

## PATHOLOGICAL CONDITIONS OF CONDEMNED BOVINE LUNGS FROM ABATTOIRS IN AKWA IBOM STATE, NIGERIA

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### ABSTRACT

*A study of diseases of the bovine lungs was carried out in Akwa Ibom State, Nigeria between (1999 – 2002). A total of 5,369 cattle were slaughtered within the study period out of which, 459 (8.5 %) lungs were condemned. Tuberculosis accounted for 183(39.921), representing 3.4 % of the total cattle population. This was closely followed by Pneumonia, which was 180(39.2 %), representing 3.4 % of this population. Abscesses, 93(20.1 %) and Taenia sp Cysts 3(0.7%), representing 1.7% and 0.1 % respectively of the total cattle population slaughtered also resulted in lung condemnations. The overall annual prevalence of the diseases amongst condemned bovine lungs shows that most of them were encountered in the last three years of study, 10.1 %, 9.7 % and 8.7% for the years 2000, 2001 and 2002, respectively. There was a clear positive seasonal influence on the prevalence of these diseases. The prevalence rate of tuberculosis and abscesses decreased along the seasonal periods from LDS to EDS. The rainy seasonal periods (ERS and LRS) increased the prevalence of pneumonia more than the dry periods while Taenia cysts were only recorded during the early dry season (EDS). It was, therefore, concluded that tuberculosis and pneumonias, both accounting for over 79 %, were the major reasons for bovine lung condemnations at the abattoirs in Akwa Ibom State.*

**Keywords:** Pathology, Bovine, Lungs, Abattoirs, Akwa Ibom

### INTRODUCTION

Surveillance of animal diseases for the purposes of control and eradication is practiced all over the world. Clinical and post mortem diagnoses are conventional methods being widely used. In developed countries, new methods introduced have been proved very reliable for diseases surveillance, control and eradication. Developing countries are faced with both economic and technological difficulties in putting to use most of the modern methods of surveillance and as such abattoir condemnations based on physical observations is practiced (Alonge and Fasanmi, 1979; Shadbolt *et al.* 1987; Matovelo and Mwamengele 1994; Ofokwu and Okwori, 2000; Okoli *et al.* 2000). Information generated from slaughter houses have equally been used to assess economic losses arising from the condemnations of bovine lungs and other organs (Okolo, 1985; Dipeolu *et al.* 1998; Halle, 1998).

Diseases are the major reasons for organ condemnations at the abattoirs. For example, 41.9 % of whole carcasses condemned between 1975 and 1977 in Nigeria were due to tuberculosis, and 22.2 % due to cysticercosis of *Taenia spp* (Alonge and Fasanmi, 1979). Pneumopathies had also accounted for 20 % of abattoir condemnations in Nigeria (Atsanda and Agbede, 1999), while abscesses had accounted for 0.4 % of liver condemned in abattoirs in Akwa Ibom State (Opara *et al.*, 2003).

Infectious diseases of respiratory tracts of farmed animals are caused by a combination of infectious agents and predisposing factors (Eddy *et al.*, 1992; Blood and Radostits, 1994). Under rearing conditions most ruminant livestock harbour some

disease conditions without clinical manifestation. During abattoir ante-mortem inspections, hundreds of such animals are passed for slaughter (Okolo, 1985; Okoli *et al.*, 2002).

In Akwa Ibom State, thousands of cattle are processed as meat for human consumption each year. However no study has been carried out among cattle brought in for slaughter in Akwa Ibom State to determine the prevalence of the diseases affecting the lungs which play vital roles in the maintenance of normal physiological status of these animals.

The present study therefore examined bovine lungs from abattoirs in Akwa Ibom State, Nigeria, to ascertain the prevalence of bovine lung diseases in cattle processed for human consumption.

### MATERIALS AND METHODS

The prevalence of some diseases affecting the lungs of cattle slaughtered in Akwa Ibom State, Nigeria were monitored for four years January-December (1999 – 2002), using meat inspection data collected from Public Health Unit of the Federal Livestock Department (FLD), State Zonal Office, Uyo.

