

# HELMINTHIASIS OF PIGS IN DELTA AREA OF NIGERIA

GUOBADIA E. ESTHER\*

Department of Veterinary Microbiology and Parasitology, University of Ibadan, Ibadan, Nigeria.

Received 30 March, 1996; Accepted 30 June, 1997

## ABSTRACT

A survey of the helminth parasites of pigs in the Delta area of Nigeria was carried out. Faecal samples obtained from the rectum of the pigs were examined for helminth ova by using the sedimentation method. Structured questionnaires were also used to get information on some epizootiological factors from pig farmers. Of the 1,140 faecal samples examined, 3.8% was positive for trematode infection while 47.5% was positive for nematode infection. Among the nematode parasites identified, *Ascaris suum* was found to predominate (43.8% of the total). Poor sanitation was found to be the major factor predisposing pigs to helminth infections in the area. It was therefore concluded that since pig is an important livestock to the inhabitants of the area, there is the need to regularly organise programmes that will educate the farmers on the proper keeping of the animal for maximum productivity.

**Keywords:** Helminthiasis; Pigs; *Ascaris*; Sanitation.

## INTRODUCTION

Helminths are endoparasites which comprise a large and varying group of invasive parasites which have been divided into groups (Soulsby, 1982). These groups include the flatworm, roundworm, tapeworm, and worm-like organisms. There are over 800 species of round-and flat-worms occurring on farms and ranches in Nigeria (Ogunrinade, 1982, Guobadia, 1991). Helminths are most widespread in the tropics and constitute the greatest threat to the health and socio-economic status of the animals (Ukoli, 1984, Ogunrinade, 1990). Attention is now being increasingly directed at them since they cause considerable livestock mortality and

financial loss to farmers.

There are different types of helminths that infest pigs (Dune, 1971) and they belong to two groups. The first group comprises the trematode (flukes) and the cestode (tapeworm) which are usually flat in nature (Ikeme and Ojukwu, 1980). The second group consists of the roundworms which are the nematodes. Of these helminths that infest pigs, nematodes are the most prevalent as they appear to be very common among young pigs as well as the adults (Soulsby, 1982, Chiejina, 1988). These parasites are of great economic importance to the pig industry in Nigeria. The damage done depends on the degree of infestation, the younger pigs being more commonly affected than the older ones. Acute helminthiasis leading to deaths have been reported among young sheep in certain parts of Southern Nigeria (Troucy, 1989).

More importantly, pig is the intermediate host of a wasteful and devastating cestode parasite of man, *Taenia solium* (Goodwin, 1973; Webster and Wilson, 1980). These parasites rarely occur in pure infestation. In general, mixed infections are encountered. It is, however, usual to find dominant species among animals depending on the age of the animals and the ecological condition under which they are raised (Finelle, 1973). Generally, symptoms of the disease caused by these parasites range from retarded growth to loss of weight, while in heavy infestation, death may result (Galloway, 1974). Pigs constitute one of the main sources of protein to the people of the Delta area of Nigeria. It contributes about 50% of the total meat supply to the inhabitants. The realisation of the importance of pig meat to the people of this area of Nigeria and the devastating effects of helminths on the health of pigs led to this study being carried out. This study will thus enhance the establishment of a strategic eradication and control programme for these

**Present Address:** P.O. Box 7702, Benin City, Edo State, Nigeria.

helminths in this part of Nigeria.

## MATERIALS AND METHODS

Pigs in Delta State of Nigeria were used as the population of the study. Delta State is made up of 19 local government areas (L.G.A) and since the study was mainly concerned with helminths of pigs, the eight L.G.A. where pigs were extensively and intensively reared in the State were included in the survey.

### Sampling Technique

Each of the L.G.A.s. is made up of several towns/villages and, for the purpose of this study, the towns and villages, where pigs are reared, were grouped into zones. The town/villages in each of the sampling zones were listed and the representative sampled

towns were selected randomly. About 28 villages were selected for sampling and a total of 1,140 faecal samples were collected from the animals.

### Technique for Data Collection

This was based on a thorough examination of the faecal samples obtained from the rectum of the sampled pigs for live parasites or the developmental stages such as eggs or larvae by using the sedimentation method described by Thienpont *et al* (1979). Field assessment of the animals was also carried out for signs of the parasitic infection. Oral interview with the farmers was also carried out by using structured questionnaire while the same were administered to those who could read and write.

