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INTENSTINAL HELMINTH AND PROTOZOAN PARASITES OF PIGS REARED UNDER INTENSIVE MANAGEMENT SYSTEM IN IBADAN, NIGERIA

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Abstract

Two hundred and seventy two pigs of different age groups reared in an intensive management system in 10 different locations in Ibadan were screened for intestinal helminth and protozoan parasites. The following incidences were recorded. *Ascaris suum*, 25.4% *Oesophagostomum dentatus* 13.6%, *Trichuris suis*, 10.7%; *Strongylodes ransomi*, 7.0%; *Eimeria debliecki*, 31.3%, *Eimeria suis*, 2.2% and *Balantidium coli*, 0.74%. Mixed infections with these parasites were common. No helminth egg was detected in all the piglets screened. The incidence of helminth parasites increased with age. So also was the worm burden. To prevent widespread infection with these parasites strict adherence to good management and hygiene in piggery pens is recommended.

Introduction

Local breeds of pigs are hosts to a large number of helminth and protozoan parasites and this has been attributed to poor management and lack of veterinary care since they are kept on a range (Dipeolu and Sellers, 1970). Contaminated feed and water are the usual sources of infection with internal parasites (Dipeolu and Sellers, 1970; Ajayi, *et al.*, 1988). Internal parasites of animals reduce feed conversion rate and weight gain and therefore increase the time required to reach market weight (Adejinmi and Harrison, 1997).

In recent time there has been a pronounced intensification and increase of pig production in Nigeria. It has grown to become an exclusively indoor industry in which the animals are continuously or permanently kept on concrete or slated floors with no access to pasture and with limited contact between age groups. Also available for use are new anthelminthic and antiprotozoan drugs with high efficacies.

However, despite the high proportion of pigs housed intensively and the use of drugs infection with internal parasites remains common. The long duration of rainy season, the high relative humidity and temperature favour the development of these parasites' eggs and oocysts which have negative influence on the growth rate, productive and reproductive capacities of these animals (Dipeolu and Sellers, 1970)

There is a dearth of information on the internal parasites of exotic pigs reared under intensive management system in Nigeria. This study was therefore undertaken

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to determine the incidence of helminth and protozoan parasites of exotic pigs reared intensively. The distribution of parasites within the pig population was also examined.

Materials and Methods

The study comprised 10 piggeries in different locations in Ibadan. The farms have no special programme of routine internal parasite control. The animals in all the farms were intensively managed on slated or concrete floors with no access to paddocks.

Faecal samples were taken from the following defined age groups – piglets (day 1 – 4 weeks), weaners (5 weeks – 8 weeks) growers (9 weeks – 8 months) sows and boars (Adultsf > 8 months). A total of 272 faecal samples were collected from the 10 farms. When possible at least 3 individual samples were taken from each of the groups in each farm. The faecal samples from gilts, sows and boars were taken from the rectum while fresh deposited faeces from piglets and weaners were collected from the floor. The samples were taken in insulated containers and examined or stored in a refrigerator until examination within two days.

Laboratory Methods

Faecal examination was carried out using modified McMaster technique where approximately 3 grams of faeces were emulsified in water and poured through a fine mesh sieve as described by Urguhart *et al.*, (1988). The emulsion was centrifuged at 2000 r.p.m. for 2 minutes and the sediment redissolved in saturated sodium chloride with 50g of glucose per 100 ml and the McMaster chambers subsequently filled to determine parasite burden on each animal.

Samples positive for strongyle ova were cultured according to the method of Sellers and Dipeolu (1975) to identify the species of helminth. Larvae from each culture were identified using the criteria described by Soulsby (1982). The modified McMaster technique was also used to determine oocyst count per gram of faeces. Positive faecal samples for oocysts were cultured in potassium dichromate (BDH Ltd, England) as described by Adam *et al.* (1979) in order to identify genera and species of coccidia involved. Identification was based on the number of sporozoites per sporocyst as described by Soulsby (1982), and Adam *et al.* (1979).