Meat inspection records for the State were generated through the inspection activities of the State Veterinary personnel who cover all the abattoirs in the different local government areas. Monthly, records from the local government areas were pooled together and then resubmitted to the FLD Zonal office as monthly meat inspection report. The meat inspection report, contained disease conditions identified, overall yearly and monthly prevalence rates of the diseases encountered during post mortem inspections.

These data were further analysed for disease trends over the period of study, using descriptive analyses. Averages and percentages were also used to determine the prevalence rates and trends across four seasonal periods namely: early dry (October to December), late dry (January to March), early rains (April to June) and late rains (July to September).

**RESULTS**

The disease conditions in condemned lungs of cattle slaughtered at the abattoirs in Akwa Ibom State are shown in Table 1. Out of a total of 5,369 cattle slaughtered, 459 (8.5 %) lungs were condemned. Tuberculosis was responsible for 183 (39.9 %) of the condemned lungs. This accounted for 3.4% of the lungs condemned from the total cattle slaughtered. Pneumonia was encountered in 180 (39.2 %) of the condemned lungs and 3.4 % of the total cattle slaughtered. Abscesses were responsible for 93 (20.1 %) of the condemned lungs which translated to 1.7 % of the total cattle slaughtered. *Taenia* cysts accounted for 3 (0.7 %) of the condemned lungs, representing 0.1 % of the total cattle slaughtered.

**Table 1: Disease conditions in condemned lungs of 5,369 cattle slaughtered at the abattoirs in Akwa Ibom state between January 1999 and December 2002**

Disease condition	No. (%) of cases	Percentage of total slaughter
Tuberculosis	189 (39.9)	3.4
Pneumonia	180 (39.2)	3.3
Abscesses	93 (20.1)	1.7
Hydatid cysts	3 (0.7)	0.1
Total	459 (8.5)	8.5

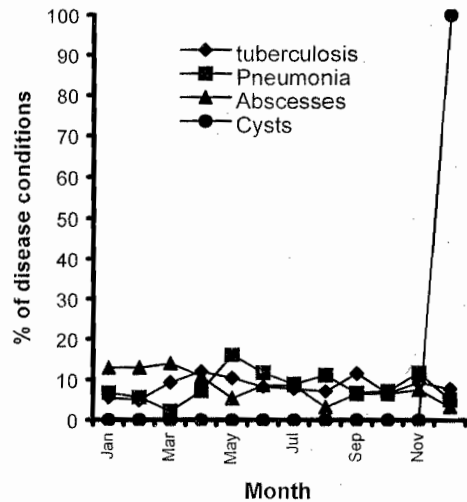
Table 2 presents the overall annual prevalence of disease conditions in condemned bovine lungs, from January 1999 to December 2002. The year 2000, recorded the highest cases of condemnations 98(10.1 %), followed by 131(9.7 %), 140(8.7 %) and 90(6.6 %) recorded in 2001, 2002 and 1999 respectively. Tuberculosis accounted for over 3 % of the reasons for lung condemnation in all the years monitored. It was recorded most in 1999 which was 51(3.8 %) followed by 2001, 2002 and 2002 which recorded 50(3.5 %) and 50(3.1 %), respectively.

Pneumonia accounted for 45(4.6 %) condemned lungs in 2000; 64(4.0 %); 45(3.1 %) and 26(1.9 %) in 2002, 2001 and 1999 respectively. Abscesses were encountered most in 2001 and they accounted for 36(2.5 %) of the condemned lungs. This was followed by 21(2.2 %), 25(1.6 %) and 11(10.8 %) prevalence rates in 2000, 2002 and 1999, respectively. *Taenia* cysts were recorded only in 1999 and 2002. Furthermore, 2(0.1 %) of the lungs had cysts in 1999 while in 2002, cysts were reported in 1(0.1 %) lungs.

