Journal of Clinical Pathology and Forensic Medicine Vol. 1(2), pp. 9 - 12, April 2010
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Full Length Research Paper

Pathological conditions and lesions observed in slaughtered cattle in Zaria abattoir

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Accepted 29 January, 2010

Disease prevalence in ruminants constitutes a serious impediment to livestock production in Nigeria. Records of common cattle diseases prevalent in Zaria are pertinent for effective control programmes. Knowledge of the extent to which the public is exposed to zoonotic diseases through meat consumption is useful in preventive medicine. The slaughter house in Zango-Zaria was visited between January and September, 2008 to obtain information on pathological conditions found in cattle slaughtered during the same period. A total of 7812 cattle were examined. Fascioliosis constituted 23.41%, haemonchosis 11.61%, pericarditis 17.06%, pneumonia 8.79%, liver cirrhosis 10.41%, fracture 6.50%, pulmonary emphysema 4.71% and abscesses in liver, lungs and kidneys 4.55% of the pathological conditions noted. Seasonality trend of some conditions was noted, that is streptothricosis was highest in July, abscesses in September, liver cirrhosis in April and emaciation and haemonchosis, pneumonia and pericarditis occurred mostly in June. Of the 5758 organs having lesions, 598 whole organs were totally condemned. The number of carcasses partially condemned was 5160. The results highlight the need for improved meat inspection practices at abattoirs and awareness of butchers and cattle traders.

Key words: Abattoir, cattle, lesions, pathological, Zaria.

INTRODUCTION

Slaughter houses provide an excellent opportunity for detecting diseases of both economic and public health importance. Frequent encounters of bovine pathological lesions in the lungs, heart, intestine, kidney and liver have been constant features in the annual reports of various government stations in Nigeria (Babalola, 1975; Ogunrinde 1980; Antia, 1982). Numerous abattoir surveys of bovine pathological conditions have been conducted to investigate macroscopic and microscopic abnormalities (Al-Dahash and David, 1977; Ogunrinde 1980; Antia, 1982; Matovelo and Mwamengele, 1993). The slaughterhouse and its regulations, represents a key control point of livestock production chain (Ogunrinde, 1980; Antia, 1982). Any observation and information obtained at slaughterhouse can contribute to the understanding of slaughtered animals' diseases. The pathological examination represents a useful tool to make a diagnosis within the slaughter line.

Some of these surveys had been centred on one or two organs of the body, while others encompassed the entire organs of the body. A wide variation has been recorded in the incidence of abnormalities found over different geographical locations. These findings are affected by various factors such as the degree of veterinary supervision and critical appraisal of abnormalities by the person carrying out the survey (Al-Dahash and David, 1977; Okoli, 2001). It is necessary to know the extent to which the public is exposed to zoonotic diseases as observed in abattoirs. In addition, the financial implications of condemnation to the butchers in terms of meat may be substantial (Antia, 1982; Halle, 1998). The daily encounters of these diseases and the concern of the veterinary public health staff in this abattoir convinced us of the need to carry out a survey of diseases associated with slaughtered cattle in this abattoir. Records of ante and post-mortem inspections are useful epidemiological data for the evaluation of diseases at farm level and to verify the efficacy of prophylactic and therapeutic interventions (Ogunrinde 1980; Antia, 1982).

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Table 1. The various disease conditions observed in Zaria abattoir.

Disease	Organ	(%)	Total	Sept.	Aug.	July	June	May	April	Mar.	Feb.	Jan.
Streptothricosis	Skin	3.77	272	12	26	146	46	42	0	0	0	0
Poornness	Body	3.46	250	5	32	62	19	24	18	56	12	22
Fracture	Bone	6.50	469	142	9	22	52	68	42	46	42	46
Fascioliosis	Liver	23.41	1690	52	130	162	196	201	425	200	162	162
Cirrhosis	Liver	10.41	751	14	96	92	42	162	109	102	92	42
Abscesses	Liver, lung and kidneys	4.55	328	104	0	72	32	90	0	0	0	30
Pericarditis	Heart	17.06	1231	24	0	194	106	195	202	250	168	92
Pneumonia	Lungs	8.79	634	12	60	102	122	82	72	42	102	40
Emphysema	Lungs	4.71	340	162	0	72	42	64	0	0	0	0
Haemonchosis	Rumen	11.61	838	0	122	160	202	142	72	0	94	46
Emaciation	Body	2.88	208	0	0	0	94	0	72	0	0	42
Hydronephoresis	Kidney	0.08	6	0	0	0	4	0	2	0	0	0
M/Abscesses	Omentum	0.14	10	0	2	4	0	4	0	0	0	0
Tumor	Intestine	0.03	2	0	0	0	0	2	0	0	0	0
Pimpy gut	Intestine	2.61	188	0	42	42	0	64	0	46	0	12
Total			7217	896	975	927	1023	1001	1001	1056	988	1022