Results

Poor management and hygiene which include high stocking density, improper cleaning of Piggery pens, contamination of feed and water with faeces of infected animals, lack of routine treatment of pigs and regular deworming were some management defects observed in the farms visited.

Faecal examinations of 272 pigs revealed four types of helminths *Oesophagostomum dentatus, Ascaris suum, Trichuris suis* and *Strongyloides ransomi* and three protozoan parasites *Eimeria debliecki, Eimeria suis* and *Balantidium coli*. The numbers and percentages in infected pigs are shown in Table 1. *A. suum* was the most common helminth (25.4%) followed by *O.dentatus* 13.6%), *T Suis* (10.7%) and *S.ransomi* (7.0%). 31.3% were positive for *E.debliecki,* 2.2% for *E.suis* and 0.74% for *B.coli*. Mixed infections with these parasites were common particularly in fairly large farms. No helminth egg was observed in all the piglets screened.

The incidence of helminth parasites increased with age with highest incidence of 67.6% in boars (Table II). The mean egg per gram and oocyst per gram values from the infected animals increased with age in the same way as the incidence (Table III).

Table I: Incidence of Helminth and Protozoan Parasites of Pigs in 10 Different locations with Intensive Management System

Farm Location	No. of Animals Screened	Parasites Detected													
		Ascaris suum		*Oesophagostomum dentatus*		*Trichuris suis*		*Strongyloides ransomi*		*Eimeria debliecki*		*Eimeria suis*		*Balantidium coli*	
		No + ve	% + ve	No + ve	% + ve	No + ve	% + ve	No + ve	% + ve	No + ve	% + ve	No + ve	% + ve	No + ve	% + ve
University of Ibadan	43	6	14.0	5	11.6	3	7.0	9	21.0	10	23.3	1	2.3	0	0
Apata	40	10	25.0	2	5.0	3	8.0	1	3.0	18	45.0	0	0	0	0
Olomi	30	13	43.3	8	27.0	5	17.0	7	23.0	15	50.0	0	0	0	0
Alakia	12	0	0.0	0	0	1	8.3	0	0	2	17.0	0	0	0	0
Samonda	10	3	30.0	2	20.0	0	0	0	0	6	60	0	0	0	0
Kajola Monatan	10	4	40.0	1	10.0	1	10.0	0	0	6	60.0	1	1	0	0
Sasa	15	3	20.0	1	7.0	1	7.0	1	7.0	7	47.0	0	0	0	0
Moniya	34	8	23.5	3	8.8	5	14.7	1	2.9	8	23.5	1	2.9	1	2.9
Moor Plantation	42	12	28.6	9	21.4	7	16.7	0	0	10	23.8	2	4.8	0	2.8
Aba Alade	36	10	27.8	6	16.7	3	8.3	0	0	6	16.7	1	2.8	1	0
Overall	272	69	25.4	37	13.6	29	10.7	19	7.0	85	31.3	6	2.2	2	0.74

Table II: ***Incidence in relation to Different Age-groups of pigs under intensive management System***

Age-group	Total No. Screened	No + ve	% + ve
Piglet	53	12	22.6
Weaner	69	34	49.3
Grower/Gilt	55	28	50.9
Sow	58	32	55.2
Boar	37	25	67.6
Overall	272	131	48.2

Table III: Worm Egg/and Protozoal oocyst counts per gram of faeces in different age-Groups of pigs under intensive management system

Age-group	Ascaris suum	Oesopha-gostomum Dentatus	Trichuris suis	Strongyloid es ransomi	Eimeria debliecki	Eimeria suis	Balanti-dium coli
Piglet	-	-	-	-	110±29	-	-
Weaner	175±86	183±33	83±33	163±55	1414±777	125±12	-
Grower/Gilt	739±150	600±318	733±66	83±17	1142±390	-	-
Sow	700±399	113±556	363±158	260±62	853±286	-	100±55
Boar	2373±286	1761±449	350±275	605±92	1025±253	-	-

Values are expressed as means ± standard deviations

DISCUSSION

The results of this study showed that helminth and protozoan parasites of pigs reared under intensive management system in Ibadan are largely limited to *O dentatus*, *A. suum*, *T.suis*, *S. ransomi*, *E. debliekki*, *E. suis* and *B. coli*. The absence of *Metastrongylus spp* may be explained by the fact that this parasite needs earthworm as the intermediate host and thus it is restricted to herds that have outdoor runs which are not considered in this present study.

