CROSS-SECTIONAL SURVEY OF THE OCCURRENCE OF DISEASES AND DISORDERS IN TRADE CATTLE SLAUGHTERED AT NSUKKA ABATTOIR, ENUGU STATE, NIGERIA.

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Abstract

This study evaluated the occurrence of diseases and disorders among trade cattle slaughtered between March 2012 and March 2013 at Nsukka abattoir, Enugu State, Nigeria. The study population was 8,296 cattle slaughtered during this study period, while the sample population evaluated in the cross-sectional survey was 567 cattle slaughtered on days of scheduled research visits to the abattoir, which was once in two weeks across the 13-month study period. Diagnosis of the diseases/disorders encountered during the study followed standard procedures. Results showed that out of the 567 cattle sampled, 82 (14.46%) had diseases/disorders, while 485 were apparently healthy. The occurrences of specific diseases/disorders were as follows: fasciolosis – 8.47%, tuberculosis – 1.76%, trypanosomosis – 1.41%, skin disorders – 0.88%, paramphistomosis – 0.71%, neoplasms – 0.18%, and cachexia of unknown aetiology – 1.06%. Among the 485 apparently healthy cattle, 9 (1.59%) were found with foetus in their uterus at slaughter (pregnant). It was concluded that the occurrence of diseases/disorders in the cattle surveyed was 14.46%, and that fasciolosis topped the list as the disease with the highest occurrence.

Key words: Occurrence, Diseases, Disorders, Cattle, Nsukka abattoir, Nigeria.

Introduction

Cattle are among the first animals to be domesticated by man for agricultural purposes, and presently they provide humans with milk, meat, hides, manure and draft power (Felius, 1995). Milk and meat from cattle is the main source of animal protein for humans, and are considered important food items because of their nutritional value as excellent sources of not only proteins but also micronutrients such as vitamins A and B_{12}, riboflavin, iron, zinc, calcium and conjugated linoleic acid (Ndlovu, 2010).

The occurrence of diseases is one of the major constraints to animal production in general (Adesihinwa *et al.*, 2004; Fadiga *et al.*, 2011; Belay *et al.*, 2013). Diseases are associated with losses resulting from poor growth and productivity, reduced feed conversion, mortality, medication costs and condemnation of parts or whole animals during meat inspection at abattoirs or meat processing plants (Tambi *et al.*, 2006; Richardson & Moore, 2009; Fadiga *et al.*, 2011; Ahmed *et al.*, 2013).

Abattoir-based survey of animal diseases usually provide a good opportunity of detecting diseases of both economic and public health importance, and also for evaluating the changes in trends of occurrence/prevalence of animal diseases with time (Vecerck *et al.*, 2003; Raji *et al.*, 2010). The objective of this present study was to evaluate the occurrence of diseases and disorders in trade cattle slaughtered at Nsukka abattoir, Enugu State, Nigeria.

Materials and Methods

This study was a cross-sectional disease survey done on trade cattle slaughtered during a 13-month study period (March 2012 – March 2013) at the Nsukka abattoir, Enugu State, Nigeria. All the cattle slaughtered at the Nsukka abattoir are sourced from Northern Nigeria where they are reared/raised. The study population was an estimated 8,296 cattle slaughtered within the 13-month study period (average of 21 per day). The disease survey research visits were made to the abattoir once in two weeks during the 13-month study period (27 visits in all), and all cattle slaughtered on the days of research visit (total of 567) constituted the sample population. For each research visit, cattle billed for slaughter were physically examined at the lairage and marked. Upon slaughter, blood samples were collected from the jugular ouflow of all the slaughtered cattle – 2ml of the blood was dispensed into sample bottles containing ethylene diamine tetra acetic acid (EDTA) anti-coagulant, while 3ml was put into plain sample tubes to clot in order to obtain serum for further investigation. A wet mount of the blood sample was done immediately upon sample collection as a preliminary check for trypanosomes, and later the smear of the blood was made and stained by the Leishman technique for further evaluation of haemoparasites.

The slaughtered cattle was grossly observed for

lesions of diseases/disorders and presence of parasites. Diseases suspected based on observed lesions were confirmed later in the laboratory following standard procedures. Parasites observed were also morphologically identified and confirmed. Diagnosis of trypanosomosis was based on observation of trypanosomes on wet mount and or stained thin smear (Maudlin *et al.*, 2004). Bovine tuberculosis was tentatively diagnosed based on gross observation of the typical tuberculosis granulomas (tubercles) on visceral organs nd confirmed by immunochromatographic assay (Okoro *et al.*, 2014). Fasciolosis was diagnosed by gross observation, identification and counting of the Fasciola worms seen on examination of the livers and bile ducts (Molina *et al.*, 2005), while paramphistomosis was diagnosed by visual observation of Paramphistomum worms on the mucosal surface of the rumen and abomasum (Soulsby, 1982). Skin disorders and neoplasms were diagnosed by visual observation, palpation and further laboratory evaluation (McGavin & Zachary, 2007). Pregnancy was diagnosed on observation of foetus in the uterus of slaughtered cows.

Data generated were presented as percentages of occurrence.

