

Original Article

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Reports on the Prevalence of Pneumo-Enteritis Among Sheep in Ile-Ife, Nigeria

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ABSTRACT [ENGLISH/ANGLAIS]

Data were collected on the prevalence of pneumo-enteritis among 895 sheep reared on the semi-Intensive system at Obafemi Awolowo University Teaching and Research (OAU TR) farm, Ile-Ife and 317 sheep brought from the free range for sale at Ile-Ife Sheep and Goat (ISG) market between the periods of December 1986 to October 1993 and November to October 1993 respectively. At OAU TR farm, 39.51% of the sheep were affected with pneumo-enteritis; 78.13% of the treated sheep (32 in number) recovered while 6.26% mortality was obtained. At ISG market 33.10% of the sheep were affected. The disease was more prevalent during the dry seasons (November to March) at OAU TR farm (9.96%) and ISG market (69.33%) than what obtained during the rainy season (April to October) at the two locations (8.08% and 21.90% respectively). The incidence of the disease was higher among sheep at ISG market than those at OAU TR farm. Bacteriological examination of nasal swabs from infected sheep revealed the presence of *Pasteurella haemolytica*, *Pasteurella multocida*, *Streptococci spp.* and *Coccobacillia* bacteria. Prompt treatment of infected sheep elicited recovery.

Keywords: Season, management, sheep, Pneumo-enteritis, prevalence

RÉSUMÉ [FRANÇAIS/FRENCH]

Les données ont été collectées sur la prévalence de la pneumo-entérite chez les 895 moutons élevés sur le système semi-intensif à l'Université Obafemi Awolowo d'enseignement et de recherche (OAU TR) ferme, Ile-Ife et 317 moutons amenés de la gamme pour vente à Ile-Ife Sheep et de chèvres (ISG) de marché entre les périodes de Décembre 1986 à Octobre 1993 et Novembre to Octobre 1993, respectivement. A la ferme de OAU TR, 39,51% des brebis ont été affectés par la pneumo-entérite; 78,13% des brebis traitées (32 au total) récupéré tandis que la mortalité de 6,26% a été obtenu. Au ISG marché 33,10% de la brebis ont été touchés. La maladie est plus fréquente pendant les saisons sèches (Novembre à Mars) à OAU TR ferme (9,96%) et le marché ISG (69,33%) que ce obtenus au cours de la saison des pluies (Avril à Octobre) sur les deux sites (8,08% and 21.90 %, respectivement). L'incidence de la maladie était plus élevé chez les moutons à l'ISG de marché que ceux à la ferme OAU TR. L'examen bactériologique des prélèvements nasaux de moutons infectés ont révélé la présence de *Pasteurella haemolytica*, *Pasteurella multocida*, streptocoques spp. et les bactéries. coccobacilles Un traitement rapide des moutons infectés suscité de récupération.

Mots-clés: Saison, la gestion, les moutons, la pneumo-entérite, la prévalence

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INTRODUCTION

Production from small ruminant in Nigeria especially sheep can increase if they are well managed; and this can increase wool and animal protein availability thus alleviating the problem of malnutrition. Animal production in Nigeria is confronted with hindrances or militating factors such as poor quality of feed, malnutrition, climate, parasites, predators and diseases among others. Williamson and Payne [1] had noted that disease in livestock increase feed necessary to bring animal to slaughter weight, increase cost of production especially cost of medications and control and cost of

labour needed to attend to the sick animals, poor capital utilization besides posing danger to public health. The pneumonia related diseases of sheep have long been recognized as one of the most important problems associated with sheep-raising throughout the world [2]. One of the diseases affecting sheep production in Nigeria is pneumoenteritis which is a catarrhal enteritis associated with pneumonia. It is caused primarily by virus, cold, worms and stress although secondary invasion by bacteria may be involved.

This study aimed at investigating and reporting the effects of season and management systems on the prevalence of

pneumo-enteritis of sheep in Ile-Ife, Osun State, Nigeria via data collection and bacteriological examination of smears from the nasal swabs or mucous of sheep.

