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Mastitis in Assam Hill Goat: It's etiology, symptoms, management and treatment methods

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Abstract

Mastitis, an economically important disease led to severe production losses in dairy animals. Known for Its multiple etiology but predominantly of bacterial origin apart from mycotic and viral origin. This article covers etiology, pathogenesis, clinical sign, management and treatment of clinical mastitis in Assam Hill Goat. A adult doe weighing about 10 kg is presented with anorexia, unthrifty gait, severe swelling of right quarter of the udder at about 2(two) days after parturition/kidding. Appropriate management of case is done with complete recovery with the help of antibiotics and supportive medication.

Keywords- Mastitis, pathogenesis, anorexia, doe, parturition

Introduction

Mastitis is a most common disease and has been reported in almost all domestic mammals and has a world-wide geographic distribution [1]. It is characterized by physical and chemical changes in the milk and pathological changes in the glandular tissue [2]

Etiology - Most common causes of clinical mastitis in dairy goat is *Staphylococcus aureus* and

Escherichia coli [2].

Pathogenesis - Organisms get entry into the mammary gland via teat canal. Unhygienic milker hand, fomites, fecal matter act as a source of infection. Normally, organisms remain as commensals in mucosa membrane of test canal, mammary gland. Injury/trauma to the teat canal due pressure changes in milking lead to colonization of organisms thereby leads to spreading of the pathogens.

Staphylococcus aureus release toxin such as superantigen, leukocidin, hemolysin, coagulase and likely alpha, beta and delta toxin (virulence factor) that leads to cell membrane injury and cell lysis. Apart from above mechanism, mastitis caused by *Escherichia coli* and

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other gram-negative bacteria releases endotoxins (LPS) and other toxins that leads to tissue injury and cell lysis. Endotoxins is also be absorbed by capillaries and lead to endotoxic shock and ultimately leads to death of the animals if untreated. (reference: *Chapter Mechanism of microbial infection/ PATHOLOGIC BASIS of VETERINARY DISEASE, SIXTH EDITION, James F. Zachary, DVM, PhD, DACVP*)

Classification of mastitis

Based of clinical sign and severity of inflammation, mastitis in small ruminant is classified into clinical, subclinical and chronic forms [3].

Clinical mastitis is characterized by swelling, heat, pain, and edema [2]. Subclinical mastitis (SCM) has prevalence of about 15-40% without any typical clinical sign of the affected gland [4]. Chronic forms of mastitis lead to fibrosis and hardening of affected quarter.

Milk SCC or MSCC (Milk somatic cell count) for uninfected goat are higher than MSCC for uninfected cows and sheep (paape and capuco,1997). MSCC for uninfected goats range from 270 to 2000 × 10³/ml and for infected goats it ranges from 659 to 4213 × 10³/ml [5].

Materials and Methods

Case presentation

An adult doe of about 10 kg body weight (BW) with history of anorexia, swelling of right quarter of the udder at about 2(two) days of parturition.

A detailed clinical finding reveled- body temperature of 106.6 °F (fig.1), mucus membrane - congested, heart rate- 76 bpm and respiratory rate- 29 breaths/min, watery milk with mild flakes (fig.2). Upon palpation; the udder is hot, painful to touch with excessive swelling & inflammation(fig.3), unthrifty gaits and the animal is lethargic and less responsive.



Fig:1 -106°F (BT)



Fig:2 (watery milk with mild flakes)



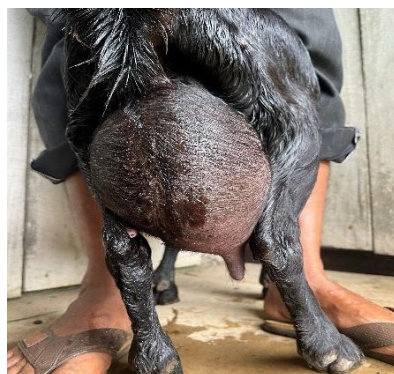


Fig:3(severe swelling of right quarter of udder)

Results and Discussion

Treatment/ Management and care

Based on prominent clinical sign and symptoms the case was tentatively diagnosed as a case of clinical mastitis. The doe is having systemic infection as well as abnormal secretion(milk) and abnormal gland(parenchyma), therefore both parenteral as well as intramammary antibiotics are chosen [2]. A field level emergency situation, fluid therapy consists of normal saline- 500 ml for 3 days is given parenterally to prevent endotoxaemic shock, a broad spectrum antibiotic is chosen i.e oxytetracycline.[2] In this case oxytetracycline of concentration 50mg/kg at the dose rate of 10mg/kg is injected by intravenous route for 5 days(fig:4) and intramammary antibiotic infusion with composition- procaine penicillinG, streptomycin sulphate, sulphamerazine & hydrocortisone acetate is administered for 2 occasions(fig:5) after cleaning the udder with potash water. Other supportive medication includes intravenous injection of flunixin meglumine at the dose rate of 2.2 mg/kg body weight for 5 days [6], seratiopeptidase bolus- half bolus orally twice daily for 10 days. Along with that local application of medicated sprays and alternated cold and hot fomentation is applied to the affected quarter of the udder(fig:6). After period period of 10 days, gradual reduction in hot and painful swelling (fig.7), body temperature become normal (fig.8), milk become normal (fig.9) and animal starts browsing. (fig:10)



Fig:4 (inj. oxytetracycline iv)



Fig:5 (Intramammary infusion of antibiotic)



Fig:6 (Cold fomentation of affected udder)



Fig:7(Gradual reduction in inflammation & swelling of affected udder quarter)



Fig:8(103°F BT after treatment)



Fig:9 (Milk gradually become normal)



Fig:10 (Animal starts browsing and kids suckle the doe udder)

Conclusion

Early and prompt treatment of clinical mastitis is necessary to eliminate the cause. Proper management and hygienic condition is of utmost importance to prevent the occurrence of mastitis in dairy animals. Moreover, effective choice of antibiotic is necessary to reduce antibiotic resistance of microorganisms.



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