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Management of Suspected Outbreak of Sheep pox in Yankasa Breed of Sheep in FCT, Abuja Nigeria

Enid Godwin[1], Saulawa Mahmud Abdullahi[2], Jamila Dauda[3], Ayuba Kutarju [4] Zakariya Audu[1], Jude Omeje[5], Ugba-Jinge Nese[1], Obande Elijah Ubah[1], Simon Ikechukwu Enem[1], Chinwe Elizabeth Okoli[1], D. I Ajogi[1], G.O Egwu[5]

1. Department of Public Health, Faculty of Veterinary Medicine, University of Abuja.
2. Department of Public Health, Faculty of Veterinary Medicine, Bayero University of Kano.
3. Department of Public Health, Faculty of Veterinary Medicine, University of Maiduguri.
4. Department of Operations Veterinary, Nigeria Police Force Headquarters, Garki Abuja.
5. Department of Veterinary Medicine, University of Abuja

Corresponding author: enid.godwin@uniabuja.edu.ng

ABSTRACT

Sheep pox is a highly devastating viral systemic disease of sheep. This case report describes an outbreak of sheep pox virus in a flock of sheep. Of the sixth eight (68) animals, twelve (12) were affected with a morbidity rate of (17.6%). The affected animals were treated with tylosin and other supportive care; all the treated animals recovered. This indicates that the use of antibiotic may have effect on reducing secondary bacterial infections and hyperthermia even in the presence of acute viraemia. The study shows that sheep pox virus is very endemic in the country (Nigeria). Farmers should be educated on the identification and prompt reporting of the disease to the appropriate authority for effective prevention and control program.

Keywords: Management, Outbreak, Sheep Pox, Yankasa Breed, FCT, Nigeria.

INTRODUCTION

Sheep pox is a contagious viral disease of small ruminants. In endemic areas the affected animals show mild clinical symptoms, but becomes fatal to newly introduced animals [1]. The sheep poxvirus (SPV), is an enveloped double stranded DNA virus with a genome size of 151 kb. It is classified under the species Capripoxvirus sheeppox, genus Capripoxvirus, subfamily Chordopoxvirinae, and family Poxviridae [2]. Pox disease is characterized by fever, appearance of papules, pustules, and scab in checks, lips, nostrils, medial part of the thigh and under the tail, usually remitted and cured within 5-6 weeks [3]. The virus enters via the respiratory tract and transmission commonly is by aerosol infection associated with close contact with infected animals. Spread can also occur from contact with contaminated materials and through skin abrasions produced iatrogenically or by insects. But there is no evidence about importance of this route of transmission in the field. Viruses are shed in secretions and excretions of infected animals, but it is believed that they are not important sources of transmission during outbreaks, because it is difficult to recover live virus on tissue culture from scabs materials. Movement of infected animals acts as the main cause of spreading SP viruses [4; 5; 6]. Incubation period of sheep pox is 4-8 days, Sheep pox (SG) are serious, systemic, fatal, viral diseases. Characterized predominantly by skin lesions extending all over the skin, but are most obvious on face, eyelids and ears, perineum and tail and internal lesions [7]. Sheep and goat pox in endemic areas are associated with significant production losses because of reduced milk yield, decreased production, abortion, damage to wool and hides, and increased susceptibility to other disease, while also being a direct cause of mortality [8]. The virus can be diagnosed by isolation of Capripoxvirus (CaPV) on chorioallantoic membrane (CAM) from Embryonated chicken egg (ECE) is considered to be a preliminary diagnostic test by developing characteristic pock lesions CAM [9 ; 3]. Clinical signs, post mortem lesions, Capripox virus isolation, serological and molecular tests [10] are also helpful in the diagnosis. The SP viruses can be inactivated at 56°C within 2 h, or at 65°C within half an hour. They can survive at a pH between 6.6 and 8.6. These viruses are susceptible to highly acidic or alkaline pH; for example, 2% HCl (hydrochloric acid) or H_2SO_4 (sulfuric acid) can completely destroy these viruses within 15 min [11]. CaPVs are considered as stable in the environment. They are susceptible to sunlight; however, they may survive in a dark and cool environment for up to 6 months. The SP are included in the OIE list as one of the notifiable diseases; it should be notified within 24 h of confirming the disease. Animals are susceptible during all age groups, and it has a very important role in agricultural economy [6].

