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***Case Report***

# Management of Septic Mastitis in a Seven Months Old New Zealand White Rabbit Doe

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**ABSTRACT**
Mastitis is a condition affecting various animals, including rabbits, hamsters, mice, and rats. While these species are frequently used as models for studying mammary gland infections in biomedical research, there is limited understanding of their natural occurrence, epidemiology, and management. This case report focuses on the causes, clinical signs, pathology, and treatment of septic mastitis in rabbits, highlighting existing knowledge gaps and emphasising the need for further research. On 29th May, 2025, a client presented her seven-month-old New Zealand rabbit doe, weighing 2.5kg, to the University of Maiduguri Veterinary Teaching Hospital, complaining that she noticed a swollen mass on the rabbit's chest. Physical examination revealed an abscess on the first mammary gland located at the right anterior region of the doe; the mass was painful on touch and a dark brown necrotic tissue was seen on its medial aspect. Creamy-white viscous fluid was recovered on aspiration. A swab sample was collected from the affected area for bacterial culture. This was followed by differential diagnosis that included septic mastitis, cystic mastitis and caked mammary gland. Bacterial culture yielded a moderate growth of *Staphylococcus aureus* after 24 hours of incubation at 37ºC, confirming septic mastitis. Septic mastitis is a primary reason for culling adult does from commercial rabbit farms. It causes serious medical and reproductive challenges, but it is reversible if diagnosed and properly managed on time.

**Keywords:** Doe; New Zealand; Rabbit; Septic Mastitis

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## INTRODUCTION

Mastitis is an inflammation of mammary gland. Clinical mastitis, caused by natural infections in the female rabbits, can be either acute or chronic. Acute mastitis can progress to gangrenous necrosis, leading frequently to septicaemia and death (Lund, 2018; Koreyba, 2025). Mastitis might become chronic, and later on, purulent or purulent-gangrenous; in such cases, with a median monthly culling risk of 0.50% (D'Amice *et al*., 2024). On the other hand, there might be a complete recovery (Miller and Zachary, 2017). The differences in presentation were likely attributable to bacterial virulence factors and host immunity (Tunner, 2018).

Septic mastitis can occur in lactating does, especially those predisposed to infection due to trauma on the mammary gland or as a result of poor sanitation. Affected animals are febrile, anorexic, and depressed. The skin around the swollen gland may be cyanotic. Causative organisms commonly isolated in septic mastitis include *Staphylococcus* and *Streptococcus* species. Death of neonates may occur, or death of the doe may result from septicaemia. Diagnosis of septic mastitis is based on clinical signs, history of lactation or pseudocyesis, and isolation of bacteria on culture of mammary tissue or exudates. Treatment may include

surgical drainage, mastectomy, hot packs, and antibiotic therapy (based on culture and sensitivity). It is a potentially life-threatening infection and can lead to septic shock (Ferrerra *et al*., 2014; Koreyba *et al*., 2024). Environmental risk factors enabling infections of the mammary gland can be (a) traumatic gland and nipple damage caused by suckling kits or occurring in the housing; (b) climatic stress, such as cold air streams; or (c) a combination of moisture plus dirt in the nest (Dawod *et al.,* 2025). There is a tendency for septic mastitis to increase with the age of female rabbits, even if mastitic does are culled from first parities. The agent determinants of mastitis might be part of the ubiquitous microbiota on the body or in the habitat, such as *Staphylococcus aureus, Pasteurella multocida*, or Enterobacteriaceae (Shlafer *et al*., 2016; Jabeen, 2024). Cases of mastitis in rabbits does are silent and under reported, especially in Nigeria. To the best of our knowledge, this is the first case report Nigeria focusing on septic mastitis in rabbits does, underlining the importance of maintaining mammary gland health in these pets. Thus, the focal point of this case report is septic mastitis in rabbit doe.

