Mastitis

Inflammation of the mammary gland .regardless of the causes ,it is characterized by physical ,chemical and bacteriological changes in the milk and by pathological change in the glandular tissue .

Etiology

Streptococcus agalactiae

Clinical Finding

1-transient fever

1- **Animal off its feed .**

Acute :

-inflammation of gland is sever but there is no systemic reaction (swollen ,pain hot).

Chronic :

-inflamation is mild (no swollen ,no pain ,heat absent) .

- milk watery and present of clots .,milk production is decrease in all stage of disease .

<u>Mastitis caused by miscellaneous streptococc</u>

- ***Streptococcus dysgalactiae***
- ***Streptococcus uberis***
- ***Streptococcus zooepidemicus*---------- (chronic suppurative mastiris)**
- ***Streptococcus pyogenes*** **----------(in mare ,cattle)**
- ***Streptococcus pneumoiae .***

<u>Mastitis cause by Staphylococcus *aureus*</u>

-Milk is purulent or containe many thick clots .

- Extensive fibrosis and sever loss of function.

Clinical Finding

- Per acute : occur in the first few days after calving ,and highly fatal

- Sever systemic reaction ,elevation of temperature ,rapid heart rate ,complet anorexia
- Udder is grossly swollen ,hard and sore to touch.
- Gangrene is constant develop ,bluish discoloration to udder .
- The secretion is reduced to a small amount of blood –stained ,serous fluid without odor ,clots or flakes .

Mastitis cause by *Corynebacterium pyogenes*

- Summer Mastitis of cattle and occurat sporadically .
- Per acute ,there is systemic reaction and abortion may occur .
- Secretion watery and later purulent with putrid odor .

Mastitis Cause by Escherichia coli ,Klebsiella spp.,and Enterobacter aerogenes

- Coliform mastitis term use to include the mastitis in cattle caused by organism above ..
- Coliform mastitis is world wide and most common in dairy cattle which are housed during winter months .
- Any causes lead to animal recumbence (Downer cow syndram ,parturient paresis after parturition, milking machine) there is coliform mastitis .
- -secretion is watery to serous in consistency and contain flakes .

Mastitis cause by Pasteurella spp. (goat)

- Milk watery and in 24hr the quarter becom blue and cold .

Mastitis cause by Nocardia asteroids

-fibrosis of the gland and appearance of clots in grayish viscid secretion .

Mastitis cause by Mycoplasma spp.

-on standing a deposit of fine sandy material ,flakes leaving aturbid ,whey-like supernatant ,later the secretion resembles colostrums or soft cheese in thin serum .

Mastitis cause by Mycobacterium spp.

Appearance of clots in discolored milk .

Mastitis cause by Fungi ,Yeasts and Algae

- Trichosporon spp.,characterized by swelling of gland and clot in the milk .
- The recovery is spontaneously.

Pathogenesis

There is three stages :

1- Invasion

- In which organism pass from the exterior of the teat to the milk inside the teat canal .,and it depend on ,
- Bacterial density
- Frequency of udder infection .
- Degree of sphincter damage .
- Teat canal Antibacterial.

2- Infection phase ,it depend on ,

-type of bacteria ,and bacterial multiplication in milk ,adherent in epithelial cell of mammary gland .

-suscebtablity of bacteria to antibiotic .

-present of protective substances in milk

-according milking stage or lactation period .and its present in dry period due to absent of physical flushing ..

-before increase of leukocyte due to inter of microorganism (physical trauma) .

3- inflammation phase :

1- pathogenicity and tissue invasive power of the causative bacteria .
2- the susceptibility of mammary tissue to the bacteria .and there is two type

-resistance due to presence of tissue antibody.

-hyper sensitivity as aresult of previous infection .

Clinical Pathology

1- Bacteriological culturing of milk.
2- Cell count in milk ,in 1-2 hr after this time there is damage of leukocyte ..
3- Bulk milk cell count .

4- California mastitis test . the result : (trace 500000 ; +1 1000000;+2 2000000 ;+3 4000000) .

5- Indirect chemical test ,increase in sodium and chloride ions ,and consequent increase in electrical conductivity which occur in mastitic milk .

Treatment

1- Udder infusion (intra mammary infusion)

- disposable tube containing suitable drugs in water soluble with hygiene is -necessary during treatment,complet emptying of the quarterbefor infusion .
- penicillin G 100,000 unit ,2 infusion at 48hr intervals .
-Cloxacillin 500mg ,long acting ,one infusion .
-Streptomycin+ penicillin 1gm ,3 infusion 24 hr. intervals
- Tetracyclin 200-400 mg ,daily for 2-3days .
-Cloxacillin + penicillin 200mg ,3 infusion ,once daily for 3 days to treated coliform mastitis with massage .

2-Parenteral treatment is advisable in all case of mastitis specially when the gland is badly swollen and intramammary antibiotic is unlikely to diffuse properly .

-Penicillin 16 unit

-Oxytetracyclin 10 mg.

- tylosin .12.5 mg .

-Erythromycin 12.5 mg.

3- treatment of Dry cow :

-Chronic cases specially *Staph. aureus* satisfactorily by treatment when the cow I s not lactating.

- treat in dry time also good prohpylaxis .

4- Milk from cow treated systemically should not use until 72hr.

Milk from cow treated locally should not use until 96hr.

-Supportive therapy :

Large quantities of isotonic fluid , containing glucose and antihistamin drugs when extensive tissue damage and sever toxemia.(crushed ice to decrease toxin absorption).

Drying –off chronically affected quarters

-if a quarter dose not respond to treatment and is classified as incurable.

- the quarter dried off by infusion of 30-60 of 3% silver nitrate solution

20 ml of 5%copper sulfate solution .

300-500 ml of a 1:2000 acriflavine solution ..

6- In case of gangarenous mastitis ,Total amputation of quarter or ligation of the mammary vessels .

Control :

1-Detection of infected quarters .

2-Reducing the duration of the infection

3-Reducing the new infection rate .

4-Teat Dipping using (iodophor solution 1%iodine,chlorhexidine ,hypochlorite solution containing 4% free chlorine)

5-Teat cup disinfection

6- Drying off.

7-Vaccination.