Review Of Literature

PART-IV

PART - IV : TREATMENT

Sharma and Singh (1970) stated that comparison of three proprietary intramammary infusions revealed that Mastalone (a combination of oxytetracycline, oleandomycin, neomycin and prednisolone) was effective in 87%, Strypen Forte (benzylpenicillin plus dihydrostreptomycin) in 70% and Aureomycin (chlortetracycline) in 63% of cases.

Rosenzuaig and Mayer (1970) examined bacteriologically individual quarters (including dry cows) of a herd of 150 milking cows under poor management and milking conditions. Each cow was again examined at drying off, after which all quarters were treated, whether infected or not, with 0.5 g. benzathine cloxacillin, and the teats were dipped in 5,000 ppm iodophor. Further bacteriological examinations were carried out 12-14 days after calving, and a month after the last calving in the herd. The incidence of Staph. aureus infection in the herd fell from 25% to 13% between the first and final examinations. The incidence of staphylococcal infection of the udder decreased by 61% between drying-off and 12-14 days after calving in treated cows and by 13% in untreated controls, and the incidence of new staphylococcal infection in the same period increased by 4.7% in treated cows and 22.3% in controls.

Bratlie (1973) carried out bacteriological examination of milk samples from 746 dry cows, it revealed that 240 (32%) were infected in one or more quarters; the total infected quarters being 504 (52.5%). All the four quarters of infected cows were treated with either placebo, a combination of cloxicillin, neomycin and hexachlorphane,or penicillin plus neomycin. Examined four days after parturition, a cure rate of 59.7% was detected in placebo treated group and 78% in the antibiotic treated groups. At the same time new infections were seen in noninfected quarters, as follows:

12.6% in placebo treated, 9.9% in antibiotic treated and 5.9% in health untreated quarters. It was suggested that only the infected quarters of dry cows should be treated, except where infection was due to beta-haemolytic streptococci.

Merck et al.(1974) carried out drying off half of 325 cows in three herds at the Max Planck Institute, with the injection of 500 mg. benzathine-cloxacillin into each teat canal. Bacteriological and cytological studies showed that, in the treated group, the incidence of subclinical mastitis after calving was reduced by 64% from the incidence prior to drying off, while it increased by a half in the untreated group. The number of infected quarters was

reduced by 53% by the dry period therapy, and it cured 75% of the quarters which had been affected with subclinical mastitis.

Dannemann (1974) carried out the trial in 18 herds on cows which had shown raised cell counts on bucket samples and/or bacteriological cultures from quarter samples in the preceding lactation. Dry period therapy was given to 79 cows (314 quarters) with benzathine oxacillin, and to 79 cows (310 quarters) with benzathine-cloxacillin. Bacteriological and cytological investigation of milk from the treated quarters two and six weeks after calving showed clear and sustained improvement after either treatment, with slightly more favourable results with benzathine-oxacillin.

Roychoudhury et al.(1976) conducted a trial with Pendistrin-SH (squibb) in clinical cases of staphylococcal mastitis; and found that a combination of procaine, benzyl penicillin, streptomycin, sulphamerazine and hydrocortisone, was 94-100% effective in coagulase positive staphylococcal infection. In chronic cases due to mixed infection the efficacy of the infusion was 33% to 55%. This less effectivity was due to (i) resistance of the organisms to the penicillin therapy which might develop from injudicious, inadequate and repeated use of the drug.

(2) Fibrosis and cellulitis in chronic infections which might prevent infusion of the drug to the hidden foci of infection and (3) Presence of mixed microbial infection outside the spectrum of antibiotic activity of the penicillin.

Bywater (1976) stated that, subclinical mastitis may be treated during lactation by examining each quarter bacteriologically to identify those infected and then treating simultaneously with appropriate therapy. Though, a more practicable approach to subclinical mastitis was the use of therapy at drying-off as part of a control programme.

