FASCIOLOSIS IN SLAUGHTERED CATTLE FROM ABATTOIRS IN ONDO STATE, NIGERIA

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SUMMARY
Fasciolosis, an important helminth disease of livestock has been confirmed from abattoirs report in most parts of Nigeria for a long time. Prevalence of fasciolosis among slaughtered cattle in Ondo State, Nigeria was assessed. Abattoir records of slaughtered cattle were studied from 2003-2010. A total of 73,761 cattle were slaughtered within the study period. The study revealed 16.7% peak prevalence of fasciolosis from 13,206 cattle slaughtered in 2008. The 8 year study period recorded 14.5% prevalence. The high prevalence of fasciolosis translates to high economic loss due to liver damage and low carcass weight. The disease needs to be considered seriously as a great hindrance to livestock health and profitability; and also in regard to human health.

Key words: Abattoir records, Fasciolosis, Prevalence, Slaughtered cattle, Ondo State.

INTRODUCTION
Fasciolosis is an important helminth disease caused by two trematodes Fasciola hepatica (the common liver fluke) and Fasciola gigantica. Report from abattoirs in Nigeria also confirmed the presence of the disease in most parts of the country for a long time (7). One of the neglected food-borne-diseases in the international public health arena is fascioliasis. It is a serious infectious parasitic disease infecting humans and animals worldwide and tops all the zoonotic helminthes. Human cases are being increasingly reported from Europe, the Americas, Oceania, Africa and Asia. Hence, human fascioliasis is considered now as a zoonosis of major global and regional importance (11,13). Fasciolosis is a disease of significant importance to the farmer and butchers, as it has been reported to have been causing hepatic diseases in ruminants. Their life cycle appears to be markedly influenced by characteristics of the environment and/or human activities. Liver fluke development is dependent on environmental characteristics during the egg, miracidium, and cercaria phases, which occur in an external freshwater milieu. The phases of sporocyst and redial generations occur within a fresh water snail of the family Lymnaeidae, which is also dependent on the environment. Despite these restrictions Fasciolosis has succeeded in expanding from the original European geographic area to five continents (2,4,6). The disease causes considerable impact on the economy of the livestock industry. The economic losses consist of costs of anthelmintics, drenches, labor, liver condemnation at meat inspection; and losses in production due to mortality, reduction in meat, milk and wool production; and reduction in growth rate, fertility and draught power. The disease also has public health significance, causing human fasciolosis and "halzoun" (11,15). Scientists estimate that 56.2 million people were infected with food-borne trematodes worldwide in the year 2005. Approximately 7.9 million people were suffering from severe complications and 7’000 people died. The global burden is
estimated at 665,000 disability adjusted life years (DALYs) (5).

*Fasciola hepatica* is present in animals in most developing countries where surveillance and control activities are often inadequate or unavailable. This makes the epidemiologic and public health aspect of the infection largely difficult. The highest prevalence of 19.0% was recorded in Egypt where the disease is distributed in communities living in the Nile Delta (4). The present study was carried out with the aim of assessing the prevalence of fasciolosis among slaughtered cattle in abattoirs in Ondo State, using abattoirs records in the state as the data source during the period of 2003 - 2010.

**MATERIALS AND METHOD**

The study utilized records in 15 abattoirs from 18 Local Government Areas in Ondo State, Nigeria (Fig. 1). Ondo State lies between latitude 5° 45’ and 7° 52’N longitude 4° 20’ and 6° 05’E [3]. It occupies a land area of 15,500km² and a population of 3,460,877 based on 2006 census (7). The State abattoirs selected for the study are under the supervision of Ministry of Agriculture, Veterinary Services, Ondo State. Permission was obtained from the Director, Veterinary Services. Qualified veterinarians and Animal health technologist perform meat inspection under the supervision of a Veterinary surgeon. The study duration was from Aug. 1st- Sept.30th, 2011. Data were collected from the abattoir record books; these included total number of cattle brought for slaughter, ante and post mortem examination. The data were used to affirm the prevalence of Fasciolosis in Ondo state. Selected data were entered and validated by the SAS statistical software version 99 for frequency and percentage distribution.