## CASE HISTORY

On 29th May, 2025, a client presented her seven-month-old New Zealand rabbit doe, weighing 2.5kg to the University of Maiduguri Veterinary Teaching Hospital, complaining that she noticed a swollen mass on the rabbit chest.

## PHYSICAL EXAMINATION

Upon physical examination, a large exudative abscess was noticed on the first mammary gland located at the right anterior region of the doe, the mass was painful on touch and a dark brown necrotic tissue was seen on its medial aspect, creamy-white viscous fluid was recovered on aspiration. However, clinical investigation revealed normal vital parameters with a pinkish mucus membrane of the eye.

## DIAGNOSIS

The diagnostic plan included examination for clinical signs, as well as microbiological analysis. Swab sample was collected from the affected area for bacterial culture, this was followed by differential diagnosis that included septic mastitis, cystic mastitis, caked mammary gland and neoplasm. Tentative diagnosis arrived at was septic mastitis

## RESULTS

Bacterial culture yielded a moderate growth of *Staphylococcus aureus* after 24 hours of incubation at 37ºC, confirming septic mastitis.

## TREATMENT

The treatment plan employed surgery and chemotherapy, for the surgical procedure, the area was shaved using Tiger® razor blade and cleansed using Chlorhexidine gluconate, the area was locally infiltrated using Lidocaine (2%), then it was lanced, drained and flushed with chlohexidine gluconate solution, oxyteteracycline spray was used and the injury was managed as an open wound.

**Table 1: List of Drugs Used for the Treatment**

| S/No | Drugs | Dosage | Dose | Route |
|---|---|---|---|---|
| 1 | Chlorhexidine gluconate | As required | As required | Topically |
| 2 | Lidocaine (2%) | 2-4mg/kg | As required | Locally infiltrated |
| 3 | Amoxicillin | 15mg/kg | 0.25mL×3/7 | Intra muscular |
| 4 | Vitamin B-complex | 0.02-0.2mL/kg | 0.25mL×3/7 | Intra muscular |
| 5 | Oxytetracycline (Spray) | As required | As required | Topically |