Ungureanu et al.(1977) suggested therapy at drying-off, involving the injection of six ml. (500 mg) cloxacillin. The injection was given into 363 teat canals, of which 139 were infected. It was observed that a total of 303 were free of infections at the subsequent calving and only 60 infected. There were 16% of new infections. The efficacy of the treatment was greatest against Streptococcus agalactiae and less against Staphylococcus aureus.

Os et al.(1977) stated that the activity of the combination ampicillin + cloxacillin against Streptococcus agalactiae was mainly due to ampicillin. Against penicillin-resistant staphylococci, the activity of the

combination was mainly due to the activity of cloxacillin. Against the other microorganisms both compounds contributed to the activity of the combination.

Nielsen (1978) carried out single intramammary treatments of bovine mastitis with penicillin preparations during lactation and at drying-off with seven preparations and their curative effects. The efficacy of seven commercial preparations was assessed in 693 cows and 1,305 infected quarters (1.88 infected udder/cow). Three preparations were of procaine penicillin, two of potassium penicillin, one of benzathine penicillin and one of penethamate hydroiodide. Different preparations also contained streptomycin, neomycin and bacitracin. Each preparation was used only once and only benzathine penicillin-streptomycin was used at drying-off. Of the total, 354 cows (51%) were cured (784 quarters, 60%) after three months. The average rate of cure was 54% (range 40-95%) of cows and 34% (range 25% to 62%) of quarters. The average cure rate in lactating cows was 60% and in drying-off cows 75%.

Kapur and Singh (1978a) reported that in 33 cows and 26 buffaloes, 88 infected quarters were treated with intramammary injection of Spiramycin, Pendistrin-SH, Mastalone; or Omnamycin. Mastalone cured 15 to 17 treated quarters, Corynebacterium pyogenes and Pseudomonas spp.

failed to respond to it. Spiramycin cured only 30 of 43 quarters. amd Streptococcus agalactiae, Escherichia coli and Pseudomonas spp. failed to respond. Pendistrin-SH cured 12 of 14 quarters, one quarter infected with Staphylococcus aureus and one with Bacillus species failing to respond. Omnamycin cured 12 of 14 quarters, the two resistant infections being with Staph. aureus and Elcoli.

Pearson and Mackie (1979) stated that 53% of 436 quarters responded to treatment, only 28% of S.aureus quarters responded. There was little relationship between in vitro sensitivity and cure rate.

Preez et al.(1981) treated the teat infections of Staphylococcus aureus with 1 g. chloramphenicol (three times at 12 hours intervals), it reduced infection rate by 66% by 14 days after the last treatment. The same treatment in subclinical reduced infections by 31%. Orbenin dry cow treatment, three times at 12 hours intervals, reduced infections 81 and 80% respectively. No chloramphenicol residues were detected in milk 12 hrs. after the last treatment. After Orbenin dry cow treatment residues were present in all quarters.

Poutrel and Rainard (1981) quoted that, selective treatment of all cows with atleast 1 CMT positive quarter at eight weeks before drying-off was suggested as the

simplest and most economic treatment for herds with a low mastitis infection rate. Systematic therapy was recommended for herds with high infection rate.

Garcia Partida et al.(1981) used gentamicin in the treatment of bovine mastitis. Out of 125 cases of bovine mastitis (11 subclinical, 50 acute and 64 chronic), 100 cases were treated with 50 mg. gentamicin, 1 mg. dexamethasone plus 1,00,00 i.u. procaine penicillin in 20 ml and 25 cases with 50 mg gentamicin, 1 mg dexamethasone plus 125 mg trimethoprim. Subclinical cases reveived a single dose, the remainder a second dose at 18 hours and if necessary, a third dose at 24 hours. After 30 days 91.2% were classed as "Cured"; all of these were negative to the California Mastitis Test. Results with the gentamicin/trimethoprim product were superior (96%) to those of the gentamicin/penicillin product (90%). Results were analysed in relation to the infecting organisms; all of 19 cases of E.coli mastitis, 47 of 49 Staph. aureus, and 44 of 49 cases of streptococcal mastitis were deemed cured.

