THERAPEUTIC MANAGEMENT OF CLINICAL MASTITIS IN COWS AND BUFFALOES WITH DIFFERENT ANTIBIOTICS PREPARATIONS[#]

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ABSTRACT

A total of 60 cases (32 cows and 6 buffaloes) comprising of 98 quarters were studied underthe present investigation. Milk samples from 60 cases (32 cows and 6 buffaloes) comprising of 98 quarters were collected aseptically in sterilized vials. The milk samples were also subjected for some indirect tests viz. strip cup test, white side test, CMT and BTB indicator card method for proper diagnosis of the cases. In addition to this, affected udder was also examined physically. The affected quarters were categorized into 4 groups viz. Group-I 12 cows with 19 affected quarters; 2 buffaloes and 2 quarters, Group II 14 cows and 24 quarters; 2 buffaloes and 3 quarters, Group III (15 cows and 21 quarters; 1 buffaloes and 1 affected quarters and Group IV 13 cows and 26 quarters; 1 buffaloes with 2 affected quarters. The maximum recovery was observed in Group IV which was treated with intramammary preparation of cefoperazone and the cure rate was 85.71% animal-wise and 82.14% quarter-wise on day 3 (post-treatment) whereas cent per cent cure rate both animal-wise and quarter-wise were observed on day 5 (post-treatment) which need one additional intramammary infusion.

Key words: Mastitis, antibiotic sensitivity, cow, buffalo

Introduction

The common intramammary antibiotic therapy has not given valuable results due to lack of optimal absorption and dispersion in the glandular tissue of the lactating cows. In addition, the emergence of resistance by pathogenic bacteria associated with mastitis is the greatest problem. The pattern of drug resistance continues to change in a particular area depending upon various epidemiological factors and indiscriminate use of antibiotics (Nag and Ray, 1982; Chaudhary and Narayan,1984.) So, the current trend necessitates exploring an alternate, suitable, appropriate and supportive therapy by increasing the phagocytic activities of mammary polymorphonuclear and mononuclear cells (Daley and Hayes, 1992). Therefore, the present study was undertaken to treat the affected udder in different combinations.

Materials and Methods

A total of 60 cases (32 cows and 6 buffaloes) comprising of 98 quarters were studied under the present investigation. Milk samples from 60 cases (32 cows and 6 buffaloes) comprising of 98 quarters were collected aseptically in sterilized vials. The samples were streaked on blood agar media for bacteriological culture as per the standard procedure described by Cruickshank *et al.* (1975) and then *in vitro* drug sensitivity was done following the method described by Bauer *et al*. (1966).

The milk samples were also subjected for some indirect tests viz., strip cup test, white side test, CMT and BTB indicator card method for proper diagnosis of the cases. In addition to this, affected udder was also examined physically. The affected quarters were categorized into 4 groups viz., Group-1 (cows=12, affected quarters=19;buffaloes=2, affected quarters=2), Group-II (cows-14,affected quarters=24; buffaloes=2, affected quarters=3), Group-III (cows=15, affected quarters=21; buffaloes=1, affected quarters=1) and Group-IV (cows=13, affected quarters=26; buffaloes=1, affected quarters=2. The details of the treatment schedule has been shown in Table 1.

Results and Discussion

The treatment efficacy in 4 different treatments groups in animal-wise and also in quarter-wise was observed during respective common therapeutic duration. The common therapeutic duration in Group I, II and III was observed on day 5 (post-treatment; whereas in Group IV (cefoperazone group) it was observed on day 3 (post-treatment); as well as on day 5 (post treatment), since one additional dose was given on day 3 in which the quarters were not cure. Higher recovery was observed in Group IV animal-wise (85.71%) and quarter-wise (82.14%) on day 3 post-treatment and 100 per cent both animal-wise and quarter-wise on day 5 (post-treatment) as compared to Group I in which per cent recovery was 71.42 per cent and 80.95 per cent, respectively on animal-wise and quarter-wise basis followed by Group III in which per cent recovery animal-wise and quarter-wise was 62.50 per cent and 72.72 per cent, respectively on day 5 post-treatment; whereas in Group II, the pet cent recover both animal-wise and quarter-wise was 56.25 per cent, respectively on day 5 (post-treatment). The details of the above results have been shown in Table 2.

Trisodium citrate was used as supplement therapy along with antibiotics for early recovery from mastitis. Wilson *et al*. (1986) used cefoperazone as a single dose of 250mg in an oil based suspension infused into bovine quarters suffering from clinical mastitis. Following tri-sodium citrate administration, the citrate content of milk increased and pH dropped to normal. These findings are in agreement with Pal *et al*. (1994). Trisodium citrate has several advantages over other remedies

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Table 1: Drug dosage regimens for treatment of mastitis

S. No.	Trade name of drug and their manufacturer	Composition of the drug(s)	Dosage and schedule	Route of administration	Duration of treatment
1	Pendistrin-SH (Sarabhai Zydus)	Procaine penicillin (1 lac IU), Streptomycin sulphate (100 mg), Sulfamerazine (500mg) and Haydrocortisone acetate (29 mg) per tube.	1 tube twice daily per affected quarter	Intramammary	5 days
	Dicrysticin-S (Sarabhai Zydus)	Procaine penicillin G (15lac), Penicillin G sodium (5lac) and Streptomycin sulphate (2.5g) per vial.	10 mg/kg b.wt. twice daily	Intramuscular	5 days
2	Mammitel (Intas)	Colistinsulphate (5lacIU)+ Cloxacillin sodium (200mg) per syringe.	I tube twice daily per affected quarter	Intramammary	5 days
	Intamox (Intas)	Amoxycillinsodium (1.25g)+ Cloxacillinsodum (1.25g) per vial.	8 mg/kg .b. wt. twice daily	Intramuscular	5 days
3	Gentaves (Vesper)	Gentamicin (40 mg/ml)	80 mg+2.0 ml water for injection twice daily	Intramammary	5 days
			2.5 mg/kg b.wt. twice	Intramuscular	5 days
4	Mastiwok (Vetoquinol)	Cefoperazone (250 mg) per syringe.	I tube per affected quarter single infusion	Intramammary	3-5 days

Table 2: Efficacy of therapy of different treatment group in animal-wise and in quarter-wise during common therapeutic duration

Treatment group	No.of animal treated	No.of quarters treated	Post-treatment			
			Day 3		Day 5	
			No. of animal recovered	No.of quarters recovered	No. of animal recovered	No.of quarters recovered
Group-I	14	21	NIL	NIL	10 (71.42)	17 (80.95)
Group-II	16	27	NIL	NIL	9 (56.25)	14 (51.85)
Group-III	16	22	NIL	NIL	10 (62.50)	16 (72.72)
Group-IV	14	28	12 (85.71)	23 (82.14)	14 (100.00)	28 (100.00)

Figures in parentheses indicate per cent of animals/quarters recovered

in mastitis as it replenishes the citrate radical in animal body and is cheap and quarters need not to be treated individually. Mandial *et al*. (1999) reported the efficacy of Pendistrin-SH (82.35%) and gentamicin (87.80%) which are in agreement with the present study. Moyo *et al*. (2005) concluded that vitamin E supplementation during the dry and early lactation periods is associated with lower intra-mammary infection (IMI), somatic cell count (SCC) and clinical mastitis (CM). Colak *et al.* (2006) concluded that vitamin E supplementation during the transition period benefits the immune system via improving neutrophil activity and consequently reduces the risk for mastitis and retained placenta.

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