Seroprevalence of Trichinellosis in Pigs slaughtered in Bodija Abattoir Oyo State Nigeria

Oyeduntan ADEDIRAN *, Emmanuel UWALAKA

ABSTRACT
This survey was carried out to determine the prevalence of trichinellosis in Bodija municipal abattoir of Oyo state, Nigeria. Sera samples were collected from pigs slaughtered on the slabs from July to November, 2010 and taken to the laboratory in the department of Veterinary Microbiology and Parasitology, University of Ibadan for analysis. The samples were processed for Trichinella antibodies by ELISA using excretory-secretory (E/S) antigen. 246 samples were collected and a prevalence of 15.04% was recorded. Adult pigs had a higher prevalence (35.55%) than the young (8.40, 14.29) and prevalence in male pigs was slightly higher (19.80%) than the females (11.72%) though this prevalence is not statistically significant.

Keywords: Seroprevalence, Trichinella, ELISA, sex, age, Nigeria

INTRODUCTION
Trichinellosis, a zoonotic disease caused by nematodes belonging to the genus Trichinella, and family Trichinidae, occurs worldwide and is found in virtually all warm blooded carnivores and omnivores, including humans [1,2] Trichinellosis, though dating back to antiquity was only clearly evident in 1860 by Friedrich Zenker who showed the transmission from animal to man [3].

T.spiralis, considered to be the most pathogenic species is distributed worldwide and highly infective in pigs, mice and rats [4] The frequency of Trichinella outbreaks in human and animals in the world has led to the conclusion that it is an emerging or re-emerging disease in some parts of the world [5].

Reports from CDC [6] and Pozio [7] show that the condition has been seen in the United States and some parts of Africa. In Oyo state, Akinboade et al [8] carried out a study of trichinellosis in pigs using the pepsin digestion technique and obtained an incidence of 5.21%. Anon [9] reported that more pork is consumed than other meat in the world and in 1998, pork represented 30% of world total meat consumption compared to 26.5% for beef and 28% for poultry [10].

Studies on trichinellosis in both human and animal in some countries of the world like Nigeria is limited and this has led to lack of reliable epidemiological information.

The objective of this study was to investigate the seroprevalence of trichinellosis in pigs

MATERIALS AND METHODS
The study location is the slaughter slab for pigs at Bodija abattoir located at Ibadan. Bodija abattoir is a major...
The percentage positivity per animal ranged from 15.03% to 70.89%. Two samples (5.41%) of the positive samples had very high titres with percentage positivity of 70.89% and 41.16%. Trichinella positive samples had an ELISA index (%) ≥15 while the Trichinella negative samples had an ELISA index (%) < 15.

Adults pigs had a higher number of positives (16) and the highest prevalence rate of 35.55% compared to growers (11, 8.40%) and weaners (10, 14.29%) (Table 1).

The male pigs slaughtered had a higher prevalence (19.80%) than females (11.72%) (Table 2).

**DISCUSSION**

The study is probably the first to investigate the seroprevalence of trichinellosis in Oyo state using ELISA technique. In 1984, Akinboade et al. [8] reported a trichinellosis prevalence of 5.21% in Oyo state using pepsin digestion technique. The use of ELISA for antibody detection in various animals in the detection of trichinellosis has recorded various degrees of success [14-16]. The overall prevalence rate of 15.04% recorded in Oyo state was similar to that reported by Wang and Cui [13] in China but was at variance to reports by (10, 15; 18, 19, 20) Akinboade et al. [8], Larrieu et al. [11], Cha’vez-Larrea et al. [14], La Rosa et al. [15], Gamble [16]. Wang and Cui [13] reported a seroprevalence varying from 0.09% to 29.63%. Larrieu et al. [11] in Argentina reported a higher prevalence of 19.9%. Cha’vez-Larrea [14] reported 5.72% prevalence in Ecuador. La Rosa et al. [15] reported 2.5% prevalence in Mexico while Gamble [16] reported a 0.013% seroprevalence in North America.

The difference in the result of this study compared with that of Akinboade et al. [8] could be as a result of the different techniques employed. The pepsin digestion technique (pepsin digestion technique)}
technique has a limitation of being unable to detect all larvae present in the carcass while ELISA can detect serum antibody titre up to 130 weeks [17]. This high specificity could have led to the high prevalence since both current and old infections can be detected. The high percentage positivity indicative of high antibody titre could be from current infections while the lower decreasing titre could be as a result of waning immunity. Adults were seen to be infected than growers or weaners. This is in line with the report of Akinboade et al [8] and Larrieu et al [11]. Adult pigs have a tendency to scavenge more than the growing ones and thus are more likely to be exposed to predisposing factors. The difference in prevalence rates between the age groups (adult, growers, weaners) however was not statistically significant, thus, age has no effect on prevalence. The prevalence in males was found to be higher than in females. This corroborates the findings of Akinboade et al [8] and Larrieu et al [11] although the difference in prevalence rates was not statistically significant. The higher number of positive males could be as a result of their inquisitive nature that may have exposed them to more sources of infection.

CONCLUSION

This study concludes that trichinellosis is present in pigs in Ibadan Nigeria and the prevalence is higher than was previously reported.

REFERENCES

[7] Pozio E. World distribution of Trichinella spp. infections in animals and humans. Veterinary Parasitology 2007;149:3-21
ACKNOWLEDGEMENT / SOURCE(S) OF SUPPORT

We acknowledge John D and Katherine MacArthur Foundation, and University of Ibadan, for partly sponsoring this work.

CONFLICT OF INTEREST

No conflict of interest was declared by authors.

How to Submit Manuscripts

Since we use very fast review system, and since we are dedicated to publishing submitted articles with few weeks of submission, then the easiest and most reliable way of submitting a manuscript for publication in any of the journals from the publisher Research, Reviews and Publications (also known as Research | Reviews | Publications) is by sending an electronic copy of the well formatted manuscript as an email attachment to rrpjournals@gmail.com or online at http://www.rrpjournals.com/.

Submissions are often acknowledged within 6 to 24 hours of submission and the review process normally starts within few hours later, except in the rare cases where we are unable to find the appropriate reviewer on time.

Manuscripts are hardly rejected without first sending them for review, except in the cases where the manuscripts are poorly formatted and the author(s) have not followed the instructions for manuscript preparation which is available on the page of Instruction for Authors in website and can be accessed through http://www.rrpjournals.com/InstructionsForAuthors.html.

Research | Reviews | Publications and its journals have so many unique features such as rapid and quality publication of excellent articles, bilingual publication, some of which are available at http://www.rrpjournals.com/uniqueness.html.