Becker (1982) tested a proprietary combination of 200 mg ampicillin and 400 mg. oxacillin in 10ml. oil suspension in 107 cows with 153 mastitis quarters in 45 housed dairy herds over a 13 months period. Secretions became normal in 57% of cases within 10 days of the,

conclusion of treatment. Only 11% of affected udders remained diffusely indurated on palpation, though 54% had been before treatment. Mastitis due to gram-positive organisms responded more quickly to treatment then other forms.

Hamaver (1983) treated acute bovine mastitis with trimethoprim/sulfonamide intramammary. The nature, actiology was investigated. In 86 cases involving 91 quarters. Alternate cases received the experimental trimethoprim-sulfonamide treatment (25 ml. i/v and intramammary injection of a preparation in oil on two successive days). The remaining cases, for comparison received the antibiotic treatments currently in use, which included oxytetracycline, kanamycin, neomycin, penicillin, streptomycin and ampicillin. Judged by test results two weeks later, 88% of the experimental groups and 80% of the comparison groups were cured.

Storper et al.(1983) tested the efficacy of three new intramammary antibiotic combination products in eliminating streptococci and staphylococci from subclinically infected udders of lactating cows, and the duration of antibiotic residues in milk were determined. Products tested were Amclox (75 mg. ampicillin sodium and 200 mg. cloxacillin sodium), Kanapen (250 mg kanamycin sulphate and 3,00,000 units procaine penicillin G), Ampicet

(100 mg. ampicillin sodium and 200 mg. cephalothin sodium). Each product was infused twice, with 24 hours interval, into the quarters of the udder. The efficacy of each of the products in eliminating streptococcal infection was good and compared favourably with the reported efficacy of products containing only penicillin G, only cloxacillin or a combination of ampicillin and cloxacillin. With Amclox, the average cure rate of Staphylococcus aureus infection was 47.5%, ranging between 12.1 and 87.8% in three herds. Kanapen eliminated 79.2% and 88.6% S.aureus cow infections in two herds. Ampicet cured 66.0% of S.aureus cow infections in five herds although in one herd only 15.6% of the infections were eliminated. Antibiotic activity was found in milk upto 84 hours after Amclox therapy, whereas the required milk withholding periods were 108 hours and 48 hours after treatment with Kanapen and Ampicet, respectively, (all in herds milking three times daily).

Trapecar et al.(1983) carried out a field trial of "Kloksavet M" and "Ampivet K" for staphylococcal and streptococcal mastitis. "Kloksavet M" (PLIVA, Zagreb) was an intramammary preparation containing 200 mg. cloxacillin and 10 mg prednisolone, while "Ampivet K" contains 200 mg. ampicillin and 100 mg cloxacillin. One tube was inserted into an affected quarter on three

successive days. 17 cows with Staphylococcus aureus mastitis, 5 with Streptococcus pyogenes and 6 with S.uberis mastitis were treated with either preparation. The high efficacy of the antibiotic was confirmed.

Singh et al.(1984) conducted a study to know the efficacy of cloxacillin (Orbenin-LA) alone had its combination with ampicillin (Ampiclox L.C.) in acute mastitis. Further they stated that, these drugs had not been used routinely in our country and were still not available as intramammary infusion. The Orbenin L.A. was tried in 13 cases of acute mastitis and it was able to cure 61.53% of the animals and 56.75% of the quarters treated. Ampiclox L.C. was tried in 12 cases and it was able to cure nine cases completely and two partly. The percentage of cure was 75% of animals and 86.95% of the quarter treated. Orbenin L.A. was able to eliminate 54.83% of the staphylococci and 50% streptococci whereas Ampliclox L.C. cleared 100% streptococci, 90% staphylococci and 77.77% of E.coli infections.