The incidence of internal parasites was highest in Kajola-Monatan and lowest for Alakia. The high incidence was probably due to poor management and hygiene as observed in this study and which was evident in Kajola – Monatan.

The worm burden as described by egg per gram of faeces was highest in boar. The lower value observed in sows compared with boars and growers could be attributed to strategic deworming programmes carried out on sows before and during pregnancy and this is probably responsible for the absence of helminth egg in all the piglets sampled. The weaners and growers have the highest oocyst per gram of faeces. This is in agreement with the report of Soulsby (1982) that Eimeria infection in pigs is primarily a disease of young pigs with the older ones being rarely affected. In almost all the farms sampled and in all the groups the helminth and protozoan incidences were clearly age dependent. This agrees with the studies of Morris et al. (1984) and Ajayi et al. (1988).

Soulsby (1982) observed that worm eggs particularly that of *A. suum* can survive

for as long as five years and remains viable and this gives credence to the fact that poor management and hygiene in piggery pens can lead to infection of pigs with these parasites and consequently low productivity.

From this study it is evident that pigs reared intensively are proned to infection with helminth and protozoan parasites. To prevent .infection of pigs with these parasites for maximum productivity it is recommended that: large intensive farms for pigs should avoid high stocking density; should be efficient in faeces removal from piggery pens; effective anthelmintic and antiprotozoan drugs should be routinely used prophylactically; sick animals should be isolated and promptly treated; and proper hygiene should be maintained in piggery pens.

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References

Adams, K. M. G., Paul, J. and Zaman, V. Medical cand Veterinary Protozoology, An illustrated guide. Revised edition.

Adejinmi, J. O.and Harrison, L. J. D.Parasitic Nematodes of domestic ruminants in Nigeria: Impact on ruminant production and control. *Trop. Vet.* 15m 137-148 (1997).

Ajayi, J. A.; Arabs, W. L. and Adele, G. A. Helminths and protozoa of pigs on the Jos Plateau Nigeria *Bull. Anim. Hlt and Prod. In Far.* 36:47-54 (1988)

Bate, E. G. A review and update of swine Parasite control. *J. Am. Vet. Med. Ass.* 170: 343-344(1977).

Sellers, K. C. and Dipeolu, O. O. Technical Note: A Simple Baermann Technique for the culture of third stage *larvae of nematodes J. Nig. Vet. Med. Assoc.* 4(2):97-100(1975).

Soulsby, E. J. l. Helminth, Arthropods and Protozoan of domesticated animals. 7th edition, Bailliere Tindall, London Pg. 276-284 (1982)

Dipeolu, O. O.and Sellers, K. C. An Investigation of the indigenous pigs in rural area of South Western Nigeria.B*ull .Anim. Hlt. Prod. In Far. 25 (2): 142-148(1970).*

Morris, R. G., Jordan, H.E.; Luctum, W.G., Coburn, T. C. and Maxwell, C. V. Prevalence of gastrointestinal parasitism In Oklahoma swine, *Am. J. Vet.Res.45:* 2421-2423 (1984).

Roepstorff, A. and Jorsal, S. E. Prevalence of Helminth infection, in swine in Denmark.. *Vet. Parasit.*33:231-239(1989).

Urguhart, G. M..; Armour, J. J.; Duncan, J.L; *Dunn, A. M.; and Jennings, F. W.* Veterinary parasitology. ELBS, BathPress Avon Great Britain Pg. 275-281 (1988).