TABLE 1: HELMINTH INFECTION RATES IN PIGS IN THE DELTA AREA

Zones	Total Sample Examined	Number (%) Positive for Trematode alone	Number (%) Positive for Nematode alone	Number (%) of Mixed Infection	Number (%) Negative
A	288	11(3.8)	121 (42.0)	134 (46.5)	22 (7.6)
B	214	10 (4.8)	112 (52.3)	71 (33.2)	21 (9.8)
C	341	14 (4.1)	163 (47.8)	136 (39.9)	28 (8.2)
D	144	8 (5.6)	62 (43.1)	62 (43.1)	12 (8.3)
E	153	0(0.0)	83 (54.2)	56 (36.6)	14 (9.2)
TOTAL	1,140	43(3.8)	541(47.5)	457 (40.2)	97 (8.5)

TABLE 2: HELMINTH INFECTION RATES IN PIGS IN THE DELTA AREA

HELMINTH PARASITES	INFECTION RATE
<b>TREMATODES:</b>	
<i>Gastrodiscus aegycticus</i>	3%
<i>Fasciolopsis buski</i>	4%
<b>NEMATODES:</b>	
<i>Ascaris suum</i>	43.8%
<i>Strongyloides spp</i>	26.3%
<i>Trichuris spp</i>	12.0%
<i>Physocephalus spp</i>	2.0%
<i>Metastrongylus spp</i>	28.7%
<i>Ascarops spp</i>	4.2%
<i>Stephanurus spp</i>	14.0%
<i>Gongylonema spp</i>	3.1%
<i>Mecracanthorhynchus spp</i>	1.0%
<i>Ascaris strongylina</i>	1.0%

**TABLE 3: FARMERS OPINION ON THE PREDISPOSING FACTORS TO HELMINTH PARASITE INFECTION**

Factors	No. of Respondents (Percentage)
Poor feeding	3 (11.54)
Bad climatic condition	1 (3.85)
Over population	2 (7.69)
Poor sanitation	17 (65.38)
Lack of medical care	3 (11.54)

**TABLE 4: FARMERS OPINION AS TO THE TIME OF MOST PREVALENT HELMINTH INFECTION**

Period	No. of respondent (Percentage)
Beginning of rainy season	3 (11.11)
Middle of rainy season	20 (74.07)
End of rainy season	3 (11.11)
Harmattan season	-
Dry season	2 (3.70)

**Statistical analysis**

Data collected were analysed by using simple percentages. The difference in the infection rate between the two classes of helminths was separated using the student's T-test as described by Hayslett (1985).

**RESULTS**

Two classes of helminths were identified among the pigs; the nematodes and the trematodes. Of the 1,140 faecal samples examined, 3.80% were positive for trematode infection alone, 47.5% were positive for nematode infection alone while 40.2% of the faecal samples had mixed infections (Table 1). 8.5% of all the samples examined were found to be negative for helminth eggs or ova.

**SPECIES OF TREMATODE AND NEMATODE IDENTIFIED**

The species of trematodes and nematodes identified in the faecal samples examined included *Gastrodiscus aegypticus* and *Fasciolopsis buski*. Heavy infestation of *Gastrodiscus* species was recorded in zones C and E. The infestation rate of *Fasciolopsis* species was however very low in all the zones. Among the nematodes identified were *Ascaris*

*suum*, *Stephanurus dentatus*, *Trichuris* sp, *Metastrongylus salmi* and *Strongyloides* spp. The infection rate with *Ascaris suum* was high (43.8%). Other species that had high infection rates were *strongyloides* spp. (26.3%), *Trichuris* spp (12.0%), *Metastrongylus salmi* (28.7%) and *Stephanurus dentatus* (14%).

The infection rate of *Gongylonema* spp., *Ascaris strongylina*, *Physocephalus* spp. and *Mecracanthorhynchus* spp. were generally low in all the zones (Table 2). The difference in the infection rate between the two classes of the helminth parasites was found to be significant (P<0.05). Nematode parasites were found to be most predominant in all the zones accounting for 51.9% of the total infected samples while trematode accounted for 4.1%. The mixed infections constituted 44.0% of the total infection

**PREDISPOSING FACTORS TO HELMINTH PARASITE INFECTION**

In the course of the study, questionnaires were administered to 45 pig farmers to understand the factors responsible for helminth infection in the surveyed area. Table 3 shows that poor feeding, poor sanitation and lack of medical care were among the reasons given for helminth parasite preponderance in the area. Poor sanitation accounted for 65.4% of the responses from the farmers while lack of medical care accounted for 11.54%. Others factors were over-population (7.6%) and bad climatic condition (3.85%).

When the responses as to the time of the year when the helminth parasite infestation was most prevalent was analysed, majority of the farmers responded that helminth infections was most noticeable at the middle of the rainy season when the atmosphere was very damp (Table 4).

**DISCUSSION**

It was discovered that helminth parasites infection was one of the major problems confronting pig farmers in the area of study. Two classes of helminths, nematodes and trematodes were found to infest pigs. This agreed with the finding of Soulsby (1982) that there are no adult tapeworm in pigs and so

there is no possibility of finding cestode ova in pigs.