The results of the seasonal prevalence of disease conditions in condemned bovine lungs at

abattoirs in Akwa-Ibom State are shown in Table 3. Seasons had effect on the prevalence of bovine lung diseases, with ERS recording 142(10.9 %), followed by 99(9.7 %), 150(9.3 %) and 113(7.8 %) also recorded during the LDS, EDS and LSR, respectively. Seasons equally had effect on the prevalence of tuberculosis, with its presence observed in all the four seasonal periods. The peak (5.5%) recorded during the LDS was followed by decreasing patterns of 4.3 %, 3.3 % and 2.7 % occurrences during the ERS, LRS and EDS, respectively. Pneumonias had the highest occurrence 63(5.0 %) during the ERS, followed by 48(3.3 %), 43(2.7 %) and 26(2.6 %) during the LRS, EDS and LDS respectively. Abscesses were encountered mostly during LDS 37(3.6 %) while 23(1.8 %), 16(1.0 %) and 17(1.2 %) were encountered during the ERS, LRS and EDS, respectively. *Taenia* cysts were not observed during LDS, ERS, and LRS but occurred during the EDS (3, 0.2 %).

The percentage monthly occurrence of disease conditions in condemned bovine lungs from abattoirs in Akwa Ibom State are shown in Figure 1.



**Figure 1: Percentage monthly occurrence of disease conditions in condemned bovine lungs at abattoirs in Akwa Ibom State (1999-2002)**

A cyclic pattern of tuberculosis monthly distribution was observed for bovine lungs condemned at abattoirs in Akwa Ibom State. A bimodal peak was exhibited in April (12.0 %) and September (11.5 %) for tuberculosis. On the other hand, a cyclic monthly distribution was recorded for bovine lungs infected with pneumonia. Peaks were recorded in the months of May (16.1 %) and November (11.7 %). Abscesses were highest in the months of January, February, March and April (12.9, 12.9%, 14.0 and 10.8%), respectively. Another lesser peak periods were (6.5%) in September, October (6.5%) and November (7.5%).

**Table 2: Disease conditions in condemned lungs of 5,369 cattle slaughtered at the abattoirs in Akwa Ibom state between January 1999 and December 2002**

Year	No. of animals slaughtered	Tuberculosis cases	Pneumonia cases	Abscesses cases	Taenia cysts cases	Total cases
1999	1355	51 (3.8)	26 (1.9)	11 (0.8)	2 (0.1)	90 (6.6)
2000	973	32 (3.3)	45 (4.6)	21 (2.2)	0 (0)	98 (10.1)
2001	1430	50 (3.5)	45 (3.1)	36 (2.5)	0 (0)	131 (9.7)
2002	1611	50 (3.1)	64 (4.0)	25 (1.6)	1 (0.1)	140 (8.7)
<b>Total</b>	<b>5,369</b>	<b>183 (3.4)</b>	<b>180 (3.4)</b>	<b>93 (1.7)</b>	<b>3 (0.1)</b>	<b>459 (8.5)</b>

**Table 3: Seasonal prevalence of disease conditions in condemned bovine lungs at abattoirs in Akwa Ibom state between January 1999 and December 2002**

Seasonal period	No. (%) of animals slaughtered	Tuberculosis (%)	Pneumonia (%)	Abscesses (%)	Taenia cysts (%)	Total
LDS	1017 (18.9)	56 (5.5)	26 (2.6)	37 (3.6)	0 (0)	99 (9.7)
ERS	1298 (24.2)	56 (4.3)	63 (5.0)	23 (1.8)	0 (0)	142 (10.9)
LRS	1442 (26.9)	48 (3.3)	48 (3.3)	17 (1.2)	0 (0)	113 (7.8)
EDS	1612 (30.0)	43 (2.7)	43 (2.7)	16 (1.0)	3 (0.2)	150 (9.3)
<b>Total</b>	<b>5,369</b>	<b>183 (3.4)</b>	<b>180 (3.4)</b>	<b>93 (1.7)</b>	<b>3 (0.1)</b>	<b>459 (8.5)</b>

LDS = Late Rainy Season; ERS = Early Rainy season; LRS = Late Rainy Season; EDS = Early Dry Season

*Taenia saginata* cysts had only one sporadic occurrence in the month of December (100 %).

## DISCUSSION

Tuberculosis and pneumonias accounted for 79.1 % of the lungs condemned at the abattoirs in Akwa Ibom State during the study period. This finding agrees in part with Ajogi *et al.* (1995) that tuberculosis is the major cause of bovine lung condemnation in abattoirs.

