

Coliform Mastitis in Dairy Cows

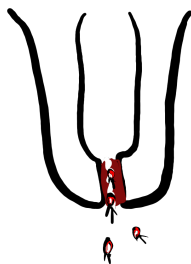
Etiology



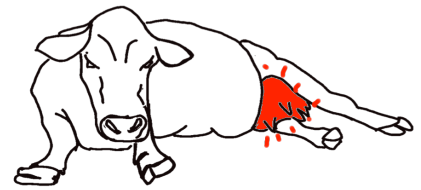
Coliform mastitis pathogens, mainly *Escherichia coli*, *Klebsiella* sp., and *Enterobacter* sp. are gram-negative rods in the Enterobacteriaceae family. The prevalence of coliform infection is low, constituting only 2-4% of mastitis cases; however, severe clinical mastitis is common and frequently fatal within days of bacterial invasion.

Risk Factors

Use of dung, sawdust bedding, damage of the teat ends by over-milking or poor milking machine maintenance, are all risk factors for coliform mastitis. Infection is most common in cows housed in total confinement or dry lots, and is rarely observed in pastured cows.



Pathogenesis



Unlike many of the common contagious mastitis pathogens, *E.coli*, *Klebsiella*, and *Enterobacter* are opportunistic bacteria found in feces. Though coliforms may invade and cause mastitis through hematogenous or percutaneous routes, the most frequent route of invasion is through the teat canal. Infections typically occur in multiparous cows from two weeks before until two weeks after calving when the teat canal is most vulnerable to bacterial invasion and the cow is immunocompromised. Coliform mastitis also commonly occurs close to the drying off period if the keratin plug fails to form in the teat canal or no dry-cow treatment is pursued by the producer.

In most cows, coliform bacteria do not cause clinical mastitis upon invading the gland. The bacteria briefly multiply, but infections are cleared within one to two days by host defences. However, susceptible cows may become infected after a single exposure to the teat canal. After the initial introduction into the canal, the bacteria quickly invade the teat cistern and proliferate with release of endotoxins. The endotoxins cause an increase in vascular

permeability, a marked influx of neutrophils, and extensive cytokine release resulting in necrosis and severe vascular leakage.

Clinical Signs



The common clinical signs of coliform mastitis are associated with the release of endotoxin and include swelling of the udder, watery milk with small flakes, decreased milk production, fever, and anorexia.

Gross lesions of coliform mastitis consist of marked oedema, haemorrhage, and necrosis of mammary tissues.

Secretions in the cisterns are usually serosanguineous with small clots of fibrin or coagulated casein, which may obstruct the ducts.

Peracute cases may result in the pyrexia, tachycardia, and shock of endotoxemia.

Infections typically affect only one quarter, but cause clinical mastitis in up to 90% of cases and are usually associated with systemic disease.

Some cases of coliform mastitis may become chronic, but most more than 50% of infections end within ten days. Considering the typical timing and systemic effects of coliform mastitis,

If the cow survives the initial endotoxemia, the necrotic mammary tissue will be sequestered from the unaffected tissue and sloughed. Gangrenous mastitis is usually not caused by coliform infection alone, but secondary invasion of *Staphylococcus aureus* may lead to gangrenous change.

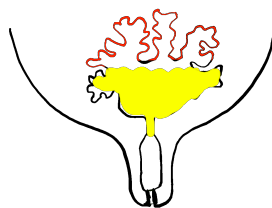
Differential Diagnosis

Include parturient hypocalcemia , carbohydrate overload with rumen acidosis.

Treatment

Even though the bacterial invasion begins in the mammary gland, treatment of coliform mastitis must also combat the systemic endotoxemia.

1.Regular stripping



Stripping of the affected quarter several times a day, in conjunction with oxytocin injections, has also been utilised to reduce the number of bacteria and endotoxin in the gland.

2. Use of anti-inflammatories and antibiotics

Broad spectrum intravenous antimicrobials are given to severely affected cows to reduce the bacteraemia which may be present in up to 48% of coliform mastitis cases.

Anti-inflammatories are necessary to reduce swelling and reduce the cow's temperature, thus alleviating discomfort.

3. Intramammary infusions

Intramammary infusions of antibiotics typically do not affect the outcome of coliform mastitis cases but may be beneficial in decreasing pathogenic gram-positive organisms within the mammary gland.

4. fluid therapy

fluid therapy may also be necessary to prevent shock and maintain overall hydration status

5 . Use of Supplements i.e. pow. Safty Milk pro@ 1 sachet B.D. for 5-10 days (which helps in killing the bacteria, reduce pain/ inflammation)/pow.Fibru-Lyse (Reduce Fibrosis) @ 1 sachet Daily for 5-10 days

Minimise the Risk (Control)

Prevention of coliform mastitis is difficult because *Escherichia coli*, *Klebsiella*, and *Enterobacter* are ubiquitous in even the most well-managed dairies.

Improving pre-milking hygiene and frequent evaluation of milking machine function may reduce bacterial load and teat end changes.

Safty milk Forte Powder @ 1 sachet daily for 10 days/ once in month in the dry cow also very beneficial as it improve teat plug health, kills the bacteria as well as improve immunity

