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Therapeutic management of clinical mastitis in Murrah buffalo

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Abstract

Very few diseases are having a multifactorial origin one of them is Mastitis. In spite of the species of animals. ABST has a high significance in the diagnosis of mastitis and in deciding the line of treatment for the Acute type of mastitis. Early Infusions help for early recovery from subsiding infections. Instead of routine specific and supportive treatment herbal and homeopathic treatment had a great significance in improving the quality of milk in subacute mastitis. Most of the teat canals under study were already open several months before calving may produce mastitis.

The multivitamins and Macro and micro minerals help in the healing and repairing of damaged soft alveolar tissue of the udder and neutralize the infection. The SCC decreases after continuous proper antibiotic treatment. Laboratory findings and Clinical parameters like palpation and Percussion of the udder also manage mental practices to help in early recovery and minimizing the udder infection in Murrah buffalo. Once mastitis is diagnosed, the main challenge for the veterinarian or the producer is to treat the animals in such a way that it will not deteriorate and become an economic burden to the production system. Several therapeutic strategies like antibiotics, bacteriocins, homeopathy drug, herbal therapy, Immunotherapy is an alternative, immunologically-based treatment for mastitis, and silver nanoparticle technology have been evaluated for efficacy in treating mastitis.

Keywords: Mastitis, milk, mammary gland, teat, weight, murrah

Introduction

Mastitis (Inflamed udder) caused by infectious pathogens is still considered a devastating condition of dairy animals affecting animal welfare as well as economically incurring huge losses to the dairy industry using decreased milk production performance and increased culling rates. The incidence of clinical mastitis in buffalo ranges from 8 to 40%. Moroni *et al.* (2006)^[9] reported that quarter-wise prevalence of intramammary infection in buffalo was 66%. Neelesh Sharma *et al.* (2007)^[10].

This underlines the significance of early and rapid identification/detection of etiological agents at the farm level, for which several diagnostic techniques have been developed. Therapeutic regimens such as antibiotics, immunotherapy, bacteriocins, bacteriophages, antimicrobial peptides, probiotics, stem cell therapy, native secretory factors, nutritional, dry cow and lactation therapy, genetic selection, herbs and liposomes, nanogels, polymeric nanoparticles, inorganic nanoparticles, and solid lipid nanoparticles nanoparticle technology-based therapy have been evaluated for their efficacy in the treatment of mastitis.

Case history

A Nine-year-old Murrah Buffalo in her Fourth Lactation yielding 12 liters of milk /day and weighing about 450 kg was brought to the Veterinary Clinic Complex Alankar Nagpur. having typical clinical signs and symptoms like sudden onset of anorexia, drop in milk yield, lethargy, depression, and Pits on pressure (edema) in the udder. Chakrabarti A (2000). The milk from the affected quarter was custard yellow in coloration with clots or flakes These observations were similar observations like Sreemulu (1992)^[15].

The Buffalo was previously treated by a local veterinarian for three days with Enrofloxacin and supportive treatment, but the animal could not recover hence brought to VCC Alankar Nagpur,

Clinical examination

On Routine Inspection, palpation, percussion and auscultation of buffalo for various clinical Examination i.e Body temp 103.40F, Tachycardia(78/Min) and Tachypnoea(29/min), oliguria,

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Swati Sahay (2000) ^[16].

On Palpation of the Udder and All the teats especially the left hind quarter was hot Painful and inflamed. Shows oedematous and fibrinous swelling. After proper disinfection of the teat surface with 70% alcohol a milk 30 ml sample from each quarter left (LF) left Hind (LH) right fore (RF) Right Hind(RH) was collected aseptically after squirting a few of the teats.in sterile vials and processed within one hour of collection for ABST testing. Amongst all quarters Right fore quarter is most affected.

The Antibiotic Sensitivity Test of the affected milk sample result was Sensitive to Amikacin, Colistin, Cefotaxime - Clavulanic acid, Cefoperazone, Ceftifur Sulbactam, enrofloxacin. The modified California Mastitis Test as per Devi (1989) was conducted on the spot and revealed that the milk sample from the left hind and fore quarter was +++ Positive followed by RH (++) to MCMT.

Microscopic examination of milk for Somatic Cell count (SCC) by the method Schalm *et al.* (1971) ^[12] revealed that a maximum number of cells are present in the milk sample.





