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Mastitis in Dairy Herds: Constraints on Productivity and Economic Sustainability in India

M. Lakshmi Namratha[1]*, Venkataramireddy Balena[2] And Chandravathi.T[3]

[1]Department of Veterinary Pathology, College of Veterinary Science, Mamnoor, Warangal, PVNRTVU.

[2]Assistant Professor, Department of Veterinary Pathology, College of Veterinary Science, Mamnoor, Warangal.

[3]Associate Professor and Head, Department of Veterinary Pathology, College of Veterinary Science, Mamnoor, Warangal.

**Corresponding author: Lakshminamratha@gmail.com*

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ABSTRACT

Mastitis is a major constraint to dairy industry in India, particularly in smallholder systems, leading to significant economic losses. The disease is primarily of bacterial etiology, manifests in both clinical and subclinical forms, with latter remaining largely undetected causing progressive and irreversible damage to the mammary gland. Poor hygiene, improper milking practices, and limited farmer awareness contribute to its high prevalence. Mastitis results in decreased milk yield, poor quality milk, therapeutic expenses, and reduced farm profitability, along with hidden losses such as impaired reproductive performance and long-term productivity decline. It also poses public health risks due to microbial contamination and antibiotic residues in milk. Effective control depends on preventive measures, including improved hygiene, proper milking management, routine health monitoring, and farmer education. Adoption of scientific management practices and timely intervention are essential to reduce disease burden and enhance the sustainability of the Indian dairy sector.

Keywords: Mastitis, dairy animals, milk production, economic loss, public health, India, antimicrobial resistance

INTRODUCTION

Mastitis is globally recognized as a major production-limiting disease in dairy cattle (FAO, 2014). Despite advancements in genetic selection and herd management, diseases continue to limit dairy productivity, with mastitis as one of the primary cause of economic losses in the dairy sector. Mastitis is characterized by inflammation of the mammary gland, resulting in significant reduction in quality and quantity of milk. This results in economic burden that arises from multiple factors, like discarding of milk, premature culling, veterinary and therapeutic expenses and increased labor requirements (Hogeveen *et al.,* 2011).

A critical concern associated with mastitis is its often insidious progression, particularly in subclinical cases, where the absence of overt clinical signs allows the disease to persist undetected, thereby contributing to sustained economic losses. In addition to the financial losses, mastitis poses significant public health implications. The indiscriminate use of antibiotics in the treatment of mastitis can lead to the presence of antimicrobial residues in milk and meat, which contributes to the emergence and dissemination of antimicrobial resistance (White *et al.,* 2009).

Understanding Mastitis in Dairy Animals

Mastitis is a multifactorial inflammatory condition of the mammary gland, predominantly caused by pathogenic microorganisms that thrive in unhygienic conditions like contaminated surroundings, moist bedding, and inadequately sanitized milking equipment. These organisms gain entry through the teat canal and colonize the mammary tissue triggering an inflammatory response. Clinically, mastitis is characterized by hot, painful and swollen udder and alterations in milk consistency either watery or with clots and flakes. This form is classified as clinical mastitis. In contrast, subclinical mastitis, which is more prevalent and economically significant, does not present with overt clinical symptoms in the animal or visible abnormalities in milk making it difficult for farmers to detect. Despite appearing normal, the infection persists and progressively impairs the secretory epithelial cells of the mammary gland. As a result, milk yield gradually declines and its quality deteriorates over time.

Economic impact of mastitis on Indian dairy sector

Mastitis represents a major economic constraint in the dairy sector, particularly among Indian farmers, by exerting both direct and indirect financial burdens. The most immediate effect is a substantial decline in milk production, which can drop by 20 to 30 percent depending on the severity and duration of the infection. In addition to production losses, farmers incur increased expenditures related to therapeutic interventions, including the cost of veterinary services, pharmaceuticals, and supportive care resulting in further financial burden. In severe or chronic cases, culling of affected animals becomes necessary, leading to capital loss and replacement costs, thereby further exacerbating the economic strain. Mastitis affected animals exhibit compromised reproductive performance, reduced fertility, and overall reduction in physiological health. These conditions necessitate additional inputs in terms of labor, nutrition, and management, without proportional gains in productivity.

