

Mastitis in Goats – Diagnosis and Management

Anusha Dasohari¹ and Srikanth Kandula^{2*}

¹Veterinary Asst. Surgeon, Kammarpalli, Nizamabad Dist Telangana state 503308

²Assistant Professor, Dept of Veterinary Clinical Complex, CVSc, Korutla, Telangana-505326

*Corresponding Author E-mail: srikanth0649@gmail.com

Received: 23.06.2017 | Revised: 20.07.2017 | Accepted: 25.07.2017

ABSTRACT

The present study was carried out in 32 goats over a period of 10 months that were presented with the history and signs related to abnormalities of udder, milk composition and other general signs and milk samples were collected from each affected udder lobe in a sterile container and subjected to cultural and antibiogram studies. Samples were revealed that Staphylococcus, E. coli, and Pseudomonas were the common bacterial organisms responsible for Caprine Clinical Mastitis and Amoxicillin- Clavulanic Acid was highly effective antibiotic in treating such cases.

Key words: Goats, Milk, Staphylococcus, E. coli, and Pseudomonas, Amoxicillin.

INTRODUCTION

Mastitis refers to inflammation of the mammary glands, regardless of the cause, which is accompanied by abnormal alterations in physical, chemical and bacteriological composition of milk or clots, flakes, or watery milk³. It is a multiple etiological disease complex, being most prevalent in high yielding dairy cattle, buffaloes, goats and sheep throughout the world¹⁵ Mastitis in goats is mainly of sub-clinical type¹¹ which causes reduced milk yield, kid mortality and is responsible for major economic losses⁷ caused by a wide range of microorganisms, but most cases are reported to be due to staphylococci infection⁵, Further, goat rearing mostly local breed is a common livelihood for most of the poor in Hyderabad, even though, the prestigious breed Jamunapari is also been reared as a status symbol by the other group. Though sufficient work was done on mastitis

in cattle, published reports on caprine mastitis is dearth in India. Hence, the present study was designed to investigate the isolation of major bacterial pathogens responsible for Clinical Caprine Mastitis and their sensitivity to different antibiotics.

MATERIALS AND METHODS

The present study was carried out in 32 goats over a period of 10 months that were presented with the history and signs related to abnormalities of udder, milk composition and other general signs like reduced appetite, generalized weakness to Veterinary Hospital Mailardevpally, College of Veterinary Science, Hyderabad.

A minimum of 5 ml milk sample was collected from each affected udder lobe in a sterile container, after cleaning the teat with denatured 90% ethanol and discarding the first few milk drops.

Cite this article: Dasohari, A. and Kandula, S., Mastitis in Goats – Diagnosis and Management, *Int. J. Pure App. Biosci.* 5(6): 448-451 (2017). doi: <http://dx.doi.org/10.18782/2320-7051.5040>

Samples were subjected to cultural and antibiogram studies to identify the possible etiology and affective anti microbial agent.

Cultural Assay:

Within 24 hrs of collection, the samples were plated onto the nutrient agar, MacConkey agar and Eosin Methylene Blue agar (Hi-Media, Mumbai, India) and incubated aerobically at 37°C for 24 h. The isolated colonies were again plated on to nutrient agar plates as pure culture and subjected to standard morphological, biochemical tests as described by Cowan and Steel⁸ to ascertain their identity and to observe the colony morphology (shape, size, surface texture, edge and elevation, colour, opacity etc). The organisms showing characteristic colony morphology were repeatedly sub cultured onto selective media until the pure culture with homogenous colonies were obtained. Selective media like EMB agar, Mac Conkey agar and Mannitol salt agar (Himedia, India) were used for isolation of different organisms on the said media. The culture was subjected for invitro antibiotic sensitivity test by disc diffusion technique as described by Bauer *et al.*⁴, However, the affected goats were treated with Amoxicillin and Dicloxacin @ 20 mg/kg, Meloxicam and other supportive drugs for 5-7 days to avoid further deterioration of the udder.

