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OBSERVATION AND MANAGEMENT OF CONTAGIOUS ECTHYMA (ORF) IN A GOAT HERD IN ABIA STATE, NIGERIA: A CASE REPORT.

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Abstract

Background and Objective: Contagious ecthyma (Orf) is a highly contagious zoonotic skin disease affecting sheep and goats, occurring sporadically across Nigeria. Despite its prevalence, reports on field-level outbreak management are limited. This case report documents the clinical presentation, diagnosis, and management of Orf in a herd of West African Dwarf goats, highlighting the importance of prompt intervention and the potential risks associated with viral mutation and cross-species transmission. Materials and Methods: A herd of eight West African Dwarf goats in Abia State, Nigeria, presented with characteristic proliferative lesions on the oral commissure, nasal area, periorbital region, and head. Three affected animals were examined; body scores were fair, and vital signs remained within normal limits. Scab samples were collected for bacterial culture and sensitivity. Isolates of Citrobacter and Staphylococcus aureus were obtained, both sensitive to gentamicin and ciprofloxacin. Treatment included gentamicin (5 mg kg-1 for 5 days) and ivermectin (0.04 mg kg-1, repeated after one week). Supportive care and management improvements were also administered. Results: Two of the three severely affected goats succumbed to the disease, while the remaining animals recovered with treatment. Culture and sensitivity confirmed secondary bacterial infection. The lesions and clinical signs were consistent with Orf, affirming the diagnosis. The case emphasizes the severity and common occurrence of Orf in susceptible goats. Conclusion: The case underscores the need for heightened awareness and early intervention in suspected Orf outbreaks. Given the potential for virus strain mutations and expanding host range, there is an urgent need to establish preventive measures and consider vaccine development to mitigate future outbreaks.

Keywords: Contagious ecthyma, goats, management, observation.

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INTRODUCTION

Contagious Ecthyma is a highly contagious zoonotic disease affecting domestic and wild ruminants worldwide. it is commonly encountered in goat populations1. The disease can result in important losses, either by fatalities in affected flocks or by culling of affected animals, especially when lesions persist for several weeks or recur. Mortality may be high in lambs (10%) and kids (93%), often partially due to anorexia resulting from severe oral lesions or secondary infections2, 3, 4. The disease is caused by a Para poxvirus related to pseudo cowpox and bovine papillomavirus virus5, often causing more severe infection in goats than in sheep. It is known by several other names, including orf, contagious pustular dermatitis, scabby mouth and sore mouth6. The early description and progression of the disease7 has relatively maintained its pattern over the years as the primary lesion develops at the mucocutaneous junction of the lips and around erupting incisor teeth and may extend to the mucosa of the buccal cavity. The lesions start as papules and progress through vesicular and pustular stages before encrusting 7. The disease can persist for long periods in a flock where convalescing carriers serve as a source of infection to other animals8. In Nigeria, Orf has not been given much attention regarding its prevention and control, probably because it has low mortality rates in affected populations compared to Pestes des Petits Ruminants (PPR), which is a more devastating plague of small ruminants and attracts more attention. It is important to note that Orf can be complicated by other underlying infections to result in mortalities, especially in immunocompromised animals and animals having underlying infections causing anaemia, pneumonia, and other chronic debilitating diseases. Constant animal infection with the orf virus enhances maintenance of the virus in the environment and its spread to susceptible animals, causing sporadic outbreaks among flocks. Laboratory confirmatory diagnosis of orf, formerly made by direct demonstration of virus in scab material using electron microscopy, has now been replaced by PCR as the diagnostic method of choice9, 10. Other methods based on historical positive differentiation obtained by inoculating susceptible and ecthyma-immunized sheep11 could be used for definitive diagnosis. The latter is constrained by the non-availability of the orf vaccine and experimental sheep. Serological tests such as complement fixation test (CFT), agglutination test (HT), agar gel precipitation test (AGPT), serum neutralization test (SNT), ELISA, and molecular studies using PCR have been widely utilized in the diagnosis of orf 9, 12. Clinical recognition has been of high importance, especially in areas where resources and standard laboratory facilities are limited. Many owners, especially small holders, are not aware of the possible prevention of orf by vaccination. Though vaccination is said to produce only a fair protection because of the multiplicity of immunogenic virus strains3. It is recommended that awareness of orf be created among owners and measures on biosecurity and vaccination be put in place to reduce the occurrence and spread of the disease to other susceptible species and humans. The objective of this case report is to document the clinical observation, diagnosis, and management of contagious ecthyma (Orf) in a goat herd in Abia State, Nigeria, and to highlight the measures taken to control the outbreak and prevent further spread within the herd.