**RESULT**

From the abattoir records covering 2003-2010, a total of 73,761 cattle were slaughtered and a prevalence of 14.5% for fasciolosis was found in this study. In 2003, 5,935 heads of cattle was slaughtered, decreasing from 2004 through 2006. From 2007 – 2010 a rise in cattle slaughtered numbering 13,206, 13,932 and 20,398 were recorded respectively. The lowest slaughter of 4,778 heads of cattle in 2006 was recorded while 20,398 heads of cattle slaughtered in 2010 was the highest. On yearly study, the prevalence of fasciolosis were 2003 (11.6%), 2004 (8.9%), 2005 (10.7%), 2006 (11.0%), 2007 (10.8%), 2008 (16.7%), 2009 (16.6%), 2010 (16.7%) Table 1. A prevalence of 11.6% in 2003 was followed by 8.9% prevalence with a reduction in the heads of cattle slaughtered. From 2005-2006 a persistent increase in prevalence 10.7% and 11.0% with a decreasing slaughter of 4,985 and 4,778 cattle were recorded. An increase 5,536 slaughter with a reduced prevalence 10.8% in 2007 was observed. In 2008, the slaughtering of 13,206 heads of cattle was accompanied by a peak prevalence of 16.7% of fasciolosis. Between 2009-2010, an increasing slaughter of 13,932 and 20,398 cattle showed a reduction in prevalence i.e. 16.6% but a slight rise 16.7% respectively. Based on location (Table 1., Fig. 1.), Akure South Local Government Area (LGA), recorded the highest number of cattle slaughtered 27,652 (37.5%), with a prevalence of 16.1% during 2003-2010. The highest prevalence was recorded in Akoko Northwest LGA with 30.0% from 10 heads of cattle slaughtered in 2008.
Percentage prevalence of Fluke in Ondo State
Table 1. Cattle slaughtered in abattoirs and prevalence of fasciolosis in different LGAs of Ondo State.