Materials and Methods

Study area

The outbreak occurred at Ruga in Karshi which is a satellite settlement in Abuja Municipal Area Council of the Federal Capital Territory (FCT) with a population of approximately 346,000 people. The area is semi-urban, with a mix of indigenous communities and migrant populations, and features several villages where residents depend heavily on livestock and companion animals [12].

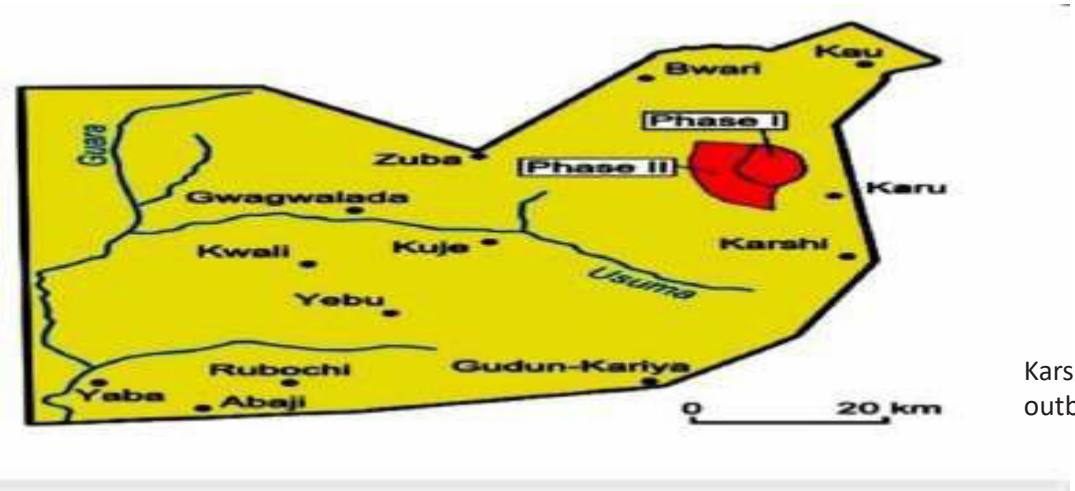

Figure 1: Map showing the location of the outbreak.

History of the Case

On 21st March, 2023 a client reported at the Primary Animal Health Service Centre Karu, with a primary complaint of losing four sheep out of a flock of sixty-eight to catarrh and difficulty in breathing.

Farm visit

Visit to Ruga in Karshi: The disease occurred 6 days to report and had spread to 12 Yankasa breed of sheep. History further revealed that the client had been managing the case using multivitamin and oxtetracycline LA, yet there was no improvement. The sheep were reared together with the cattle on a nomadic system with no vaccination record but regular deworming history. On physical examination of some of the affected sheep, the following signs were observed. Anorexia, pyrexia, swollen eye lids, laboured breathing, skin pox nodular lesions, enlarged superficial lymph nodes, oculo-nasal discharges were observed in almost all the sheep with vital parameters on (Table 1). Blood and faecal samples were collected and sent to the Parasitology and Pathology laboratories.

Management

1. Three seriously affected sheep with severe pox lesions around the eye lids were culled**.**
2. Isolation and quarantine measures were instituted in response to the outbreak: Immediate isolation and quarantine of the all affected animals were adopted to prevent spread by restricting their movement.
3. Surveillance and monitoring of unaffected animals: neighboring flocks were monitored for signs and symptoms of sheep pox virus.
4. Awareness campaign was carried out to educate farmers on the preventive and biosecurity measures as well as the importance of vaccination against sheep pox.
5. Decontamination and Biosecurity: Sodium hydroxide was used to clean animal housing, equipment, and area that may come into contact with the virus. Contaminated feed, animal waste and carcasses were disposed-off by deep burial.

Treatment and supportive care:

- Infusion. 5% Dextrose ® 300 ml; 400 ml & 260 ml IV to 3 sheep, respectively.
- Injection 20% Tylosin 5 mg/kg, x 5/7 SQ.

