Gross pathological conditions in eviscerated organs of cattle in Nsukka Slaughter Slab, Enugu State: The economic and public health implications

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Abstract

Gross lesions in cattle viscera result in loss of meat quality and condemnation during inspection. However, data on gross pathological conditions in cattle viscera are scarce in Nigeria. This study therefore was undertaken to determine the occurrence of gross lesions in cattle viscera during post mortem inspection at Ikpa Slaughter slab Nsukka and its economic and public health implications. Gross pathological lesions were found in all of the 545 cattle carcasses examined from May to August 2017. Lesions of fasciolosis, liver tuberculosis, Liver cirrhosis, lung tuberculosis, pneumonic lung, congested lung, blood retention in the heart, pimply gut and paramphistomosis were observed in 1 (0.18%), 33 (6.06%), 11 (2.02%), 216 (39.63%), 38 (6.97%), 501 (91.93%), 200 (39.69%), 545 (100%) and 545 (100%) of the slaughtered cattle, respectively. The rejection and condemnation of affected visceral organs loss estimate was N1,532,300.00. This unavoidable loss reduces profit and the absence of compensation policy encourages unwholesome practices by butchers and further exposes consumers to zoonotic disease infections. In the study, the eviscerated organs of cattle were unwholesome and unsafe due to some pathological and zoonotic conditions observed. There is need for government to make and implement zoonotic and economic disease control policies in livestock Nigeria.

Keywords: Cattle, Cost, Gross lesions, Occurrence, Public health

Introduction

In Nigeria, there is high demand for meat due to population increase. Traditionally, organs and offal from cattle serve as special delicacies in the country (Bala *et al.*, 2011). However, presence of pathological conditions in the viscera of cattle, pose major challenge to the provision of safe and wholesome meat in the country especially in the absence of government policies for the control of livestock diseases (Ola-Fadunsin, 2017). This is exacerbated in no small way by 90% of livestock population in the country being reared under nomadic management. Moreover, a sizable number of cattle slaughtered in the country is imported from neighboring countries without quarantine. In addition, the butchers in Nigeria engage in high risk

practices that expose them and the consumers to zoonotic diseases. There are therefore risks of economic loss to the butcher who purchases the animal with pathological conditions, and zoonotic infection to the consumers and other persons in contact. In the study area, little or no ante-mortem inspections are done as in other parts of the country, therefore detecting such animals with disease conditions are mainly during post mortem inspections. Moreover, data on the presence and economic effects of pathological conditions in viscera of slaughtered cattle in the study area are scarce in available literature. This study therefore, used post mortem inspection techniques based on observation of gross pathological conditions to detect diseases in viscera of

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cattle in Nsukka, Enugu State and further assessed the public health and economic implications.

Materials and methods

Study area

The study was conducted at Ikpa Abattoir in Nsukka, Enugu State. Nsukka is located at Latitude 06° 52' N, Longitude 07° 24' E and altitude 447.26m and an estimated population of 1,377,001 (NPC, 2000). The study area is characterized by two tropical climatic seasons: wet/rainy (winter) and dry (summer); low relative humidity of 14%, an annual mean rainfall range of 168mm to 170mm and preponderance of guinea savanna vegetation (Nwanta *et al.* 2011). Crop farming is a major occupation of the indigenes. However, some are into subsistent food animal production like poultry and cattle. Traditionally, the 'Muturu' is the common breed of cattle reared in the area. Nevertheless, these animals are not reared in commercial quantities; hence most of the animals slaughtered in the slaughterhouse are sourced from northern Nigeria and neighboring countries.

Study design

The study was a cross-sectional survey.

Meat inspection

Visits were made to the Ikpa Slaughterhouse twice weekly (Wednesdays and Saturdays) and post-mortem inspection was conducted between the hours of 5.30-7.00am from May-August 2017. Organs from the first 20 cattle slaughtered on the visit days were inspected after evisceration using the standard meat inspection procedures. In addition to visual examinations, palpation, olfaction and incisions were made on the organs without unnecessary mutilation. The head and the tongue with the associated lymph nodes, the liver and the portal lymph nodes, the viscera of the abdominal and thoracic

cavity with priority to the lungs, heart, rumen, and intestine were inspected for presence of cysts, ventricular blood retention in the heart, lesions of fasciolosis and cirrhosis of the liver, congestions, tuberculosis and pneumonic lesions of the lungs, paramphistomosis lesion and pimply gut in the intestine. The organs were weighed with weighing scale. Data were analysed using descriptive statistics to generate tables and figures.

