cervi*. The prevalence varied among goats in various abattoir locations. Highest infection was recorded at Orlu abattoir with 44.4% followed by Oriegwu and Achingali 25.0% respectively, followed by Afor Ogbe 24.0%, Okigwe 17.1%. Sex of the ruminants showed no significant relationship with the infections, age was found to be highly significant. Adult animals (>2years) had more infections than younger ones (<2years) at $P<0.05$. Infection rose with increased rainfall. Highest infection was observed at the peak of rainy season and decreased also with decreased rainfall. Intensity of infection was light in males than females. This result therefore calls for adequate environmental health education programme and appropriate sensitization exercise for goat rearers on the existence and prevalence of the infection.

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INTRODUCTION

Parasitic disease is considered an important obstacle in the health and product performance of animals. Loss of millions of farm animal products is incurred daily due to the devastating effect of parasite. Retarded growth, poor milk, meat and wool production and poor quality of hide and skin are known in goats due to parasitic infection (Ukoli, 1992 and Ahmed, et al 1996). They bring about tremendous loss and damages to the liver and other organs (Okafor and Ikpeama, 1985). Relatively little is written in the literature about tissue damages caused by *P. cervi*. This infection is present in almost 40% of the total slaughter goats encountered in our local slaughter houses. (Njoku-Tony, 2007). Therefore, it was pertinent to study the damages caused to the liver of goat by *P. cervi*.

The study was therefore designed to investigate the prevalence of Paramphistomiasis among goats in selected abattoirs in Imo State, This present study reports the results of the prevalence and distribution of *P. cervi* infection in parts of Imo State.

MATERIALS AND METHOD

THE STUDY AREA:

Imo State is one of the southeastern states of Nigeria. It is located within latitude $5^{\circ}10'$ and $5^{\circ}67'N$,

and longitudes $6^{\circ}36'$ and $7^{\circ}28'E$. the state is bounded on the North West by Anambra State, on the south-west by River State and on the eastern borders by Abia State.

The state has two main geographical regions the coastal plain, covering the central and southern parts of the state and the plateau and escapement zones in the northern part of the state. The soil of the coastal plain is sandy/loam and vegetation is typical rainforest. While that of the North Eastern geographical plain is clay with rich savannah vegetation. There are two distinct seasons, the rainy and dry season with the wet or rainy season lasting from March to October with peak rainfall occurring in July and September and short slightly drier spell in August, popularly known as August break. Annual rainfall ranges from 0.0mm to 2,500mm. The mean temperature over most of the state is $27^{\circ}C$, while relative humidity is about 70-80% (IMSG, 1993). Agriculture is a major socio-economic activity of the populace. There are civil and public servant also, as well as fishermen and traders.

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Sampling Methods

A Total of 128 stool samples were collected from goats of both sexes from September 2004 to September 2005 to monitor the prevalence and distribution of *P. cervi* infection. Liver samples of goats were also examined all through the period. Feces collected from the intestines and rectum of slaughter goats were sent to the laboratory in labeled specimen bottles and processed under 48hrs to identify *P. cervi* ova. Egg examination, identification and concentration were done by formol ether concentration method, direct fecal smear and sodium chloride floatation methods. Egg counts were carried out using 10 eye piece (WHO, 1984). Identification of *P. cervi* eggs was done according to the criteria of Fleck and Moody (1988) and Shah-Fisher and say(1989).sex of the animals were observed and recorded. Ages of goats were determined by estimation of dentition (Andrew et al, 1990). Prevalence was expressed as the percentage of goats infected, while intensity was recorded as number of eggs per 5grams of feces. The study lasted for one year (September 2004 to September 2005)

Statistical Analysis

Descriptive statistics as provided by the SPSS 17.0© and MS Exel 2010 software were used to represent ensuing data. The test of homogeneity of variance in means of disease prevalence was conducted with the one way analysis of variance (ANOVA). Gender and age relatedness to disease prevalence were explored with the chi square test of significance. The influence of rainfall on disease prevalence was explored using the pearson product moment correlation coefficient(r)

RESULTS

A test of variance of equality in mean prevalence of *P. cervi* across the study locations revealed significant difference

$$F(16,24) > F_{crit}(4.04) \text{ at } P < 0.05$$

Table 1 showed the prevalence of *P. cervi* in Imo State. Of 128 goat examined 30 (23.4%) were infected. Highest infection was at Orlu 4(44.0%), followed by Achingali and Oriagu 4(25.0%) and 3(25.0%) respectively, Afor Ogbe 12(24.0%) and lastly Okigwe 7(17.1%).