- Injection Multivitamin at 0.1 ml/kg x 5/7 IM.
- Injection 100 mg Hydrocortisone at 5 mg/kg, x 3/7.
- Injection 10 mg Ivermectin 200 µg/kg SC Stat

Table 1: The vital parameters of the affected sheep's

PARAMETERS	**RESULT**	**REFERENCE RANGE**	**REMARK**
TEMPERATURE (˚C)	41.5^{o}C	38-40^{0}C	High
PULSE RATE (beats/ min)	100	70-90bpm	High
RESPIRATORY RATE (cycle/min)	36CPM	20-30cpm	High
CAPILLARY REFILL TIME (seconds)	1	1-2 seconds	Normal

[13]

Laboratory Findings

PARASITOLOGY RESULT: No ova, oocyst and proglottids found

TABLE 3: HAEMOGRAM

Parameters	Clinical values	Reference values	Inference
PCV (%)	32.3	27-45	Normal
WBC (X10^{3}/ µl)	5.6	4.-8	Normal
Neutrophils (X10^{3}/ µl)	54.3	10-50	High
Lymphocytes (X10^{3}/ µl	37.8	40-55	Normal
Monocytes (X10^{3}/ µl)	2.1	0-6	Normal
Eosinophils (X10^{3}/ µl)	2.1	0-10	Normal
Basophils	2.1	0-3	Normal

[14].

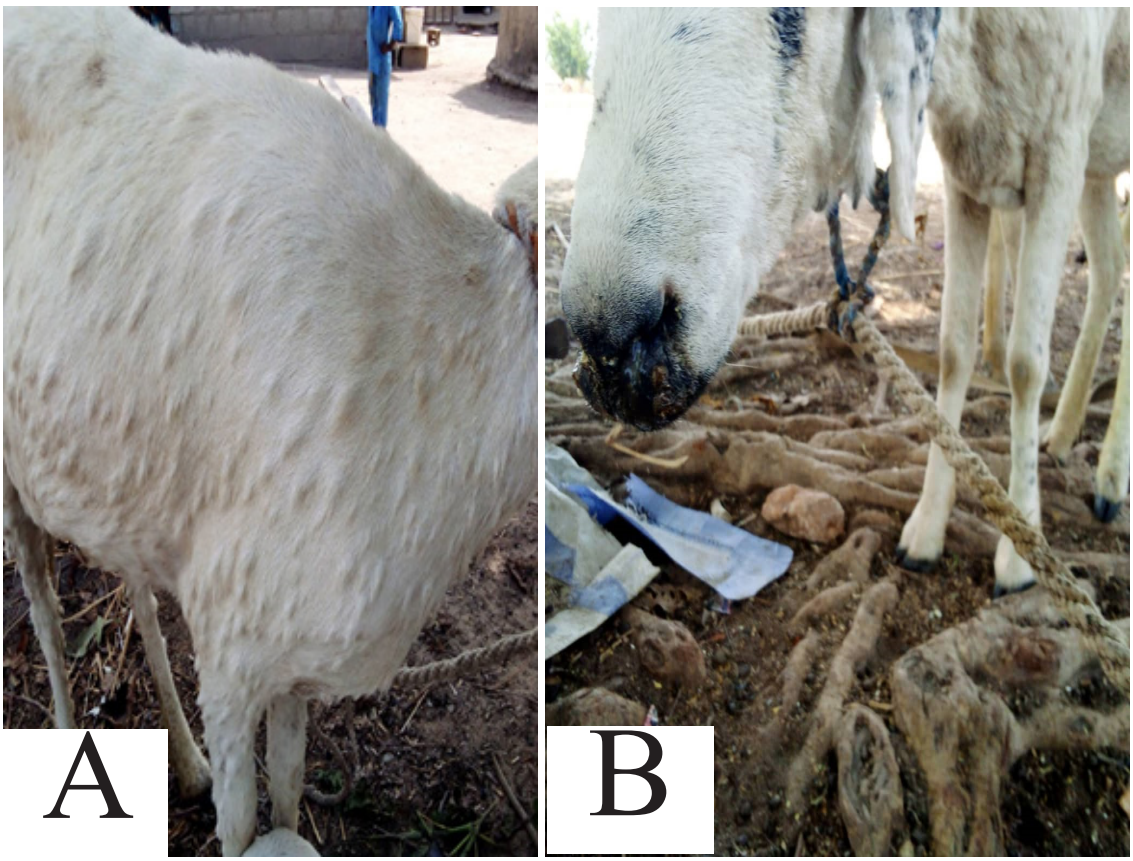

Plate I (A) Smallpox lesson on the external body surface of the affected animal, (B) Bilateral serous nasal discharges (red arrow) in early stage of infection