Results, Discussion and Conclusion

The diseases and disorders recorded, the number of animals affected and the percentage occurrence are presented in Table 1. Out of the sample population of 567 cattle evaluated, 82 (14.46%) had diseases/disorders, while 485 were apparently healthy. Among the 82 that had diseases/disorders, 48 had fasciolosis (8.47%), and *Fasciola gigantica* was the species identified. Twenty eight (4.94%) of these 48 cattle that had fasciolosis had Fasciola worm counts above 50 (heavy worm load) while 20 (3.53%) had Fasciola worm counts less than 50 (light worm load). The findings in this study that fasciolosis due to *F. gigantica* ranks topmost on the list of diseases observed in cattle agrees with the reports of Hammond & Sewell (1990) and Molina *et al.* (2005), which stated that *F. gigantica* is one of the most common helminth infections of cattle. The 8.47% occurrence recorded in this present study is higher than the 2.31% reported by Oladele-Bukola & Odetokun (2014), but was lower than the 10.5% reported by Ekwunife & Eneanya (2006), 14.56% reported by Ejeh *et al.* (2015) and 23.41% reported by Raji *et al.* (2010).

Ten (1.76%) out of the 567 cattle evaluated had tuberculosis. The finding that 1.76% of the cattle slaughtered had tuberculosis is of public health importance because bovine tuberculosis is zoonotic, and serves as a wake-up call on veterinary meat inspectors to be vigilant and condemn badly affected organs or entire carcasses to prevent them from being sold to humans for consumption. The 1.76% recorded in this present study is comparable to the 1.1% reported by Raufu & Ameh (2010) in Maiduguri Nigeria and the 1.9% reported by Ejeh *et al* (2014) in Makurdi Nigeria, but it is however lower than the 4.05% reported by Aliyu *et al* (2009) in Northeastern Nigeria and the 6.7% reported by Danbirni *et al.* (2013) in Adamawa State, Nigeria.

Eight (1.41%) of the 567 cattle evaluated had trypanosomosis, and the trypanosome responsible in all the eight cases was *Trypanosoma vivax*. The low (1.41%) occurrence of trypanosome infections in the cattle evaluated is believed to be due to the very frequent use/misuse of trypanocides by herdsmen and cattle owners. The 1.41% recorded in this present study is comparable to the 1.2% reported by Ahmed & Agbede (1993), but it is lower than the 3.9% reported by Ameen *et al.* (2008) and 4.69% reported by Fasanmi *et al.* (2014). The finding in this study that the trypanosome involved in infection of the cattle was *T. vivax* is in agreement with earlier reports of Kalu *et al.* (1996), Ameen *et al.* (2008) and Fasanmi *et al.* (2014) which showed that *T. vivax* was the major trypanosome infecting cattle, though some of these also reported *T. brucei* (but not as high as *T. vivax*).

Skin disorders in form of scabs and crusts were found on five (0.88%) of the 567 cattle, and this was predominantly on the flank and dorsum. The occurrence of skin disorders in cattle had not been reported in available literature.

Paramphistomosis was recorded in four (0.71%) of the 567 cattle. The low (0.71%) occurrence of paramphistomosis in the cattle surveyed may also be attributed to very high occurrence of use/misuse of anthelmintics by herdsmen and cattle owners. This value is lower than the 6.08% reported by Badruzzaman *et al.* (2015).

A benign neoplasm on the right forelimb was recorded in one (0.18%) of the cattle. The 0.18% occurrence of neoplasm in this present study is a pointer to the low occurrence of neoplasms in cattle, and it is relatively higher than the 0.03% reported by Raji *et al.* (2010).

Six (1.06%) out of the 567 cattle evaluated were recorded as having cachexia of unknown aetiology; based on physical examination, they were found to be badly emaciated but no specific diseases was found to be responsible.

Among the 485 apparently healthy cattle, nine (1.59%) were found to be pregnant females as

foetus were observed in their uterus on slaughter. The 1.59% of cattle that were found to be pregnant is an indication of foetal wastage that commonly occurs in abattoirs as a result of poor pregnancy diagnosis. It is recommended that matured cows be subjected to routine pregnancy diagnosis screening before slaughter in order to avoid/minimize foetal wastage. The 1.59% recorded in this present study is comparable to the 1.8% reported by Ademola (2010), but is lower than the 5.01% reported by Cadmus (2010), and the 10.7% reported by Oduguwa *et al.* (2013).

It is believed that the differences in occurrence of diseases/disorders recorded in this present study and that reported in available literature is as a result of variations in geographical location, study design (cross-sectional, retrospective, abattoir or farm survey etc), period of study and the varied methods of diagnosing and confirming the diseases. Based on the results of the study, it was concluded that there was an overall 14.46% occurrence of diseases/disorders in the trade cattle surveyed and that fasciolosis topped the list as the disease with the highest occurrence.

Table 1 . The occurrence of diseases and disorders in the trade cattle slaughtered at the Nsukka abattoir, Enugu State, Nigeria.

Diseases/disorders and conditions observed	Number of cattle affected	Percentage
Faciolosis	48	8.47%
Tuberculosis	10	1.76%
Trypanosome infection	8	1.41%
Skin disorders	5	0.88%
Paramphistomosis	4	0.71%
Neoplasm	1	0.18%
Cachexia of unknown aetiology	6	1.06%
Apparently healthy	485	85.54%
Total	567	100%

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