In all the zones sampled, mixed infection of the helminth was common which was in line with an earlier observation by Finelle (1973) that mixed infection was usually the case with helminth infection. In the mixed infections, nematode was found to be dominant. This also agreed with the result of Troncy (1989) that in helminth infections of ruminants, infection with nematode was often dominant with *Hemonchus sp* and *Trichostrongylus sp* accounting for about 90% of the infections. However, *Ascaris suum* had the highest infection rate followed by *Metstrongylus spp* in the present study. It was observed that the infection rate of nematode was high in all the zones. This was not unexpected since the climatic condition prevailing in all the zones was similar. Most of the areas surveyed were riverine and so likely to favour helminth growth. This agreed with Ukoli's (1984) observation that parasites are most predominant in tropical countries due to the climatic and environmental conditions prevailing there which favour helminth growth.

The most important factor found to favour frequent infection was poor sanitary condition. This can be attributed to the most unsanitary condition under which the pigs were housed. A particular pig farm in Zone B was covered with flood while another in Zone E was very muddy. Galloway (1974) had advised that pigs are exposed to helminth infection when they are maintained in unsanitary and congested quarters and if they are fed with contaminated feed and water. Pigs reared in some zones were found to move about unrestricted making easy transmission of the parasites possible.

Although no pig actually showed signs of a particular parasite infection, retarded growth emaciation and diarrhoea were easily noticeable among some pigs particularly in young pigs and those reared in the most unsanitary environment. Kiridder and Carrol (1971) had said that *Ascaris pneumonia* was the cause of many deaths in young pigs.

In conclusion, helminth parasite infections are very common among pigs reared in the

Delta area of Nigeria. Considering the unhygienic condition in which these animals are kept and the additional effect of poor feeding, there is the urgent need to organise regular enlightenment programmes on pig production and management for farmers in this area. This should also be accompanied by strategic preventive and control programmes for these parasites.

## REFERENCES

- CHIEJINA, A. (1988): Involvement of *Haemonchus contortus* in the production of PGE. *Brit. Vet. Journal* 143: 264-272.
- DUNE, H.W. (1971): Diseases of Swine. Third edition. IOWA State University, U.S.A. 708-739.
- FINELLE, P. (1973): Parasitic disease problems of livestock production in Africa, In: the *Proceedings of International Symposium on Animal Production in the Tropics*. ed. Loosli, J.K. and Oyenuga, V.A. p 89. Heinemann Educational Books Nigeria Ltd.
- GALLOWAY, J.H. (1974): Farm animal Health and disease control. Philadelphia: Lea and Febiger. pp. 264-315.
- GOODWIN, D.H. (1973): *Pig Management and Production*. A practical guide for farmers and students. Hutchinson and Co. Publishers Ltd. London. 183-184.
- GUOBADIA, E.E. (1991): Effect of parasitic diseases on the small ruminant enterprises in Nigeria: Present and future trends. *Abraka J. Agric.* 1:44-50.
- HAYSLETT, H.T. (1985): Statistic made simple. Heinemann London, pp. 56
- IKEME, M.M. and Ojukwu, E.M. (1980): Pig Parasites of Nigeria V: Efficiency of Helminjec against adult Nematode parasite of local pigs. *J. Agricultural Science* 2: 127-130.
- KRIDDER, J.L. and CARROLL, W.E. (1971). Swine production Fourth edition. Hill book company New York: by M.C. Graw. pp. 177-185.
- OGUNRINADE, A.F. (1982). Studies on the pathogenesis of *Fasciola gigantica* and host

- resistance in natural and experimental fascioliasis in domestic animals. Ph.D. thesis. University of London. 304 pp.
- OGUNRIADE, A.F. (1990). Haematological observations on Helminthiasis caused by *Haemonchus* in Nigerian ruminants. *Bull. Anim. Health Prod.* 9:11-17
- SOULSBY, E.J.L. (1982). *Helminths, Arthropods and protozoa of domesticated animals*. Bailliere Tindali, London. 809 pp.
- THIENPONT, D; ROCHETTE, E. and VANPARIS, O.F.I. (1979). Diagnosing helminthiasis through coprological examination. Janssen Research foundation. Beerse, Belgium 34 - 36.
- TRONCY, P.M. (1989); Helminths of livestock and poultry in tropical Africa. *Manual of Tropical Veterinary Parasitology*. Shah fishcer, M. and Ralph Say. Wallingford U.K.: C.A.B. International.
- UKOLI, F.M.A. (1984). Introduction to parasitology in Tropical Africa. John Wiley and Sons Ltd., Chichester and New York. 174- 179.
- WELSTER, C.C. and WILSON, P.N. (1980). *Agriculture in the Tropics*. 2nd ed. Longman Group Ltd. England. 528.