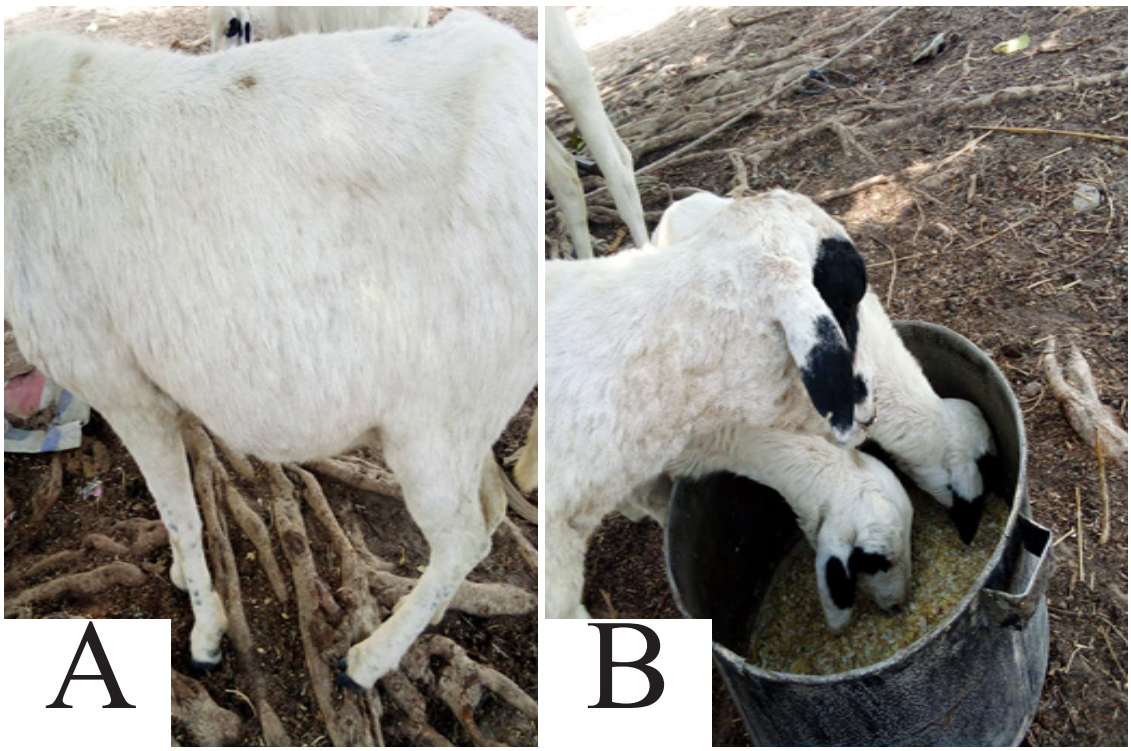

Plate 2: **(A)** Pregnant ewe, pox lesions subsided on day 6 post management **(B)**. Improved appetite

Follow up treatment on days 2, 3, 4, and 5 it was observed that pox lesions regressed with all other clinical signs. On the 6th day post treatment, lesions dried up as shown in Plate 2 (A) and the animals recovered fully.

Discussion

Sheep pox are contagious viral diseases of small ruminants. Sheep pox is highly devastating viral systemic disease of sheep. The present report describes an outbreak in a flock of sheep. Similar outbreaks have been reported in sheep from a previous study [14]. Treatment of affected animals with antibiotics facilitated full recovery of all animals involved, indicating that therapeutic intervention complemented host immunity in the control of the virus. Increased temperature was noticed in all sheep indicating viraemia, so also were the pulse and respiratory rates. These clinical findings were consistent with acute outbreak [15]. The haemogram was not typically consistent as seen in other viral infections (lymphocytosis), but there was an increased neutrophil count suggestive of secondary bacterial infection. This observation could be due to acute stage of the infection as reported in other studies. In conclusion it is important to know that sheep pox is still endemic in Nigeria and improved management practices should be encouraged to stem the tide in the spread of the infection. Sheep pox has no effective antidote, the treatment is directed at preventing secondary bacterial infections. Therefore, it is recommended that movement of animals and animal products should be restricted during disease outbreak. Carcass and any skin products such as wool or fiber which may have been contaminated should either be burned or buried, insects that are potential vectors to transmit virus should also be controlled and susceptible animals should be vaccinated with commercially available attenuated vaccine as the main control measure in endemic regions**.** Infected sheep should be isolated and closely monitored. Control of movement of apparently healthy sheep with stringent adherence to routine change in grazing direction and ensuring frequent decontamination/disinfection of premises using sodium hypochlorite are part of the good measures to control this infection. Good management practices such as avoiding overcrowding, maintaining hygienic conditions, providing good nutritious feed and regular de-worming are also advised.

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