MATERIALS AND METHODS

Study area

The cases were brought to the attention of the Veterinary teaching hospital of the Michael Okpara University of Agriculture, Umudike in Abia State, Nigeria. Abia State is located at geographic position 5025' N, 7030'E. The cases were observed and managed differently as they occurred at different periods. Case I was handled in the University farm at Umudike, where the goats were treated and observed for a period of two weeks while Case II was encountered during ambulatory visit at the cattle market in Lokpanta, Abia State.

Case History and Clinical Examination

The owner reported lesions on the mouth and oral commissure of research animals, which caused starvation and rapidly spread among the animals. The first signs appeared two days prior to presentation. The animals were previously vaccinated against Peste des Petits Ruminants (PPR) and fed on grass and occasionally on concentrates. No medication had been administered before presentation.

Signalment and Physical Assessment

Case 1: The species of animal affected was caprine, West African Dwarf goats, 8 in number (3 males and 5females), and aged between 12 months to 30months. They weighed between 9 - 18kg, their color was varied and include black, black and white, tan, brown. The vital parameters on examination during the course of disease werein the following ranges: body condition score: 3- 4, rectal temperature: 38.0–39.5 °C, Heart rate: 90–100 bpm, Respiratory rate: 20–25 cpm, Pulse rate: 110–120 bpm. Lesions were noted in 5 out of 8 animals. Three had extensive lesions around the lips, oral commissure, eyes, and between the horns. Severe tick infestations were also observed. Swabs and scabs were collected for bacterial culture and sensitivity testing.

Case 2: This case was observed during an ambulatory visit to a livestock market. It affected Caprine species, Kano Brown breed of goats. The lesions were extensive scabs around the mouth, tip of the ears, oral mucosa, commissure of the mouth, and feet (below the hairline and around the hoof). No treatment was administered, as the owner opted to sell the animals.

Differential Diagnosis Approach

Blue Tongue was ruled out due to absence of blepharitis, blepharoedema, conjunctivitis, pyrexia, cyanotic tongue, and systemic involvement and Foot-and-Mouth Disease (FMD) due to absence of feet lesions and low prevalence of FMD in goats in the region. Staphylococcal dermatitis was considered as possible secondary bacterial complication.

Ethical Statement.

The owners consented to examination and management of their animals which was done by the Veterinary Teaching Hospital Michael Okpara University of Agriculture, Umudike.

RESULTS

Case 1 Findings: Clinical signs included crusty scabs and proliferative lesions on the lips, oral commissure, around the eyes, and between the horns (Plate 1a–c). Clinical diagnosis of Contagious Ecthyma (Orf) was made based on lesion distribution and ruling out other conditions. Laboratory results further confirmed Staphylococcus aureus and Citrobacter species, which were sensitive to ciprofloxacin and gentamycin.

Treatment: Ivermectin was administered at 0.04 mg/kg, repeated after 7 days. Alongside Gentamycin at the dose of 5 mg/kg once daily for 5 days. Two of the affected goats died (including a pregnant doe that aborted prior to death). The remaining animals recovered within a period of two weeks.

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Case 2 Findings: Severe contagious ecthyma lesions observed during market surveillance (Plate 2a–c). No treatment was given due to owner's decision to sell animals instead. Highlights challenges in disease control due to poor owner compliance.