Presently, there is a little information on the economic and public health aspects of carcass condemnation in Northern Nigeria. The present survey reports on the diseases prevalent in cattle slaughtered at Zaria abattoir between January to September 2008 and their public health significance and the financial implication of condemned carcasses.

MATERIALS AND METHODS

Location and time of the study

Study area

The Zaria abattoir was visited between January to December 2008. The average number of cattle slaughtered per day was 110 (from available records at the abattoir). Cattle slaughtered at this abattoir are representatives of the various herds in Zaria and neighboring local government areas. The visits were mainly done at weekly interval. This area of study lies on the latitude of 07 38°E and longitude 11 10°N. Meat inspection was carried out at the abattoir by trained meat inspectors under close supervision of Veterinarians.

Pre and post slaughter examination

The records of numbers slaughtered and the organ lesion(s) observed and condemned were noted by meat inspector. All animals presented for slaughter were physically observed a day before or shortly prior to slaughter. Inspection of the animals was made while at rest or in motion for any obvious sign of disease. Post slaughter examination involved visual examination of carcasses and organs (results not shown) with keen attention being directed to livers, lungs, hearts, gastrointestinal tract and skin. Through palpation and incision of suspected organs, gross pathological lesion of each diseased organ was established and recorded as described by Gracey (1985).

Assessment of weight of condemned organs or carcass from slaughtered cattle and economic losses

The average price per kilogram of bovine liver, heart, lungs (A_v P_l) andkidney (A_v P_b) was obtained through interviews made with local butcher men in Zango abattoir and to determine the average weight of bovine liver, lungs, hearts and kidneys, in Zaria town from animals of different ages and the average weight calculated using method of Lamid et al. (2004). The average price of liver, heart and kidney obtained from businessmen dealing with cattle meat at Zaria town during this survey was US $ 1.00 per kg. The monthly condemnation was used to estimate number of livers, lungs, kidney and heart condemned due to disease conditions encountered at post-mortem inspection.

Statistical analysis

Collected post mortem/meat inspection records were entered, edited, validated and performed by Epi-Info (Version 6.04b, Centre for disease control, Atlanta, USA). The test statistics used were mean (x), percentages (%) and chi-square test of independence to compare monthly prevalence rates of disease conditions encountered at post-mortem inspection. The reference level for each monthly proportion value was that with the largest sample size. Because of aggregate data (other causes of liver, heart and kidney condemnation), economic loss (impact) analysis reported in this study was made.

RESULTS

A total of 7812 cattle (*Bos indicus*) were slaughtered and examined during the survey. Diseases encountered in the various organs examined are shown in Table 1. Pneumonia 8.79%, abscesses in the lungs 18.0%, cysticercosis 7.9%, pericarditis 6.3% and fat atrophy of the heart 30.3%. The commonest disease conditions encountered were fascioliosis and it constituted 23.41%,

Table 2. Total condemnation of various organs encountered at Zaria abattoir from January to December, 2008.