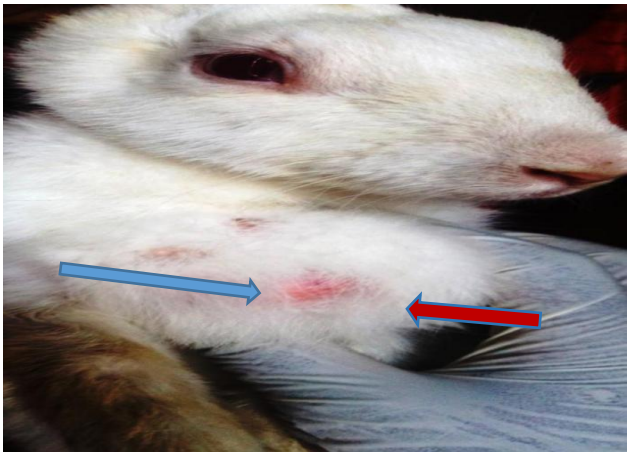

**Figure 1: Red Arrow Showing the Swollen Mammary Gland; while the Blue Arrow Showing the Teat of Mammary Gland**

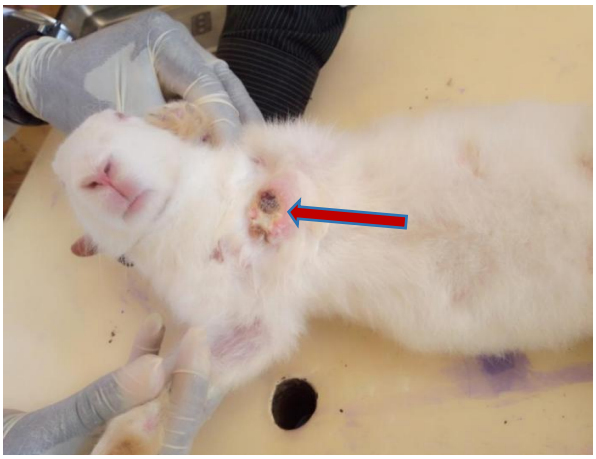

**Figure 2: Arrow Showing Dark Brown Necrotic Tissues**

**Figure 3: The Affected Mammary Gland after Dressing and Application of Oxytetracycline Spray**

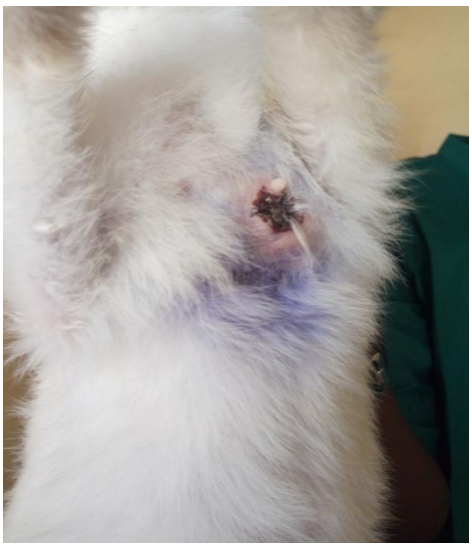

**Figure 4 and 5: Wound Site at Day 2 and 3 Day Respectively**

## FOLLOW UP

There was noticeable improvement at day 2 and closure of the wound site started at day 4 and complete disappearance of lesion at day 30. The client was advised to remove any sharp object within and around the hutch, improve sanitary measures, and report to the nearest veterinary hospital in the event of such case.

## DISCUSSION

The spectrum of mammary disease associated with *S. aureus* infection has been reported previously in rabbits (Viana *et al*., 2011). However, natural infection of the mammary gland of rabbits with *S. aureus* can cause acute gangrenous or chronic purulent mastitis (Viana *et al*., 2008; Rosell and Fuente. 2018). According Espinosa *et al*. (2020) in the acute gangrenous form, which is rapidly fatal, the mammary tissue becomes oedematous, haemorrhagic and necrotic. The chronic or purulent form is symbolized by abscesses developing under or near one or more teats. this chronic form is rarely fatal, but affected does lose condition, become lethargic (Viana *et al*., 2011; Mascarós *et al., 2025).* Consequently, in blue breast disease, all affected animals were farm rabbits, female, mainly adult animals (90%; $p < 0.001$). Clinically, the animals showed weight loss and breast-feeding rejection. Grossly, there was diffuse breast swelling with the skin overlying the mammary glands which showed a red to dark blue discoloration and the presence of serous to purulent exudates (Viana, 2011). Histologically, in cases of septic mastitis there were areas of suppurative inflammation and necrosis of the mammary gland as well as embolization of coccoid bacterial colonies in vessels (Harkness and Wagner, 1995). In contrast to septic mastitis, cystic mastitis may occur in nonbreeding females (usually older than 3 years of age), and may be associated with increased estrogen, uterine hyperplasia, or uterine adenocarcinoma (Pare and Paul-murphy 2004; Guerrero *et al*., 2015). The animal will not have any systemic signs, but will have swollen, firm, cyanotic glands, with a clear-to-dark serosanguineous discharge from the treat. The condition resolves with an ovariohysterectomy (Paul-murphy, 1997). Rabbit are self-induced ovulators, and by extension prone to pseudo or false pregnancy that may expose them to different hormonal condition which includes mastitis (Hafizuddin *et al*., 2024). In most cases farmers tend to ignore or pay less attention to mastitis in rabbit does due to the anatomical position of the mammary gland and the hair that covered the area (Trocino and Toloni. 2024).

## CONCLUSION

Septic mastitis in rabbit does is a disease of concern, that lead to serious medical and reproductive challenges, it is reversible, if diagnosed and properly managed on time.

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**Conflict of Interest**

Authors declared no conflict of interest.

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