<table>
<thead>
<tr>
<th>LGA</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>TOTAL SLAUGHTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>AKR.S</td>
<td>605(16.7)</td>
<td>594(16.6)</td>
<td>690(8.3)</td>
<td>589(8.3)</td>
<td>594(16.7)</td>
<td>7374(16.7)</td>
<td>7338(16.7)</td>
<td>9868(16.7)</td>
<td>27652(16.1)</td>
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<tr>
<td>IFEDORE</td>
<td>201(11.0)</td>
<td>206(16.5)</td>
<td>208(16.8)</td>
<td>20(15.0)</td>
<td>15(20.0)</td>
<td>130(16.2)</td>
<td>220(16.4)</td>
<td>1250(15.7)</td>
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<tr>
<td>IDANRE</td>
<td>122(16.4)</td>
<td>172(16.3)</td>
<td>185(16.8)</td>
<td>100(17.0)</td>
<td>122(16.4)</td>
<td>239(16.3)</td>
<td>243(16.9)</td>
<td>1359(16.6)</td>
<td></td>
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<tr>
<td>ONDO WEST</td>
<td>242(16.5)</td>
<td>265(8.3)</td>
<td>275(16.7)</td>
<td>308(16.6)</td>
<td>240(16.7)</td>
<td>240(16.7)</td>
<td>240(16.7)</td>
<td>2070(15.3)</td>
<td></td>
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<tr>
<td>ODIGBO</td>
<td>777(6.3)</td>
<td>720(6.7)</td>
<td>939(6.6)</td>
<td>1210(6.6)</td>
<td>1131(16.7)</td>
<td>1013(16.6)</td>
<td>734(16.6)</td>
<td>7421(11.0)</td>
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<tr>
<td>ILE-OLUJI</td>
<td>327(16.5)</td>
<td>417(16.6)</td>
<td>380(16.6)</td>
<td>26(15.4)</td>
<td>383(16.7)</td>
<td>477(16.6)</td>
<td>362(16.6)</td>
<td>2855(16.6)</td>
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<tr>
<td>OKITIPUPA</td>
<td>545(8.3)</td>
<td>330(16.0)</td>
<td>139(16.6)</td>
<td>439(16.6)</td>
<td>845(16.6)</td>
<td>734(16.6)</td>
<td>1256(16.6)</td>
<td>4364(15.6)</td>
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<tr>
<td>IRELE</td>
<td>536(16.6)</td>
<td>34(17.7)</td>
<td>27(18.6)</td>
<td>28(17.9)</td>
<td>34(17.7)</td>
<td>27(18.6)</td>
<td>118(16.1)</td>
<td>827(16.8)</td>
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<tr>
<td>ONDO EAST</td>
<td>0.0(0.0)</td>
<td>0.0(0.0)</td>
<td>0.0(0.0)</td>
<td>0.0(0.0)</td>
<td>0.0(0.0)</td>
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<td>AK. NE</td>
<td>1104(3.5)</td>
<td>1291(6.7)</td>
<td>987(16.7)</td>
<td>943(16.7)</td>
<td>4703(16.7)</td>
<td>12585(11.3)</td>
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<tr>
<td>AKNW</td>
<td>102(16.7)</td>
<td>1302(6.6)</td>
<td>16(18.8)</td>
<td>10(30.0)</td>
<td>97(16.5)</td>
<td>180(17.8)</td>
<td>534(17.1)</td>
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<tr>
<td>AKSE</td>
<td>408(16.7)</td>
<td>22(18.2)</td>
<td>383(16.7)</td>
<td>437(16.7)</td>
<td>367(16.6)</td>
<td>520(16.7)</td>
<td>2819(15.6)</td>
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<tr>
<td>AKSW</td>
<td>433(16.6)</td>
<td>843(6.6)</td>
<td>424(16.8)</td>
<td>918(8.4)</td>
<td>1010(16.6)</td>
<td>824(16.6)</td>
<td>238(16.4)</td>
<td>4783(13.3)</td>
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<tr>
<td>OSE</td>
<td>532(11.1)</td>
<td>481(16.9)</td>
<td>65(16.9)</td>
<td>90(17.8)</td>
<td>64(17.2)</td>
<td>65(16.3)</td>
<td>73(16.4)</td>
<td>1222(12.8)</td>
<td></td>
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<tr>
<td>OWO</td>
<td>145(16.6)</td>
<td>136(16.9)</td>
<td>131(16.8)</td>
<td>118(16.1)</td>
<td>554(16.6)</td>
<td>1438(16.6)</td>
<td>1322(16.7)</td>
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<td>ILAJE</td>
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<td>0.0(0.0)</td>
<td>0.0(0.0)</td>
<td>0.0(0.0)</td>
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<td>0.0(0.0)</td>
<td>0.0(0.0)</td>
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<tr>
<td>ESE ODO</td>
<td>0.0(0.0)</td>
<td>0.0(0.0)</td>
<td>0.0(0.0)</td>
<td>0.0(0.0)</td>
<td>0.0(0.0)</td>
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</tr>
<tr>
<td>TOTAL</td>
<td>5935(11.6)</td>
<td>4991(8.9)</td>
<td>4985(10.7)</td>
<td>5536(10.8)</td>
<td>13206(16.7)</td>
<td>13932(16.6)</td>
<td>20398(16.7)</td>
<td>73761(14.5)</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

The prevalence showed an undulating trend with 2 modes in 2006 and 2008 (Fig. 1). This trend as found is reflective of the husbandry nature; that is free grazing pastoralist or extensive grazing system; and largely cattle commercially transported to the study area from northern states, Nigeria. It could also be a result of cattle being moved for trade from different sources to Ondo State. Similar to our finding, a study in Zaria (northern town), Nigeria revealed 16.9% prevalence (8), suggesting endemcity in herds of origin.