RESULTS AND DISCUSSION

In the present study almost all the goats revealed similar manifestations viz., moderate to severe swelling of udder/quarter, with abnormal consistency of milk. Affected goats were exhibiting pain on palpation of affected quarter. Further, palpation of quarters also revealed hot, hard fibrotic mass and few were soft and friable in consistency (**fig. 1**). Whereas, few of the affected quarters were cold to touch with bluish discoloration of skin (**fig. 2**) with necrotized lesions at the tip of the teats. Watery milk with or without clots and flakes\occasional pus (**fig. 3**) and blood tinged (**fig. 4**) were the common abnormalities noticed with milk from the affected goats. Microbiological assay of the affected milk

samples revealed *Staphylococcal* isolates on MSA (**fig. 5**), *Escherichia coli* colonies on Mac Conkey agar (**fig. 6**) and metallic sheen on EMB agar (**fig. 7**). Microorganisms isolated were identified based on macroscopic morphology on selective media. The in vitro antibiogram of milk samples revealed susceptibility to Amoxi-Clavulanic acid (+++), Amoxicillin (++) , Ceftriaxone (++) and Amikacin (+), Enrofloxacin (++) , Gentamicin (+), Kanamycin (+) and Tetracycline (+). Out of 32 samples collected from affected goats, 12 (37.5 %) were found positive for *Staphylococcal* spp., 07 (22%) for *Escherichia coli*, 06 (19%) for *Pseudomonas* spp and the rest for mixed bacterial infection. Şükrü and Bergonier and Berthelot⁵ documented that *Staphylococci* as the common pathogens that were isolated from collected milk samples and whereas, Tufani *et al.*¹³ reported that *Staphylococcus aureus*, *Escherichia coli* and *Streptococcus* spp were the microorganisms isolated from the affected milk samples of the caprine mastitis. Olechnowicz and Jaśkowski⁹, recorded that *Staphylococcus aureus* is considered as the most common causal agent of goat mastitis, which is followed by a minor occurrence of mastitis by *Pasteurella haemolytica*, *Escherichia coli*, *Clostridium perfringens*, *Streptococcus*, *Pseudomonas* and *Nocardia* genera. Ajuwape *et al*¹ documented that the coagulase-negative *Staphylococci* (*Staphylococcus epidermidis*) was the most common pathogen with an incidence of 50.9%; followed by *Escherichia coli* (15.1%). The findings of the present study are in agreement with the above authors. Further, Najeeb *et al*¹⁰ reported highest percent of *Staphylococcus aureus* (61.64%) followed by *E. coli* (10.96%). Similarly, *Staphylococcus aureus* had been reported most frequent etiological agent (45.34%) in cases of dairy goat mastitis².

In the present study all the affected goats were treated parenterally with Amoxicillin and Dicloxacin 20 mg/kg, isoflud 2-3 ml, Tribivet, 2-3 ml and Mastilep topical for 3-5 days. Following therapy the clinical improvement viz., reduced

inflammatory signs and flakes/clots in milk were recorded among 18/32 cases. The animals started to take feed and water and started to walk few steps following therapy. As the remaining 14/32 cases that were refractory for the above antibiotic, were managed with respective antibiotic based on invitro antibiogram results for 3 days. However, 5/32 goats that were showing the signs of cold, friable udder tissue did not show any improvement and the affected quarters became completely gangrenous. These teats gradually sloughed off. The present findings are in accordance with Radostits *et al*¹⁴ who opined that the exhaustive therapeutic measure alone is not effective for treatment of gangrenous mastitis unless early surgical removal of the affected quarter is undertaken, which is the only standard treatment for gangrenous mastitis⁶ in ewes. Olechnowicz and Jaśkowski⁹ concluded that the prognosis of gangrenous mastitis in goat is not favorable. Surgery may be the alternative option to save the animal, but milk production might be lost partially or completely.

CONCLUSION

From the present study it may be concluded that *Staphylococcus*, *E. coli*, and *Pseudomonas* were the common bacterial organisms responsible for Caprine Clinical Mastitis and Amoxicillin- Clavulanic Acid was highly effective antibiotic in treating such cases.