MATERIALS AND METHODS

Data on health, medication and occurrence of pneumo-enteritis among 895 sheep reared at the Obafemi Awolowo University Teaching and Research (OAU TR) farm, Ile-Ife, Osun state, Nigeria from November 1986 to October 1993 were obtained from the sheep unit and the veterinary record. These data were then analyzed using descriptive analysis of percentages and histogram. Breeds of sheep reared on the farm were the West African Dwarf (WAD), Ouda, Yankassa and the Balami breeds that were raised on semi-intensive system of management. Sheep were fed on concentrates that comprised of rice bran, brewer dried grain and *Cajanus cajan* besides being allowed to graze on pasture at about 8.00am in the morning till 12.00noon. *Panicum maximum*, *Gliricidia sepium* and *Leucaenia luecocephala* were also provided in the forage rack inside the pen with adequate water, salt lick and ventilation. The animals were housed in groups inside the pens made of wood, concrete floor and asbestos roof. The buildings were partitioned with wooden materials into small pens and each pen was provided with a forage rack, concentrates and water troughs. Also 317 WAD sheep that were reared on free range or extensive system of management from small or individual holdings and brought for sale at Ile-Ife sheep and goat unit market, Fajuyi road, Ile-Ife, between the period of November 1992 and October 1993 were observed for the incidence or occurrence of pneumo-enteritis. The sheep were offered for sale in this market and nothing about their history was known. The general appearance of individual sheep at OAU TR farm and that of sheep and goat market both in Ile-Ife were observed between November 1992 and October 1993 for any symptom of pneumo-enteritis such as fast shallow breathing or difficulty in breathing, nasal and/or ocular, cough, fever, dullness, diarrhoea and if the animal is standing alone or on its own etc. Nasal swabs were collected from 17 sheep out of the affected sheep at sheep and goat market for laboratory examination.

Laboratory Procedures

The nasal smear were carefully planted on the prepared blood agar medium aseptically and incubated till the second day after which the culture observed on the primary plate were sub-cultured again on the secondary plate and incubated. For further bacteriological

examination, thin smears from the sterile nasal swabs and thin portion of the growing bacteria on the primary and secondary plates were placed on clean slides separately. The slides were then air-dried and fixed on flame. The slides were also flooded with crystal violet stain for 2 minutes and washed away with Grams – iodine solution for 30 seconds. It was then differentiated with acid alcohol or acetone and washed away immediately with plenty of water. The stained slides were counterstained with safranin, washed off with plenty water, blotted dried and examined under oil immersion (magnification of x1000) for the presence of bacteria.

RESULTS

The prevalence and seasonality of pneumo-enteritis among sheep reared at OAU TR farm between November 1986 and October 1993 is shown in Table 1.

The flock size during the dry season (November to March) was 462 and 433 during the rainy season (April to October) totaling 895sheep during the period of the study. The affected sheep showed copious nasal discharge with dyspnoea or difficulty in breathing, cough and emaciation with ocular discharge, high body temperature or fever, diarrhoea, dullness or weakness and loss of appetite. Forty six cases (9.96%) of pneumo-enteritis were reported during the dry season while 35 cases (8.08%) were observed during the raining season meaning that about 9.05% of the entire flock was affected. Thirty two (39.51%) of the infected sheep were treated; 14 (30.43%) during the dry season and 18 (51.43%) during the rainy season. Only nine (64.29%) and 16 (88.89%) sheep of the treated sheep recovered during the dry and rainy season respectively. From the month of November 1991 to October 1993 there was no case of pneumo-enteritis among the sheep reared at OAU TR farm except for one sheep observed on 12 December 1991 to show the sign of the disease. The affected sheep was treated with 2ml of Terramycin® intramuscular for five days and the animal recovered from the ailment. Sheep mortality was higher during the dry season (8.01%) than what obtained during the rainy season (4.39%). In the overall or pooled data, 6.26% of the animals died from the disease

DISCUSSION

The signs and symptoms of pneumo-enteritis reported at OAU TR farm and those observed at Ile-Ife sheep and goat market were similar to those reported and documented by other researchers [3,4,5,6,7] as the affected sheep were generally dull with bilateral mucoid nasal and/or ocular

discharge, loss of condition, depression, diarrhea with stained vent, slightly labored breathing, increased body temperature, depressed appetite and emaciation.

Higher percentage of sheep that were affected with the disease (9.96%) during the dry season could be attributed to the fact that it was dry season during harmattan period with depressed or low environmental temperature and there is the possibility that the abundant dust during this period of the year could carry pathogenic microorganisms that can cause cold and pneumonia on the animals. Higher incidence of pneumo-enteritis that occurred during the months of November to March (60.0 – 85.7%) at Ile-Ife sheep and goat market (Figure 1) which was the dry season could be attributed to the same reason. The highest incidence was observed during the month of December when harmattan was at the peak with its associated cold weather, dry air and dusts. The cold could predispose the animals to respiratory infections like pneumo-enteritis. Insufficient forages and legumes with poor nutritional status of standing hays during this period coupled with inadequate concentrate supplement may cause nutritional imbalance in sheep which could depress its immunity against diseases and pathogens, thus predisposing them to various kind of diseases. Dipeolu [8] and Otesile [9] reported the same phenomenon. ISUE [3] also emphasized that inadequate colostrum intake by lambs will deprive them of energy, protein, mineral, electrolyte and fluid intake which will compromise the body's natural immune mechanisms against infectious diseases such as pneumonia and can result in diseases.

This could explain why greater number of sheep (88.89%) responded to treatment during the rainy season when there are plenty forages at OAUTR farm compared to what obtained (64.29%) in the months of November to March. The same reason accounted for the higher mortality (8.01%) obtained among sheep during the dry season at OAUTR farm.