Disease	Action taken	Total	Sept.	Aug.	July	June	May	April	March	Feb.	Jan.
Fascioliosis	Partial	1532	140	125	155	190	195	240	180	150	157
	Total	70	2	5	7	6	6	8	20	12	4
Cirrhosis	Partial	723	50	94	88	40	152	99	90	70	40
	Total	54	2	2	4	2	10	10	0	22	2
Abscesses	Partial	223	11	0	70	28	85	0	0	0	29
	Total	15	3	0	2	4	5	0	0	0	1
Pneumonia	Partial	655	23	59	100	155	80	70	30	100	38
	Total	30	0	1	2	7	2	2	12	2	2
Pimply gut	Partial	191	0	40	40	0	60	0	40	0	11
	Total	13	0	2	2	0	2	0	6	0	1
Haemonchosis	Partial	974	160	121	152	200	140	65	0	90	46
	Total	20	2	1	2	2	2	7	0	4	0
Pericarditis	Partial	760	0	58	160	50	140	130	50	100	72
	Total	475	0	2	34	22	55	72	200	68	22
Nephritis	Partial	2	0	0	0	0	0	2	0	0	0
	Total	4	0	0	0	4	0	0	0	0	0
Cysticercosis	Partial	0	0	0	0	0	0	1	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0
Emphysema	Partial	100	12	0	70	40	60	0	0	0	0
	Total	4	0	0	2	2	4	0	0	0	0
M/Abscesses	Partial	0	0	0	0	0	0	0	0	0	0
	Total	11	0	2	0	0	5	0	0	0	0
Tumor	Partial	0	0	0	0	0	0	0	0	0	0
	Total	2	0	0	0	0	2	0	0	0	0
Total partial condemnation		5160									
Total condemnation		698									

haemonchosis, 11.61%, pericarditis, 17.06%, pneumonia 8.79%, cirrhosis 10.41%, fracture 6.50%, emphysema 4.71% and abscesses in liver, lungs and the kidneys 4.55% of the pathological conditions noted. The monthly distribution of pathologic lesions as also noted to be significant at specific period of the month. For example streptothricosis was highest in July, abscesses in September, liver cirrhosis in April and emaciation and haemonchosis, pneumonia and pericarditis mostly in June (Table 1). Table 2 shows the common causes of condemnations in the organs. Of the 5160 organs having lesions, 598 whole organs were totally condemned, while 5160 carcasses were partially condemned.

DISCUSSION

Helminthoses are among the most common and economically important parasitic infections of ruminants under different production systems and agro-climatic zones of the zones of the world. A number of abattoir data and clinical reports from Africa have highlighted the economic importance of fascioliosis, parasitic gastroenteritis, cysticercosis and oestophagostomosis in ruminant livestock (Tembely et al., 1988; Okolo, 1985; Nfi and Alonge, 1987; Matovelo and Mwamengele, 1993; Okoli et al., 2000). The importance is predicted on the prodigious losses they cause to food animal industry through meat

condemnation and morbidity produced by the various worm infestation (Dipeolu et al., 1988; Umeh et al., 1998). Helminthiosis, particularly fascioliosis and haemonchosis, accounted for 23.11 and 11.60%, respectively of the total disease condition encountered. This certainly calls for improved control and preventive measure such as regular deworming and avoidance of fadama area for grazing. Akerejola et al. (1979) estimated the economic loss due to round worms in Zaria and Kano areas in sheep and goats to be 60 million Naira. In cattle the cost could be higher due to body weight and damage caused by these worms.

Scientists in Nigeria have not paid sufficient attention to cattle diseases. It is when the diseases affecting cattle are identified and their epidemiology understood that meaningful preventive and production programmes can be formulated. This study may be valuable in the area of monitoring conditions that are of public health hazards (Schwabe, 1969). The implication being that the public has been saved from acquiring these deadly and debilitating diseases especially fascioliosis, hydatidosis and cysticercosis. The low incidence of some of the conditions reported may indicate the less significant role they play as bovine diseases in this area. There is a need for erection of modern abattoirs with laboratory and cold storage facilities. These facilities will help in ensuring that only wholesome beef is passed for human consumption.

A source of spreading of disease to the slaughter houseworkers and perhaps the community is the practice of stealing and consuming diseased meat by the slaughter house workers. It is hereby recommended that proper burning of diseased meat should be mandatory. This will also reduce the incidence of consuming diseased meat by many birds and carnivorous pet animals. Finally, education of both butchers and cattle traders is necessary so that they can appreciate the need for thorough meat inspection of cattle. There is need to improve hygienic conditions at the slaughter houses so as to reduce meat contamination also the butchers and cattle traders should be encouraged to seek veterinary assistance for their sick animals.

Of the 5758 organs infected with diseases the sum of 598 whole organs was totally condemned. 5160 were carcasses partially condemned. Lamidi et al. (2004) reported average carcass weight of liver to be 3.85, heart 1.11 and lungs 3.85 per kg. A total of 70 livers were condemned due to fascioliosis, 475 hearts due to pericarditis, 30 lungs due to pneumonia and 54 livers due to cirrhosis. The cost of 1 kg of liver, lung and heart of cattle is sold for $1.00 per kg in the retail shop in Zaria market and such is with liver condemned due to fascioliosis, this amounted to the loss of ₦269,500 to the beef company while for pneumonia and pericarditis the amounts were ₦527,500 and ₦115,500 respectively. This sum of money is very significant thus confirming the profit and loss in regard diseases in livestock industry in Nigeria and the importance public health implication.

