

Treatment of Chronic (Fibrotic) Mastitis in Cows and Buffaloes



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Hallmarks of Chronic Mastitis

Chronic IMI defined: an IMI of more than 4 weeks duration (Owens *et al.*, 1997)

Chronic mastitis causes destruction of milk secreting cells.

Scar and connective tissue replaces the milk secreting tissue leading to a permanent loss of milk production ability.



Hallmarks of Chronic Mastitis ...continue Antibiotics have a poor cure rates in chronic mastitis because they do not penetrate in sufficient quantity into the fibrous tissue.

Many microorganisms cause chronic mastitis. Important m/o include *Staphylococcus aureus*, *Corynebacterium pyogenese* and yeasts etc.

Lines of Treatment of Chronic Mastitis

Intramammary infusion of antibiotics/antibacterials after complete milking of affected udder quarters with or without udder lavage.

Application of udder balm/embrocations to decrease the hardness of udder and teats and to promote circulation.

Administration of iodine products to control fibrosis

Parenteral administration of suitable antibiotics.

Oral administration of drugs which tend to change the pH of milk towards acidity and drugs which enhance immunity.

Suggested Treatment Measures

"Desperate diseases must have desperate remedies" Hippocrates-The Father of Medicine

Rx

Intramammary Treatment

- **Give a purge** (*Jalaub* in Urdu; e.g. by oral administration of 500 g of MgSO4 in 2 liters of water on the first day of the treatment; Duval, 1997).
- Completely milk the affected udder quarter(s) and then infuse 100 ml of 3% boric acid into the affected quarter only on the first day of treatment.
- Allow the infused boric acid solution to remain in the udder quarter for 4 hours and then remove it by milking.
- Now using a human IV catheter No. 22 (e.g. Introcan[®]-W, B. Braun, Germany), give intramammary infusion of injection cepharadine (e.g. Inj. Velosef[®], Glaxosmithkline Pakistan Ltd.) 500 mg + inj. Lincocin (1ml = 300mg) dissolved in 25 ml of distilled water for injection into the affected quarter daily for 5 days or
- Give intramammary infusion of Mastiveex-1[®] (S.P. Veterinaria, S. A. Spain marketed in Pakistan by BinSadiq International, contains:

cloxacillin sodium 250 mg, framycetin 200 mg, Sulfadimerazine 500 mg, chymotrypsin 8mg) daily for 6 days.



Use of udder balms/embrocations

 Wash the affected quarter and teat with warm water for about 20 minutes and then thoroughly massage the following mastitis balm/ embrocations 3-4 times daily on the affected quarter and teat:

OR

Massage **Elemi[®] Ointment** (Ghazi Brothers, Pakistan; contains Elemi resin, camphor, *Ginko biloba* leaf, *Echinacea purpurea*, lavender oil, tea tree oil, oil of sea buckthorn) on teats and udder twice a day after milking for 7 days.

Ingredients	Quantity
Aloe vera (Kawar gundal or Ghee kawar in Urdu and Punjabi) pith	100 grams
Turmeric (Halthee in Urdu) powder	100 grams
Castor oil (Arind ka tael in Urdu)	4 teaspoonful
Juice of 2 lemons	

	Ingredients	Quantity
	Menthol (Sut podina in Urdu)	20 grams
Use of udder balms/embrocations	Clove oil (Long ka tael in Urdu)	30 ml
continue	Extract omum (Sut Ajwain in Urdu)	20 grams
	Olive oil	250 ml
	DMSO	50 ml



lodine Therapy

Slow I.V administration of 10 ml of 5% povidone-iodine solution (e.g. Pyodine[®]) mixed with 500 ml of 25% dextrose. Repeat the treatment on alternate days for 3 occasions. Also perform lavage of affected quarters by
infusing 10% of povidone-iodine dissolved in distilled water. Massage the udder slightly and then completely drain the udder twice a day. Repeat the lavage of affected quarters on alternate days for 3 occasions
(Ghodasara *et al.*, 2012)

OR

Oral administration of 10 grams of potassium iodide daily for 10 days
(National Drug Formulary, Bhutan, 2010).

OR

Deep IM injection of DMSO-iodized oil or simple iodized oil. (Products developed by Dept. of CMS, University of Agriculture, Faisalabad) 4 injections at 72 hours intervals.

OR

IV injection of 250 of 20% solution of sodium iodide on the first day of treatment (Saperstein *et al.*, 1988). Repeat after 7 days.

Parenteral Antibiotics

 Injection lincomycin-spiramycin (e.g. Inj. Lincospira[®], Selmore Pharma, Pakistan; contains lincomycin 75 mg and spiramycin 125 mg/ml; 25 ml IM daily for 6 days).

OR

- Injection amoxicillin + clavulanic acid (e.g. Inj. Clavet[®], Selmore Pharma, Pakistan) 30 ml IM daily for 6 days.
- Drench 0.5 kg yoghurt + 250ml simple oil daily to mitigate the effect of antibiotic.



- Lincomycin, pirlimycin (a lincosamide antibiotic) and macrolides are ideal antibiotics for parenteral administration in mastitis therapy because of very high milk to serum concentrations:
 - (tylosin = 4.5 to 5),
 - (spiramycin = 4.6 to 4.8,
 - (lincomycin = 4.2 to 4.4)

(Mestorino and Errecalde, 2019)

Use of drugs which switch milk pH and enhance udder immunity

Anti-inflammatory, anti-bacterial, immuno-stimulant, milk pH corrector and galactogogue oral preparation (Ijaz, 2018; Manzoor, 2018):

Trisodium citrate (available from chemical stores dealing particularly with soap ingredients under the name of citrate) = 40 grams

Vitamin C (poultry feed grade)

Zinc sulphate (poultry feed grade or crop grade sold by Syngenta Co under the trade name of Naya Zinc[®]) = 3 grams

Acidified copper sulphate (e.g. Acidified Copper Sulphate[®], International Nutrition, Omaha, Nebraska, USA) = 2 grams

Shatavari (*Asparagus racemosus*; *Satawar* in Urdu; Kumar *et al.*, 2014) = 100 grams

Ocimum sanctum (Tulsi in Urdu and Hindi; Shafi et al., 2016) = 330 gram

• Oral administration of the mixture for 7-10 days

OR

= 15 grams

<u>A herbal anti-inflammatory, anti-bacterial and immuno-stimulant</u> <u>mastitis masala (Asif Shafi)</u>:



Add all above ingredients in an earthen pitcher (*Gharrah* in Punjabi). Leave them for 7 days and then start feeding 250 grams of the mixture daily in the evening till the entire mixture is finished

Treatment of Yeast and Fungal Mastitis

 Intramammary infusion of 15 ml of Nilstat[®] (Wyeth Pharma, Pakistan; each ml contains 100000 units of nystatin) plus 15 ml of sterile distilled water per quarter per day for 5-7 days (Moore, 1984).

OR

Dissolve the contents of a Cap. Omastin[®] (Bex Pharma Pakistan; each capsule contains 150 mg of fluconazole which is an antifungal antibiotic) in 30 ml of sterile normal saline and give as an intramammary infusion per quarter per day for 5-7 days (Personal perspective of Prof. (R.) Dr. Ghulam Muhammad, Department of Clinical Medicine and Surgery, University of Agriculture, Faisalabad).



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