Plate 1a	Plate1b	Plate 1c
Orf lesion on the lower eyelid	Scabs round the mouth	Lesions round the nose and mouth
		
Plate 2a	Plate2b	Plate 2c
		

DISCUSSION

Contagious ecthyma continues to affects a larger range of animal species, all age groups although young or immunocompromised animals are most frequently and most severely affected. The disease remains common causing great harm in populations of sheep and goats [13]. Clinical diagnosis is usually not challenging considering that description of the development and appearance of clinical lesions of orf are characteristic and consistent with literature[3]. The lesions develop at the oral commissure, as numerous discrete lesions which later coalesce to form large scabs. Proliferation of dermal tissue produces a verrucose mass under them and during the course of the disease (1–4 wk), these scabs drop off and the tissues heal without scarring[8]. Lesions on other sites of the skin such as the feet (Plate 2c), ear (Plate 2a) and head could be mistaken for parasitic (mange) or bacterial (dermatophilosis) dermatitis. It is reported that mastitis, sometimes gangrenous, may occur in animals with lesions on the teats, when the lesion extends to the oral mucosa, secondary necrobacillosis frequently develops resulting in necrotic laryngitis [14]. In case1, mortality of 25% was recorded as a result of secondary bacterial involvement and probable compromised immune system in the pregnant animal. Antimicrobial therapy was used for the management of ticks and bacteria isolated. The complicating organism in this case were S. aureus and citrobacter which are commensals on the skin of animal and opportunistic invader in the ongoing viral infection.It is also reported that extensive lesions on the feet in some cases may cause lameness. Occasionally, where the secondary bacterial infection is by Dermatophilus congolensis it may lead to "strawberry footrot."[15]. The treatment administered was not directed to the virus instead it was meant to control bacterial complication and tick infestation. It could then be said that the disease was resolved on its own in those animals that recovered at the end. Orf treatment has majorly been carried out in human patients using diathermy and cryosurgery, 3% cidofovir(R) topical cream. The Toll-like receptor/interferon modulating compound imiquimod(R) has also been reported to show benefit in some human cases, including that of a patient with a giant orf lesion that failed to respond to topical and intralesional cidofovir[16]. These medications are not readily available and are too expensive for practical use in animals. The treatment of choice in animals remains good nursing care and administration of antibiotics to control underlying and other infections, support and enhance immune mechanism in affected animal. Use of antiviral agents could be reconsidered when other values are attached to the animals. Measures for control including vaccination and more importantly biosecurity to reduce virus load in the environment and among animal population remains of great merit to progressively reduce infection rates in susceptible populations. The apparent evidence of lack of efforts by the small ruminant owners and other stake holders in livestock sector to control this disease could be responsible for infection of multiple other ungulate species including the camels as reported in Nigeria[4]. The concept that orf is self- limiting leaves the owners undisturbed at the initial stage of infection and when it spreads to other animals in the flock and lesions become extensive, many owner will choose to cull the animals, incurring losses from the reduction of market value of their animals. This scenario was seen in case 2 where the diseases animals were presented for sale in the market. The implication of such act is detrimental to disease control and is frequently encounter because there are no provisions for compensation of farmer in event of condemnation and withdrawal from market. There is need to develop awareness programs on orf which is variably common. Its prevention and control needs to be well instituted to reduce production and economic losses. Intensification of research in the line of genetic studies which has been started[17] and genomics for understanding of virus strains distributions, disease pattern in the country, and prediction of outbreaks will be required for identification of potent vaccine strains which could proffer longer immunity in susceptible animal species[18].

Conclusion

Contagious ecthyma remains an important drawback for small ruminant production as it causes mortality and debilitation in this group of animals. Reports are made to create awareness and instigate a responsive attitude of owners regarding protection of their flocks by reduction of orf virus load in the environment. This could be achieved through improvement of biosecurity and vaccination at individual level or as a cooperative of small ruminant owners.

Significance Statement

Contagious ecthyma has considerable impact on small ruminant production as it affects the livelihood of small holders through economic losses in form of mortalities, decreased production and productivity in diseased animals, cost of treatment of infected animal, data lost as dead occur of goats used for research (Case I). The relevance of epidemiological data on contagious ecthyma is dependent on frequent reporting of cases which constitute the primary form of data upgrade for research and policy in the epidemiology of small ruminant disease control and eradication, and the basis for the improvement of production. Ascertaining that there are no variations on the known disease pattern is important for rapid clinical diagnosis and timely management in the event of infection.

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