

CLINICO-BIOCHEMICAL AND THERAPEUTIC MANAGEMENT OF MAMMITIS IN BUFFALOES

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ABSTRACT

Nine graded Murrah buffaloes age between 3 to 6 years old were presented to Veterinary College Hospital, Bidar with the history of recent calving, swelling and reddening of one or two teats. On clinical examination revealed normal body temperature, pain on palpation of one or two teats with subsequent thickening and funnel formation were both in teat canal and gland cistern. Haematological examination revealed mild neutrophilia, marked absolute eosinophilia and lymphopenia. Biochemical examination revealed increased total protein, alkaline phosphatase (ALP), alanine aminotransferase (ALT), Concentration of C - reactive protein and decreased Serum Calcium, Serum Phosphorus. Milk examination of affected animals did not reveal any positive for California Mastitis Test and culture examination. Affected animals were treated with budesonide (200 mcg) aerosol spray along with antihistamines (Chlorpheniramine maleate) 0.3 mg/kg B.wt. Intramuscularly, Antiseptic (Iodine-based teat

dip) and Antioxidant (Vit.E and Selenium) 10ml, intramuscularly for 3 consecutive days. It was found that steroid (Budesonide 200 mcg fixed dose), antihistaminic, Iodine based dip application and Vit. E and Selenium were found effective in initial stages to minimise inflammation without any adverse effects.

Keywords: *Bubalus bubalis*, buffaloes, graded Murrah buffalos, recent calving, budesonide, iodine, allergic mammitis

INTRODUCTION

Allergic Mammitis is characterised by sudden swelling, heat, redness, pain and disturbed function resulting in sloughing off of teat, closure of the teat canal leading to incomplete drainage of milk. Reported by many earlier workers (Sankaram and Kotayya, 1977; Mouli, 1991; Lokanadhamu *et al.*, 2005). Sub-acute cases result in hardening of teat canal and funnel formation in both the teat

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canal and the gland cistern of affected animals. (Kotayya, 1980; Lokanadhamu *et al.*, 2005). Successful treatment of allergic mammitis with corticosteroids, antihistamines and antioxidants has been reported by some workers (Mouli, 1991; Radostitis *et al.*, 2007). Hence, the present study was undertaken to study haematobiochemical and therapeutic study in buffaloes suffering from allergic mammitis.

MATERIALS AND METHODS

Nine graded Murrah buffaloes maintained under semi-intensive system were presented to Veterinary College Hospital, Bidar with a history of recent calving and swelling and reddening of one or more teats.

Blood samples were collected from affected buffaloes for hematobiochemical examination. Blood samples with anticoagulant were used for the determination of differential leucocyte count as per the techniques described by Weiss *et al.* (2012). Without anticoagulant blood used for biochemical examination *viz.* Serum Calcium, Serum Phosphorus, Serum total protein, alkaline phosphatase (ALP), alanine aminotransferase (ALT) by spectrophotometrically using the diagnostic kits according to manufactures' instruction and Concentration of C-reactive protein was estimated by using AQT90 FLEX automated biochemical analyser.

Milk samples

Milk samples were collected from affected buffaloes after letting out few strips, the milk samples about 30 ml were collected from each quarter in sterile bottles. CMT (California Mastitis test) and Culture examination were performed on

individual milk samples.

Treatment

All affected buffaloes were treated with corticosteroid (Budesonide) (Budecort Inhaler, Cipla Ltd, Mumbai, India) fixed dose-200 mcg aerosol spray along with antihistamine (chlorpheniramine maleate) (Inj. Cadistin, Zydus AH Ltd, Ahmadabad, India) 0.3 mg/kg body intramuscularly, antiseptic (Iodine -based teat dip) and antioxidant (Vit. and Selenium) (Inj. E and Selenium, Zydus AH Ltd, Ahmadabad, India) 1ml for 50 kg body weight intramuscularly.

RESULT AND DISCUSSION

In Affected buffaloes total leucocyte count, absolute eosinophil count and differential leucocytes count (DLC) shown mild leucocytosis, marked absolute eosinophilia, mild neutrophilia, lymphopenia. Decreased Serum Calcium, Serum Phosphorus whereas increased total protein, alkaline phosphatase (ALP), alanine aminotransferase (ALT) and elevated concentration of C - reactive protein. (Table 1). Milk samples from affected buffaloes did not show positive to California Mastitis Test and culture examination. Therapeutic efficacy was evaluated on the basis of clinical examination before and after the 7th day of treatment.