Impact on Milk Quality and Market Value

Mastitis adversely affects not only the quantity of milk but also its quality. Milk from mastitis affected animals has an elevated somatic cell count (SCC) and increased microbial load with significant presence of pathogenic bacteria. There is a marked alteration in the milk composition with reduction in fat and solid-not-fat (SNF) content. This milk has a decreased shelf life and prone to early spoilage. Quality assessment protocols like assessment of SCC, bacterial count, and compositional quality are employed by dairy cooperatives and milk collection centers prior to procurement. Consequently, milk with poor quality is either rejected or procured at a lower price, thereby diminishing farmer's income. Inferior quality milk adversely impacts its suitability for downstream processing into value-added dairy products such as curd, paneer, butter, and cheese.

This not only affects product yield and quality but also has broader implications for efficiency and profitability across the dairy value chain.

Public Health Concerns

Mastitis raises serious public health concerns due to its direct and indirect effects on milk safety, quality, and consumer health. Milk from mastitis infected animals is rich in pathogenic microorganisms, including zoonotic bacteria, making it unsafe for consumption. Nutritional and physicochemical properties of milk are also adversely affected due to elevated somatic cell counts and enzymatic activity. The widespread use of antibiotics in the treatment of mastitis can result in drug residues in milk, particularly when recommended withdrawal periods are not strictly observed. Such residues not only compromise milk safety but leads to the emergence and spread of antimicrobial resistance, a significant global public health challenge.

Moreover, subclinical mastitis often remains undetected, thereby increasing the likelihood of contaminated milk entering the food chain. Improper handling, storage, and inadequate pasteurization can exacerbate these risks. Additionally, the potential for transmission of antimicrobial-resistant bacteria through the dairy supply chain underscores the need for integrated surveillance and control measures.

Therefore, ensuring the production of safe and high-quality milk requires a multifaceted approach, including effective mastitis prevention and control strategies, judicious use of antimicrobials, strict adherence to withdrawal periods, routine screening for subclinical infections, and the implementation of good hygienic practices. Such measures are essential not only to safeguard public health but also to enhance consumer confidence and ensure the sustainability of the dairy sector.

Prevention and Control of Mastitis

Preventing mastitis is a crucial step toward securing India's dairy economy. Effective prevention strategies include:

Improved hygiene practices: Regular cleaning of milking equipment, maintaining proper barn sanitation, and ensuring hygienic milking procedures.

Following Proper Milking Practices: Milking should be done with clean hands, and infected animals should be milked separately to prevent spread. The practice of teat dipping after milking helps to kill bacteria and reduce new infections.

Regular screening: Regular monitoring of animals, conducting simple tests like somatic cell counts, Californian mastitis test (CMT) to detect subclinical mastitis, can help in early diagnosis and treatment.

Balanced Nutrition: Providing balanced diets, mineral mixtures and minimizing stress on animals to enhance immunity.

Farmer Education and Training: Conducting awareness programs to educate farmers on best practices in dairy management and mastitis control.

Veterinary Support: Timely consultation with veterinarians and following their advice regarding treatment and management is also essential for effective control.

CONCLUSION

Mastitis is a significant constraint in the Indian dairy sector, leading to reduced milk yield, compromised quality, and economic losses. It is mostly subclinical in nature and often goes undetected, increasing the overall burden on farmers. However, the disease can be effectively controlled through proper hygienic practices, herd management, and routine monitoring of animals for early diagnosis. Strengthening farmer awareness and adopting scientific management practices are essential for prevention. Effective mastitis control not only enhances animal health and productivity but also contributes to the sustainability of the dairy industry and the rural economy.

REFERENCES:

FAO (2014) "Impact of mastitis in small scale dairy production systems." Animal Production and Health Working Paper, 13.

Hogeveen, H., Huijps, K. and Lam, T.J.G.M. (2011) Economic aspects of mastitis: New developments. New Zealand Vet. J., 59(1): 16-23.

White, D.G and Mcdermott P.F. (2001) Emergence and transfer of antibiotic resistance. J. of Dairy Sci.. 84: 151–155.