Sex related prevalence of *P. cervi* infection in slaughter goat is shown in table 2. Out of 92 male goats examined, 26(28.3%) were infected, 4(11.1%) of the 36 females examined were infected. However, female goats in Achingali and Orlu abattoirs had no infection. Infection varied from one abattoir to another.

Table 1: Prevalence of *P. cervi* in goats (*Capri sp*) in selected abattoirs.

Abattoir	Number Examined	Number infected	% infected
Afor Ogbe	50	12	24.0
Oriagu	12	3	25.0
Okigwe	41	7	17.1
Orlu	9	4	44.4
Achingali	16	4	25.0
	128	30	23.4

Table 3 showed the age related distribution of Paramphistomiasis in goats. Out of 123 adults (>2yrs) examined, 29(23.5%) were infected while only 1(20.%) out of 5 young goats (<2yrs) were infected. Old goats in Oriagu had the highest infection of 43.0% followed by Afor Ogbe and Achingali with 12 (25.0%) and 3(25.0%) respectively. Okigwe and Orlu had 18.0% and 11.1% respectively. Young goats in Oriagu had 50.0% prevalence. There was a significant difference in the infection recorded in old goats (p<0.05) than in young goats.

Table 4 showed the monthly prevalence, and mean worm load (xwld) of *P. cervi* in slaughter goats. Out of 128 goats examined from September 2004 to September 2005, 30(23.4%) were infected. Total number of parasites was 798 and ((XWLD) mean worm load was 9691.7. Rainfall range was between 0.00mm to 500.7mm through the year. Infection rose with increase in rainfall with highest level observed at the peak of rainy season and dropping at the dry season months.

Sex related egg counts of *P. cervi* in goats is shown in table 5. Of the 26(86.7%) infected male goats, 18(69.2%) were having egg counts of 0-49. 4(15.4%) had 50-99 egg counts, 2(7.7%) had egg counts 100-149, and 150-199 respectively. In the female category, the infected 4(100%) had egg

counts of 0-49. Total number of infected goats with egg counts of 0-49 are 22(73.3%), those with egg counts of 50-99 are 4 (13.3%), 2(6.7%) had 100-149 while a total of 2(6.7%) had egg counts of 150-199.

Intensity of the disease is significantly higher in males than in females at $p < 0.05$.

Table 2: Sex-related prevalence of *P. cervi* in goat (*capris* sp) slaughtered in selected abattoirs in Imo State, Nigeria.

Abattoir location	Male			Female			Total no. examined	Total No. infected
	No examined	No infected	% infected	No examined	No infected	% infected		
Afor Ogbe	35	10	28.6	15	2	13.3	50	12(24.0)
Oria	8	2	25.0	4	1	25.0	12	3(25.0)
Oki	26	6	23.1	15	1	6.7	41	7(17.1)
Orlu	8	1	12.5	1	0	0.0	9	1(11.1)
Achi	15	7	46.7	1	0	0.0	16	7(43.8)
Total	92	26	28.3	36	4	11.1	128	30(23.4)

Table 3: Age-related distribution of *P. cervi* in Imo State, Nigeria

Abattoir	Old goats (<2yrs)			Young goats (>2yrs)		
	No examined	No infected	% infected	No examined	No infected	% infected
Afor Afor Ogbe	48	12	25.0	2	0	0
Oria Oriagu	14	6	43.0	2	1	50
Okig Okigwe	40	7	18.0	1	0	0.0
Orlu Orlu	9	1	11.1	0	0	0.0
Achingali	12	3	25.0	0	0	0.0
Total	123	29	23.5%	5	1	20%

Table 4: Monthly distribution, prevalence and mean worm Load of *P. cervi* in relation to rainfall.

