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Editorial

Mastitis: An Important Diseases in Dairy Animals

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Mastitis is one of the most important disease in dairy animals. It is inflammation of mammary gland accompanied by physical and pathological changes of mammary glandular tissue and physical, chemical and microbiological changes of milk with or without systemic reaction. On an average, the total failure cost due to bovine mastitis is estimated to be $147 per cow per year, particularly contributed by milk production losses and culling, which represents 11% to 18% of the gross margin per cow per year [1]. Mammary tissue damage leading to decreased milk production accounts for 70% of the total losses [2]. It is one of the most economically important diseases of dairy cows. The economic loss occurs due to reduction in milk, changes in quality milk and milk products. In addition, disqualification of dairy cow due to chronic mastitis. Bovine mastitis can be classified into 3 classes, based on the degree of inflammation, as clinical, sub-clinical and chronic mastitis. A clinical mastitis is evident and easily detected by visible abnormalities, such as red and swollen udder, and fever in dairy cow. The milk of the cow appears watery with presence of flakes and clots [3]. Mastitis is caused majorly by Staphylococcus, Streptococcus and coliform bacteria and less importantly by other organism such as other bacteria, viruses, and fungus. The common predisposing factors are stages of lactation, milking condition, genetic factors, poor hygiene and hybrid animals. It is transmitted through teat canal pore, milkers hands, ingestion of infected material from environment, fly biting influences the entry of organism, contact occur at any time during the life of the cows including milking time between milking dry period prior to first calving in heifers. The hosts cows, buffaloes, sheep, goats, pigs and horses are highly susceptible for mastitis whereas heavily producing female animals are mostly susceptible than less producers.

Infection occurs mainly through teat canal pore in two stages as invasion stage and infective stage. Invasive stage: In this, the infective organism enters through teat canal, reaches the mammary tissue, develops inflammation and promotes the development of many folds of granulation tissue under the epithelium and become swelling. Infective stages: At this stage, microorganisms undergo multiplication and causes damage to udder tissues. In acute cases, infection set up toxaemia and can leads to death. Affected udder will be hard, swollen, and painful in surviving animals. The diffusion of bacterial toxins in to other unaffected quarters leads to infection.

The signs and symptoms of mastitis in affected animal depend on the type and stage of disease. The common signs and symptoms of mastitis are as follows:

- **Per acute form:** Pyrexia, anorexia, respiratory distress, swollen, hot and painful udder. Cessation od milk production. Exudates are often blood stained.
- **Acute form:** Swollen udder, changes in quality of milk. Milk becomes curd like, yellow, brown fluid with flakes and clots.
- **Subacute form:** No changes in the udder tissue.
- **Chronic form:** Udder is haemorrhagic, and fibrotic. Swollen and palpable supra mammary lymphnode. Udder is thick, firm, nodular and atrophic, yellowish or white fluid with clots and flakes.

An efficient and effective mastitis control program requires the early detection of infection. This can be obtained by understanding the pathogenesis, discovering new sensitive tests for early screening, and adopting good managemental practices to reduce the chance of transmission of the infection from sick to healthy quarters [4]. Early detection of mastitis and identification of the causative agent are crucial for control and treatment [5]. The common methods to detected mastitis are

- Clinical examination of the animal, udder and teat.
- **Tests done for the milk abnormalities**: Strip cup test, Bromothymol Blue Test (BTB), Bromocresol purple test, Chloride test, California mastitis test, White side test and Catalase test.
- **Direct test:** PCR, Isolation and identification of the organisms, cultural examinations, biochemical test, animal inoculation test, serological test, miscellaneous tests, electrical conductivity test, radial immune diffusion test and milk antitrypsin assay.

It is important to stripping out the infected milk from the affected quarters and cleaning of quarters with normal saline. Infusion of antibiotic therapies immediately after the infection should be followed. Selection of antibiotic should be as per antibiotic sensitivity test. Antipyretics and anti-inflammatory drugs can be used as per the requirement. Application of astringents over udder tissues will be beneficial to reduce the swelling. Intravenous therapy can be used as normal saline or dextrose saline solutions to reduce the toxic level in the blood. In non responsive cases animal should be dried out. It is done by infusing 30-60ml of 3% silver nitrate solution, or 20 ml of 5% copper sulphate.

Control and prevention of mastitis is having outmost importance which can be achieve by different techniques. Time of infection should be reduced. Early identification, segregation and proper management and treatment for sub clinical cases decrease the clinical incidence of mastitis. Immediate treatment should be given to affected animals. Culling of non responding animals is another crucial strategy. Focus should be given to control development of new infection in susceptible animals. Practice of dipping of teats with suitable antiseptic before and after milking should be advocated. Skills, knowledge and personal hygiene of the milk man are also play important role in management of mastitis. In conclusion, mastitis is the outmost important disease of dairy animals which should be early diagnosed using available diagnostic tools and treat with suitable antimicrobial agents after antibiogram.

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