Results

Out of the 545 animals examined, 500 (91.7%) were white Fulani, 44 (8.1%) Ndama and 1 (0.2%) Muturu breeds (Figure 1). Gross pathological lesions were observed in the viscera of the 545 (100%) them. It was found that 99 (18.17%) had fasciolosis, liver tuberculosis was recorded in 1 (0.18%), liver cirrhosis occurred in 33 (6.06%), lung tuberculosis in 11 (2.02%), pneumonic lungs in 216 (39.63%), congested lungs in 38 (6.97%), blood retention in the heart occurred in 501 (91.93%), pimply gut in 200 (39.69%), there also were 545 (100%) cases of paramphistomosis (Table I and Figure 2). The losses due to the conditions were in the form of condemnation and rejection of affected organs and carcasses. This was estimated at the total cost of N1, 532, 300.00 at the average visceral organs weight of 3.85kg for both liver and lungs as well as at the presumed cost of N1000.00 per/kg (Lamidi *et al.*, 2004). For the liver, a total of N512, 050.00 was estimated from N381, 150.00 (99x3.85x1000) due to fasciolosis; N3850.00 (1x3.85x1000) due to tuberculosis (TB) and N127, 050.00 (33x 3.85x1000) as a result of cirrhosis. In the lungs a total of N1, 020,250.00 were estimated: N42, 350.00 (11x3.85x1000) due to TB; N831, 600.00 (216x3.85x1000) for pneumonic lesions and N146, 300.00 (38x3.85x1000) from congestion.

Figure 1: Breed distribution of cattle slaughtered at Nsukka slaughter slab

Table 1: Gross pathological conditions in visceral organs and the cost implications in cattle at Nsukka slaughter

Organs	Lesions/Conditions	n (%)	Cost (N)
Liver	Fasciolosis	99 (18.17)	381,150.00
	Tuberculosis	1 (0.18)	N3850.00
	Cirrhosis	33 (6.06)	127,05.00
Lung	Tuberculosis	11 (2.02)	N831, 600.00
	Pneumonia	216 (39.63)	831,600.00
	Congestion	38 (6.97)	N146, 300.00
Heart	Ventricular Blood retention	501 (91.93)	0.00
Rumen	Paramphistomosis	545 (100)	0.00
Small intestine	Pimply gut	200 (39.69)	0.00

Figure 2: Some pathological conditions and disease lesions in different breeds of cattle slaughtered at Nsukka Abattoir

Note: Wf=White fulani, Nd=Ndama Mu= Mutura

Discussion

Gross pathological conditions observed in the viscera and organs of all the cattle examined at the Nsukka slaughter could be attributed to pastoral system used in rearing most of the cattle (White Fulani breed). This system of management are noted to predispose livestock to many diseases . In addition, imported cattle (which make up a good number of animals slaughtered in the Nsukka slaughter) are not quarantined at the borders in Nigeria . Also, veterinary care and services are not readily available in remote places from where these animals are sourced from (Onunkwo *et al.*, 2003). Reduction of edible meat due to the presence of gross pathological lesions is of economic importance given that the available animal protein in Nigeria is below the recommended FAO requirement . The importance of slaughtering healthy animals cannot be overemphasized since the butchers' economy, the nation's protein needs and safety of consumers are of utmost importance. An economic loss of N1, 532, 300.00 due to pathological lesions in the Nsukka slaughter observed in this study was less than the N2,9100,000.00 recorded in Makurdi due to organ condemnation over a four year period . Reduction in economic loss in this study could be due to the relative short period of the study. Also pneumonic lesions, as observed in the study, have economic consequences due to poor quality of meat and condemnation of affected organs during inspection (Tijani *et al.*, 2012). Presence of paramphistomosis and pimply gut in most of the cattle slaughtered at the abattoir indicated inadequate control measures against parasites in animals examined and the consequent reduction in profits to the livestock producers (Juyal *et al.*, 2003). Ventricular blood retention (91.3%) in most of the animals examined revealed some unethical practices at the slaughter slab such as non-resting of cattle

after transportation prior to slaughter, absence of stunning and meat processing without allowing enough interval for proper bleeding, dragging of cattle before slaughter among others as noted earlier (Onunkwo *et al.*, 2003). Such practices reduce meat quality due to oxidative instability as well as microbial establishment and growth which consequently results in speedy spoilage of meat . Unethical practices have been recorded in different abattoirs in Nigeria .

The study also detected cases of suspected TB in the organs examined. This is particularly important given that Nigeria is among the six countries accounting for 60% of new cases of the disease in 2015 (WHO, 2016) and one of the top three (India, 25%; Indonesia, 16% and Nigeria, 8%) of the ten countries accounting for 76% of the total reported cases in the world (WHO, 2017). Considering the fact that butchers in Nigeria engage in such practices as consuming and selling organs with TB lesions , the end TB strategy of the may elude the country.

Our results showed different kinds of gross pathological conditions in the viscera of the breeds of cattle examined during slaughter at Nsukka abattoir, which are of both economic and public health importance. This is very pertinent because government do not pay compensation for carcasses condemned as a result of disease conditions in the abattoirs in Nigeria . This lack of compensation has been blamed for the reported stiff resistance of butchers to proper meat inspection in abattoirs in Nigeria with the resultant selling of unwholesome meat to the final consumers . This is of public health importance given that butchers and consumers get exposed to zoonotic diseases. Also, with the harsh economic realities in the country today, the butchers and indeed the nation cannot afford to continue to lose money due to condemnation of unwholesome and contaminated meat in the abattoirs. Such

losses affect the GDP of the country negatively.

It is therefore very important that nomadic livestock management should stop and the nomads settled in ranches where the health of the animals will be better catered for. We also advocate that, government should make and implement policies for the control of livestock diseases in Nigeria. There is also the need for improved abattoir facilities, adequate meat inspection (ante-mortem and postmortem) and awareness campaigns to butchers, cattle traders, meat sellers and consumers on the importance of safe and wholesome meat.

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