Month	Rainfall in mm	No of goats examined	No of goats infected	% of goats infected	Total no of parasites	Mean worm load (XWLD)
Sept. 2004	309.1	7	-	-	-	-
Oct. 2004	322.9	6	-	-	-	-
Nov. 2004	37.0	4	-	-	-	-
Dec. 2004	0.0	13	-	-	-	-
Jan. 2005	38.3	16	-	-	-	-
Feb. 2005	84.3	9	-	-	-	-

Mar. 2005	103.1	15	2	13.3	14	1200
April 2005	182.2	12	6	50.0	122	2033
May 2005	469.8	12	5	46.7	150	3000
June 2005	500.7	13	6	46.2	190	3166
July 2005	260.0	4	2	50.0	79	3500
Aug. 2005	190.5	9	4	33.3	112	2800
Sept. 2005	490.6	8	4	50.0	119	2975
Total		128	30	23.4	798	9691.7

Table 5: Sex related egg counts of *P. cervi* in goat

Egg/5gram of faces	Number of male goats	No of female goats	Total number (%)
0-49	18(69.2)	4(100)	22(73.3)
50-99	4(15.4)	0(0.00)	4(13.3)
100-149	2(7.7)	0(0.0)	2(6.7)
150-199	2(7.7)	0(0.0)	2(6.7)
>200	0(0.0)	0(0.0)	0(0.0)
	26(86.7%)	4(13.3)	30

DISCUSSION

The results of the present study showed 23.4% prevalence of the infection in goats. (Andrew et al, 1990). This 23.4% prevalence is in line with previous studies such as one conducted by Anosike et al (2005) in Etit area of Imo State. Paramphistomiasis is incriminated as one of the reasons for liver condemnation in Nigeria (Babalola and Schillhorn Van Veen, 1975).

Infection varied from one abattoir to another, this may have been contributed by the various climatic and ecological factors that abound in the different locations where these goats grazed upon before being transported to the eastern part of the country for slaughter Njoku Tony (2007).

Highest infection rate was recorded in Okigwe (44.4%). The area is generally known for its land having stagnant and slow flowing water bodies. These water bodies equally are surrounded by vegetation that harbour snail intermediate host that harbour the infecting parasite (Okafor et al, 1988). Infection was higher in males than females, this is in line with the work of Njoku Tony (2007). Further

investigation revealed that more male goats are brought to the slaughter houses than female goats, this made proper assessment of the females difficult. However sex was not significant in the distribution of the infection since both male and female goats were exposed to the same type of feed and therefore had equal chances of picking the infection especially in contaminated areas Ahmed et al (1996). Prevalence of the infection varied between the adults (above 2yrs) and the young (below 2yrs). Investigation unveiled that young animals were not brought to the abattoirs because their meat is not mature enough for consumption and therefore of low market value. It is also known that previous infection affords some level of resistance against re-infection hence high prevalence is recorded in younger one while the older ones seed the pasture with eggs (Belding, 1969). Enihiyi et al (1975) while working with cestodes and nematodes recorded a close association between age and intestinal helminthes. This is also applicable to *P. cervi* infection. Monthly distribution, prevalence and mean worm load (xwld) of *P. cervi* revealed a gradual rise in infection with rainfall. Highest infection generally reported between April and September (Shar Fisher and say, 1989).

Table 5 showed the age-related egg counts of *P. cervi* in goat, it revealed that majority of the goats had light to moderate infection 73.3% had light infection, 13.3% had moderate infection while 13.4% had heavy infection. A total of 86.7% of the male had *P. cervi* in their faces. Among the females 13.3% had *P. cervi* ova in their feces.

Light infection – 0-49 egg counts

Moderate infection -50-99 egg counts

Heavy infection – 100- and above.

CONCLUSION

The present study report has increase the awareness of prevalence of the disease in the study area. This had also further confirmed the work of

Njoku-Tony, (2007) on the prevalence of the intermediate snail of this infection. It also showed that the area has the physico-chemical parameter and vegetation that supports the growth of the vector snails (Anosike, et al 2005). Since the public health significance of this infection is viewed from the socio-economic implication due to tremendous financial loss accruing from valuable liver condemnation from infected goats (Hill and Onabamiro, 1961) adequate health education and mollusc control programs is therefore pertinent for goat rearers in the study area to forestall further incidences.

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