Acknowledgement

The authors are thankful to the Dr Ayodhya Somasani Hospital in-charge Mailardevpally and Dr Satish Kumar Karlapudi University Head Dept of Medicine, PVNR Telangana Veterinary University, Hyderabad for their technical assistance with providing the necessary facilities to conduct the research work.

REFERENCES

1. Ajuwape, A.T.P., Roberts, A.A. and Solarin, O.O., Adetosoye, A.I., Bacteriological and haematological studies of clinical mastitis in goats in Ibadan, OYO State, Nigeria Small Ruminant Research **60(3)**: 307–310 (2005).
2. Ali, Z., G. Muhammad, T. Ahmad, R. Khan, S.Naz, H. Anwar, F.A. Farooqi, M.N.Manzoor, and A. R. Usama. Prevalence of Caprine sub-clinical mastitis, its etiological agents and their sensitivity to antibiotics in indigenous breeds of Kohat, Pakistan. *Pakistan J. Life Soc. Sci.* **8(1)**: 63-67 (2010).
3. Arshad, G. M. A population based active disease surveillance and drug trials of mastitis in cattle and buffaloes of District Sargodha. M.Sc. Thesis, University of Agriculture, Faisalabad, Pakistan (1999).
4. Bauer, A.W., Kirby, W.M., Sherris, J.C. and Turck, M.. Antibiotic susceptibility testing by a standardized single disc method. *American Journal of Clinical Pathology* **45**: 493-496 (1966).
5. Bergonier D, Cremoux R, Rupp R, Lagriffoul G and Berthelot X. Mastitis of Dairy Small Ruminants. *Veterinary Research*, **34**: 689–716 (2003).
6. Canle, C.S., Perry, C., Fubini and Susan, L..Radical mastectomy in 20 ruminants. *Veterinary Surgery* **33**: 263-266 (2004).
7. Contreras A, Luengo C, Sanchez A and Corrales JC. The role of intramammary pathogens in dairy goats. *Livestock Production Science* **79**: 273-283 (2003).
8. Cowan, S.T. and Steel, K. J.. In: Cowan and Steel's Manual for the identification of medical bacteria. 3rd Edition, Barrow, G. I. and Feltham, P. K. A. (Eds).University Press, Cambridge (1993).
9. Olechnowicz J, Jaśkowski JM. Mastitis in small ruminants. *Medycyna Weterynaryjna*, **70**: 67-72(2014).
10. M.F. Najeeb, A.A. Anjum, M. U.D. Ahmad, H.M. Khan, M.A. Ali, and M.M.K. Sattar Bacterial etiology of subclinical mastitis in dairy goats and multiple drug resistance of the isolates ., *J. Anim. Plant Sci.* **23(6)**: (2013).
11. McDougall, S., Pankey, W., Delaney, C., Barlow, J., Murdough, P.A. and Scruton, D. Prevalence and incidence of subclinical mastitis in goats and dairy ewes in Vermont, USA. *Small Ruminant Research* **46**: 115– 121 (2002).

12. N. Burçin İşnel, Şükrü Kırkan. Isolation of Microorganisms from Goats with Subclinical Mastitis and Detection of Antibiotics Susceptibility. *Animal Health, Prod.and Hyg.* **1(2)**: 106 - 112 (2012).
13. N.A. Tufani, A. Hafiz, F.U. Peer, D.M. Makhdoomi and S.D. Qureshi clinico-therapeutic management of gangrenous mastitis in ovines. *Indian Journal of Small Ruminants*, **16(1)**: 145-147 (2010).
14. Radostits, O.M., Gay, C.C., Blood, D.C. and Hinchcliff, K. W., *Veterinary Medicine. A textbook of disease of cattle, sheep, pig, goat and horses.* Bailliere, Tindall, London. (2000).
15. Watts, J.L. Etiological agent of bovine mastitis. *Vet. Microbiol.* **16**: 41–66 (1988).