All affected buffaloes were treated with corticosteroid (budesonide) fixed dose 200 mcg aerosol spray along with antihistamine (chlorpheniramine maleate) 0.3 mg/kg body intramuscularly, antiseptic (Iodine -based teat dip) for three consecutive days and antioxidant (Vit. E and Selenium) 1ml for 50 kg body weight intramuscularly single day.

In the allergic mammitis-affected buffaloes shown marked absolute eosinophils, mild neutrophils, and lymphoemia respectively. In affected buffaloes could be attributed to the inflammatory response at early lactation. Similar finding reported by (Letchworth and Camichel, 1984; Hamza and Choudhari, 1994). (Figure 1).

Decreased Serum Calcium, Serum Phosphorus, whereas increased total protein, increased alkaline phosphatase (ALP), increased alanine aminotransferase (ALT) and elevated concentration of C - reactive protein. This could be attributed due to negative energy balance; heavy milk demand could be degrading the muscle cells caused by mobilization of body reserves fat, inflammatory condition, gluconeogenesis (Sama and Ray, 1985; Sattler and Furl, 2004; Cardoso *et al.*, 2008).

The acute phase protein, C - reactive protein levels to tissue injury in affected buffaloes indicated an inflammatory response. In affected buffaloes could be attributed to the indication of tissue injury and inflammation. (Singer *et al.*, 1957).

Milk samples of affected shown negative for California mastitis test (CMT) and culture examination. This finding was close agreement with (Ramaswamy *et al.*, 2001; Sreeramalu, 1990) whereas no significant change by California Mastitis Test, Electrical Conductivity, and culture examination in affected animals.

Therapy was started in affected buffaloes with Budesonide (200 mcg) aerosol spray along with supportive therapy and shown effective therapy for management of mammitis in animals. This could be due to budesonide has approximately a 200-fold higher affinity for the glucocorticoid receptor and 1000-fold higher topical anti-inflammatory potency than cortisol with a wide

range of inhibitory activities against multiple cell types (eg. Mast cells, eosinophils, neutrophils, macrophages, and lymphocytes) and mediators involved in allergic and non-allergic mediated inflammation. (Eyre, 1978; Brattsand, 1990).

Chlorpheniramine maleate antihistaminic was used in affected buffaloes and shown improvement from condition. Similar finding was recorded by (Sankaram and Kotayya, 1977; Mouli, 1991) reported that allergic mammitis did not respond to antibacterial therapy but responded well with antihistamines. Iodine (2 to 3%) based teat dip was shown germicidal and suppression of secondary bacterial infection. Similar finding was reported by (Mouli, 1991; Radostitis, 2007). Beneficial effect of Vit. E and Selenium in affected buffaloes could be attributed to an antioxidant property containing enzyme Glutathione peroxidase has long been recognized as a natural biological antioxidant and are integral part of the cellular antioxidant system in most mammalian cells (Radostits *et al.*, 2007).

CONCLUSION

It was concluded from the present study that Budesonide (200 mcg-fixed dosage) along with supportive therapy antihistamines, antiseptic-Iodine based teat dip and antioxidant (Vit. E and Selenium) was effective in allergic mammitis in buffaloes.

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Table 1. Hemato-biochemical parameter of before and after 7th day of treatment of allergic mammitis in buffaloes (mean±s.e.).

Parameters	Mammitis buffaloes (Before treatment) (N=9)	Mammitis buffaloes (After treatment) (N=9)
Total leucocyte count	7822.00±410.03	7241±180.50
Absolute eosinophil count	167.00±22.12	26.01±10.32
Differential leucocyte count		
Neutrophils %	52.64±1.14	35.02±0.11
Lymphocytes %	44.81±2.12	61.32±0.66
Eosinophils %	2.72±0.19	0.42±0.12
Total protein (g/dl)	6.42±0.82	5.28±0.33
Alkaline phosphatase (u/l)	121.16±4.20	86.02±2.08
Alanine aminotransferase (u/l)	44.98±3.41	40.70±2.15
C-reactive protein (mg/L)	65.87±0.76	32.42±0.02



Figure 1. A buffalo showing Allergic Mammitis of right fore teat before treatment (Inflammation, hotness and reddening of teat).



Figure 2. Allergic mammitis buffalo showing improvement in teat condition after treatment.

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