Comparative study monitoring the prevalence of pneumo-enteritis at OAUTR farm and Ile-Ife sheep and goat market between the months of November 1992 and October 1993 (Table 2) also revealed that the disease was rampant during the cold dry season at Ile-Ife sheep and goat market than during the rainy season. Sheep reared at OAUTR farm showed no incidence of the disease during the period shown in Table 2, and this can be attributed to the semi-intensive system of management so practiced, where high level of sanitation, feeding with supplements, supplying of clean water and other normal management practices like sanitation, deworming, adequate ventilation etc. were observed regularly. The sheep were also divided or allocated to pens which prevented overcrowding and spread of diseases. The presence of *Pasteurella multocida*, *Pasteurella haemolytica* and streptococci in the affected sheep suggested their possible involvement in the observed pneumo-enteritis disease. This is in conformity with the report of PLS [5] and Hungerford [10] in Newzealand that the disease (pneumo-enteritis) is caused by pasteurella type of organism.

Table 1: This table shows the prevalence and seasonality of pneumo-enteritis among sheep of OAUTR farm (November 1986 – October 1993)

Parameters	Seasonal Occurrence					
	Dry Season (November - March)		Rainy Season (April - October)		Pooled Data (Nov 1986 – Oct 1993)	
	No.	%	No.	%	No.	%
Flock size	462	-	433	-	895	-
No of cases/ infected sheep.	46	9.96	35	8.08	81	9.05
No of sheep treated.	14	30.43	18	51.43	32	39.51
No of sheep treated that recovered.	9	64.29	16	88.89	25	78.13
Mortality	37	8.01	19	4.39	56	6.26

The monthly incidence of pneumo-enteritis among sheep at Ile-Ife sheep and goat market, Fajuyi road in Ile-Ife is presented in the histogram shown in figure 1.

At the sheep and goat market in Ile-Ife, 65.5, 85.7, 71.4, 60.0 and 62.5% of the sheep offered for sale in the market were noticed to be affected by pneumo-enteritis in the months of November and December 1992, January,

February and March 1993 respectively. The proportion of the affected sheep was at the highest level in December 1992 (85.7%); higher in the dry season (62.5 – 85.7%) and least in September 1993 (11.1%). The proportions of the affected sheep were 50.0, 30.4, 13.0, 13.9, 17.2, 11.1 and 26.7% in the months of April to October 1993 in that order.

Figure 1: This figure shows the monthly incidence of pneumo-enteritis among sheep at Ile-Ife Sheep and Goat market, Fajuyi, Ile-Ife.



The results of bacteriological examination of nasal swab samples showed the presence of gram negative short rods suspected to be *Pasteurella species* and some gram negative Coccobacilliary bacteria which are in pairs suspected to be streptococci. The cultured and sub cultured plates were of pure culture mainly of gram negative rods showing a characteristic α - haemolysis of the blood ager medium and suspected to be *Pasteurella haemolytica* while some of

the gram-negative rods were suspected to be *Pasteurella multocida*.

The seasonal and management effect on the prevalence of pneumo-enteritis of sheep in Ile-Ife between the months of November 1992 and October 1993 is as shown in Table 2. No incidence of the disease was observed among sheep reared on semi-intensive system of management with preventive and therapeutic health care at OAUTR farm between November 1992 and October 1993. Conversely 52 (69.33%) of the sheep at Ile-Ife sheep and goat market that were raised on extensive system of livestock management were affected with the disease during the dry season while the least cases (21.9%) were observed during the rainy season (April to October 1993) when more sheep were brought to the market for sale.

CONCLUSION

It is concluded that Bacteria such as *Pasteurella haemolytica*, *pasteurella multocida*, *streptococci spp.* and *Coccobacilla* are associated pathogens of pneumo-enteritis of sheep. Pneumoenteritis affect sheep and spread rapidly during the dusty and cold dry season. Rearing under semi-intensive system with good hygiene, feeding, ventilation and medication protected sheep and reduce the incidence of pneumo-enteritis while rearing on free range system predispose and worsened their condition. Prompt treatment of affected sheep prevented worsening of infection and elicited recovery.

Table 2: This table shows the effect of season and management on the prevalence of pneumo-enteritis of sheep in Ile-Ife (November 1992 – October 1993).

Location	Mgt. System		Dry Season (Nov. 1992 - March1993)	Rainy Season (April 1993 - October1993)
OAUTR Farm	Semi-intensive system	Total No.	29	31
		No. Affected	0	0
		% Affected	0.00	0.00
Ile-Ife sheep & goat market	Extensive system	Total No.	75	242
		No. Affected	52	53
		% Affected	69.33	21.90

MGT. = Management system; OAUTR Farm = Obafemi Awolowo University Teaching and Research Farm.

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CONFLICT OF INTEREST

No conflict of interests was declared by authors

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