Treatment and Prevention

Dry cow therapy and lactation therapy are the two protocols of antibiotic therapy used in managing mastitis. The mastitis-affected Buffaloe was treated with Inj Ceftiofur Sulbactam 4.5 gm Intravenously after antibiotic sensitivity test result, Inj Maxxtol (Tolfemanic Acid) 15 ml I/M. Inj Chlorpheniramine Malate 15 ml Intra muscularly to neutralize histamine release. Inj E care Se 10 ml I/M, Inj Ferritas was given 1 mg/kg Deep I/M route and Vitamin C Ascorbic acid)-15 ml I/M For 15 days. Inj DNS @ 1ml /kg I/V was given to supportive therapy Chakrabarti A (2000) ^[2].

Tab Titoli-M 10 tab Twice daily (For 5 days). Application of

Mastilep ointment to whole udder for 5 days. Inj Pendistrin SH Tube was introduced in the affected teat. Liq Mastitis (60 ml) 4 ml twice a day for 6-7 days daily as a homeopathic remedy until full recovery of buffaloe from mastitis. Powder Fibromast Advanced 60 ml Also a herbal spray namely Mastafast (100 ml) sprayed up to fifteen days on the affected udder. Trace minerals like selenium, copper, zinc, and vitamins like vitamin A/ β -carotene, and vitamin E can affect the udder health. Injectable trace mineral supplements containing zinc, manganese, selenium, and copper reduced the incidence of clinical mastitis in dairy cows with elevated SCC (Ganda *et al.* 2016) ^[5].

Supplementation of vitamins A, D3, E, and H can help in the recovery from subclinical mastitis by increasing the expression of host defense genes. Vitamin D activates innate immune responses of bovine monocytes and alters the oxidants-anti-oxidants balance to normal (Merriman *et al.* 2017) ^[7]. Strategies have to be developed for using targeted nutrition to obtain positive host response in managing diseases. Internal teat sealant (ITS) when used in combination with antibiotic dry-cow therapy significantly reduced the SCC along with improved prevention of subclinical mastitis (Golder *et al.* 2016) ^[6]. Plant-derived nanoparticles are gaining popularity for managing mastitis (Chaitanya Kumar *et al.* 2013; Yu *et al.* 2018) ^[3, 17]. The owner was also advised to perform complete frequent milking at every 4-5 hours. The animal showed improvement, and on the tenth day, it was completely recovered with complete disappearance of clinical signs; the milk was clear, free from clots or flakes, and white in color. Milk samples from all the quarters were found negative for MCMT, SCC, and cultural tests. Swati Sahay (2000) ^[16]

Before Treatment	After Treatment
	
	
<p>Acute Mastitis in buffaloe showing oedema, Pus, Debris and Inflammation in Udder</p>	<p>Full recovered buffaloe from Mastitis shows normal shape and size of udder</p>

Acute Mastitis in buffaloe showing edema, Pus, Debris, and Inflammation in the Udder Full recovered buffaloe from Mastitis shows normal shape and size of udder. Dry cow therapy and lactation therapy are the two protocols of antibiotic therapy used in managing mastitis.

The advice given to Malkman is that Buffaloe should not sit down immediately after milking as the teat pore & canal is open for half an hour after milking is advised and Mineral mixture supplementation is given 100 gm daily orally. Also, Full hand Milking is advised to the Farm manager during

milking. Sahu D *et al.* (2022) ^[11] Floor management and bad habits like spitting, chewing, smoking of milkman and management changes corrected during and after milking help in early recovery of Murrah buffaloe from Clinical mastitis.

now a days Interleukin-2 injection acts as markers related to white blood cell and epithelial cell functions including SCC, serum amyloid A (SAA), lactoferrin and NAGase. The stem cells of bovine mammary epithelial cells play a major role in maintaining the udder health. Bovine mammary stem cell therapy can be used for regenerating mammary tissues by

means of either repairing or replacing the damaged tissue. The stem cells have the ability to differentiate into epithelial, myoepithelial and/or cuboidal/columnar cells of the udder tissue. By utilizing bovine mammary stem cells, we can reduce the risk of rejection and the possible side effects (Sharma and Jeong 2013)^[13].

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