The findings of this present study suggest that meat inspection practices require some improvement. The hostile attitude of the butchers and cattle traders has resulted in the lenient nature of meat inspection. For example some generalised abscess conditions requiring more serious attention such as total condemnation were just trimmed off and passed for consumption. In conclusion, good meat inspection and better livestock management system will go in a long way in reducing losses obtained at abattoir in Zaria.

REFERENCES

Akerejola OO, Schillhorn Van Veen TW, Njoku CO (1979). Ovine and caprine diseases in Nigeria. A review of economic losses. Bull. Anim. Health Prod. Afr. 27: 65-70.

Al-Dahash SYA, David JSE (1977). The incidence of ovarian activity, pregnancies and genitalia abnormalities shown by abattoir survey. Vet. Rec. 101(15): 296-299.

Antia RE (1982). Survey of abattoir data in Southern Nigeria. Trop. Anim. Health Prod.14: 2.

Babalola DA (1975). Diseases of thoracic organs associated with slaughtered cattle in Bauchi abattoir North-eastern State of Nigeria. J. Niger. Vet. Med. Assoc. 4(1): 37-40.

Dipeolu AO, Dipeolu MA, Erubetine D (1988). Prevalence of fascioliosis in cattle in Ogun State. Proceedings of the 24th Annual NSAP conference 21-26th of March 1998 Abeokuta Nigeria 1998.

Epi-Info (1996). Centre for disease control, version 6.04d, Atlanta, USA and Geneva, Switzerland.

Gracey JF (1985). Post Mortem Inspection. Thornton's Meat Hygiene. 7th Edition. ELBS, Bailliere Tindall, East Sussex, UK pp. 45-60.

Halle PD (1998). Evaluation of abattoir operation in Adamawa State Nigeria. Proceedings of the 24th Annual NSAP conference 21-26th of March 1998 Abeokuta Nigeria 1998.

Lamidi SO, Oni OO, Adamu AM, Alawa CBI, Adeyinka JA (2004). Carcass and non-carcass characteristics of Bunaji (White Fulani) cattle. Niger. J. Anim. Prod. 31(2): 274-278.

Matovelo JA, Mwamengele GLM (1993). Abattoir survey on prevalence of some cattle diseases affecting liver in Morogoro. In: Animal Diseases of Gastrointestinal Tract and Liver. An African perspective. IFS Stockholm Sweden pp. 106-114.

Nfi AN, Alonge DO (1987). An economic survey of abattoir data in Fako division of Southwest province of Cameroon.1978-1980. Bulletin Animal Health and Production for Africa 35: 239-242.

Ogunrinde A (1980). Economic Importance of bovine fascioliosis in Nigeria. Trop. Anim. Health Prod. 12: 2.

Okoli IC (2001). Analysis of abattoir records for Imo State Nigeria from 1995-1999. Diseases of incidence in cattle, sheep and goats. Trop. Anim. Prod. Invest. 2001.

Okoli IC, Agoh EC, Okoli GC, Idemi GC, Umesiobi DO (2000). Bovine and Caprine Fasciolosis in Enugu State of Nigeria: Retrospective analysis of abattoir records (1983- 1997) and six-month prevalence study, Bulletin Animal Health Production Africa 48: 7-11.

Okolo MIO (1985). Pathological conditions found in goats killed at slaughtered houses in Nsukka, Nigeria. J. Anim. Prod. 12(1): 61-67.

Schwabe GW (1969). Veterinary Medicine and Human Health. 2nd edition. Williams and Wilkins Company, Baltimore, Maryland, USA p. 302.

Tembely S, Galvin TJ, Graig TM, Traore S (1988). Liver fluke infestations of cattle in Mali. An abattoir survey in prevalence and geographic distribution. Trop. Anim. Health Prod. 20: 117-121.

Umeh AP, Fabiyi JP, Sanusi M (1998). Problems of fasciolosis in cattle in Bauchi Nigeria with reference to economic importance. Proceeding of the 24th Annual WSAP Conference.