The prevalence studied from 8.9% in 2004 through 2007 (Table 1) showed dissimilarity to a study in Jalingo abattoir (19.6%, 16.1%, 13.9%) (14) but with a corresponding reduction in number of cattle slaughtered in the study area. Increasing prevalence was recorded in our study whereas the Jalingo study recorded decreased prevalence. This finding implies that cattle were highly exposed to *Fasciola sp* continuously and treatment was inadequate before sales were made from the herds of origin. It then means that the herd health were low and moved south wards from varied herds in the north and neighboring countries.

In this study, increasing prevalence of fasciolosis peaking as 16.7% in 2008 and 2010 was recorded with a corresponding increase in cattle slaughtered, which greatly differs from 35.01% found in southwestern Iran (1) from abattoir records and Zimbabwe 15.4% by coprological study (9). This finding is suggestive of a complete absence of control program on fasciolosis and other helminthic diseases of livestock in Ondo State and Nigeria; meat inspection must be strengthened for adequate gross diagnosis of the disease.

Raji et al. (10) during a nine month study in Zaria recorded a 23.41% prevalence of Fasciolosis, this is higher than findings in our study. This suggests a higher preponderance of the intermediate host in Zaria and increased infestation than Ondo State. It also implied that *Fasciola sp* are being spread via trade of cattle across agricultural zones of Nigeria i.e. from northern to the southern zones, with a resultant inhibition of cattle production and trade. This is reflected in fasciolosis prevalence in Akure south (urban center) with about seven veterinary centers and Akoko northwest (rural center) LGAs with one veterinary centre.

The study is of great public health importance, firstly, over a period of 8 years, there is rise in the number of cattle slaughtered Table 1. This is best explained by an increased demand for beef by an increasing demographic population with improved access to information that leads to a great change in taste for meat. Secondly, this improved trade in large animals does not lead to increase and improved large animal veterinary practice in the study area; perhaps due to the husbandry nature involving herding of cattle for abattoir slaughters predominantly. Thirdly, the poor herd health increases the zoonotic transmissibility of fasciolosis first among the cattle rearer and abattoir workers. Also the crop farmer that uses cattle dung as manure in crop farming and the public consuming uncooked and poorly washed vegetable. Fourthly, we have herdsmen that are aware of fasciolosis but believe and practice self medication of their animals. Most importantly is a lack of diagnostic laboratory in the study area with surveillance activity.
Fasciolosis an important zoonotic disease (1,4,13,14) is poorly studied as a disease of economic, nutritional and public health importance in Nigeria. It caused condemnation of livers in studies reported (1,10,14). Livers and meat condemnation are important protein and micronutrient sources loss that could cause nutritional insufficiency in human resulting in protein energy malnutrition (PEM). The June 1998 report of the General Organization of Veterinary Services of the Ministry of Agriculture indicated that the loss in meat and milk in Egypt due to fasciolosis was 30% per year (one billion Egyptian pounds) (4).

CONCLUSION
Our study unarguably has shown that fasciolosis prevalence is high in the study area; thus increased zoonotic potential is likely. This finding corroborates the analysis of Swai and Ulicky and others elsewhere on the enormous economic losses associated with Bovine Fasciolosis (4,11,12). It is observed that Fasciolosis is under diagnosed and under reported; yet described as an old disease. The socioeconomic implication of the disease is under studied in Nigeria. This can be controlled by:
1. Increasing the awareness of the occupational groups on the disease
2. And provision of veterinary service to improve herd health and productivity which would improve profitability.
3. Surveillance activity should be stepped up to include (a). animal movement along national borders and international cattle movement routes; (b). also the determination of the presence and infectivity of the snail intermediate host, infecting Fasciola sp and zoonotic transmissibility.
4. Meat inspection practices should be improved upon with adequately equipped staff.
5. At the center of any control method, is the need to gradually upgrade the traditional husbandry practices to semi or intensive husbandry system and establishment of control programs on helminthosis. This carries with it the improvement in the nomadic education program of the Federal Government of Nigeria.

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