Tuberculosis was considered to be under control in the 1970s and 80s, however the prevalence rate of 3.4 % in 5,369 cattle slaughtered in Akwa Ibom State calls for concern. With the worldwide resurgence of tuberculosis in human beings (Dolin *et al.*, 1994), the prevalence level reported in this study indicates its high endemicity.

Although tuberculosis was encountered in all the years studied, there was a decrease in the prevalence rates along these years. This could be as result of the recent public enlightenment campaign about tuberculosis and better meat inspection activities in the abattoirs (Ukpong, 2002). Results from this study showed that tuberculosis of the lungs was more prevalent during the rainy seasons and decreased with the end of the rains. This is contrary to the reports of Alhaji (1976), Collins *et al.* (1983) and Ajogi *et al.* (1995) who recorded higher prevalence rates of this disease during the dry seasons.

The Fulani herdsmen are nomadic pastoralists. They bring their cattle to the southern parts of the country during rainy season to graze, and re-migrate when the rains begin in the North (Ogundipe *et al.*, 1989). This prevalence of tuberculosis during the rainy seasons correlates with the migratory activity into the south to graze. Possibly these cattle might have acquired the infection up-

north before embarking on the south-ward migration for pastures.

The prevalence rate of pneumonia in this study (3.4%) does not agree with the report of Halle (1998) and Odo *et al.* (1999) who reported higher prevalence rates of 6.8% and 18.9% in Enugu and Zaria respectively. It is on record (Okolo, 1985) and Okoli *et al.* (2002) that animals with pneumonia are usually passed for slaughter even though they harbour this condition during rearing and might have shown obvious or specific clinical signs. Some of the cattle examined in our work could have had pneumonia but were unnoticed and passed for slaughter. Pneumonia is of importance in all livestock production due to harsh weather conditions during the dry season and verminous pneumonia during the rainy season which often resulted in bovine mortality (Isoun and Mann, 1977). In this study, pneumonia was recorded during the rainy and dry seasons and thus agrees with Halle (1998) who observed that both seasons exacerbate this condition in livestock. Bronchopneumonia and the accompanying abscessation (1.7 %) in the lungs might have been brought about by secondary bacterial infections with *Pasteurella* and *Mycoplasma* species. Abscess was again observed to predominate during the dry than rainy seasons. This finding agrees with the reports of Ojo and Chineme (1980), Shadbolt *et al.* (1987), Shaffo (1993), Matovelo and Mwamengele (1994) that lack of adequate pastures during the dry season encourages abscess formation in the organs as a result of lowered immunity against infectious agents.

The presence of cysts (0.1 %) in the lungs of slaughtered cattle in Akwa-Ibom State agrees with the reports of Ajogi *et al.* (1995), Atsanda and Agbede (1999) who reported prevalence rates of 0.57 % in Sokoto, 0.67 % and 0.83 % in Ibadan and Maiduguri, respectively. This confirms the lungs as predilection site for *Taenia* cysts. The cysts were encountered only at the early dry season. It is

possible that the isolated cases may have been acquired during the rainy seasons but were retained into the dry season because of favourable physiological conditions in the lungs.

Generally, the overall disease trends tended to increase from 1999 to 2002. This may be due to increasing number of slaughter down the years which also increased the number of condemned lungs. In addition, *Blood et al.* (1979) reported a higher prevalence rate of diseases among female cattle than their male counterparts. *Opara et al.* (2003) had recently reported a higher female cattle slaughter figure in Akwa Ibom State than the male ones. These reasons could be ascribed to the overall annual increase in diseased bovine lung condemned in Akwa Ibom State.

**Conclusion:** Tuberculosis and pneumonia are the major reasons for bovine lung condemnations in the abattoirs, at Akwa Ibom State. This calls for a serious concern as the result of the present study presents information on carcass condemnations. Moreover, illiterate Fulani herdsmen who provide little or attention vis-à-vis disease control and prevention owned animals involved in this study and are the major providers of meat and milk in Nigeria. The information in this study emphasizes the need for improved surveillance and meat inspection programme.

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