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Popular Article

Comprehensive Insights into Milk Fever: Causes, Symptoms, Treatment and Prevention Strategies

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Introduction

Dairy farming stands as a cornerstone of agricultural economies worldwide, supplying essential nutrition in the form of milk and dairy products. However, within the realm of dairy herd management, one persistent challenge is emerging i.e. milk fever, scientifically known as hypocalcemia. This metabolic disorder strikes dairy cows in the critical periparturient period, presenting a cascade of detrimental effects on both the animals' health and farm productivity.

Milk fever occurs primarily during the transition from late pregnancy to early lactation when calcium demands soar to support milk production. Despite the advancements in veterinary science and herd management practices, it remains a prevalent concern, affecting dairy herds globally. The repercussions of milk fever extend beyond mere health implications, encompassing financial losses, compromised animal welfare, and diminished milk quality.

Milk fever

It is metabolic diseases occurring most commonly within 72 hour of parturition and characterized by hypocalcemia, changes in neuromuscular tone, recumbency, circulatory collapse and ultimately diminution of consciousness. The ailment manifests in both clinical and subclinical forms, impacting cows during their most susceptible phase- the transition period.

Incidence of Milk fever:

- 5-10 years age group are most commonly affected.
- Highly prevalent during 3^{rd} –7^{th} calving.
- Jerseys breed is the most susceptible than other breeds.
- Animals are highly susceptible when fed protein rich diet before and after parturition.
- Complete milking in first 48 hrs.
- Majority cases occur within 72 hours of postpartum.

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- Acid - diet decreases the incidences.
- Alkaline diet increases the incidence.

Etiology

- Low level of calcium in body (2.6mg%), due to excessive loss of calcium in colostrum.
- Taking less amount of food at parturition, results in impairment of calcium absorption from intestine.
- Deficiency of vitamin D.
- Failure of mobilization of Ca to circulation from body reserves(bone).
- Elevated estrogen levels interfere with Ca mobilization from bone.
- Hypomagnesaemia – decrease Ca mobilization from bone.
- Anion cation imbalance diet.

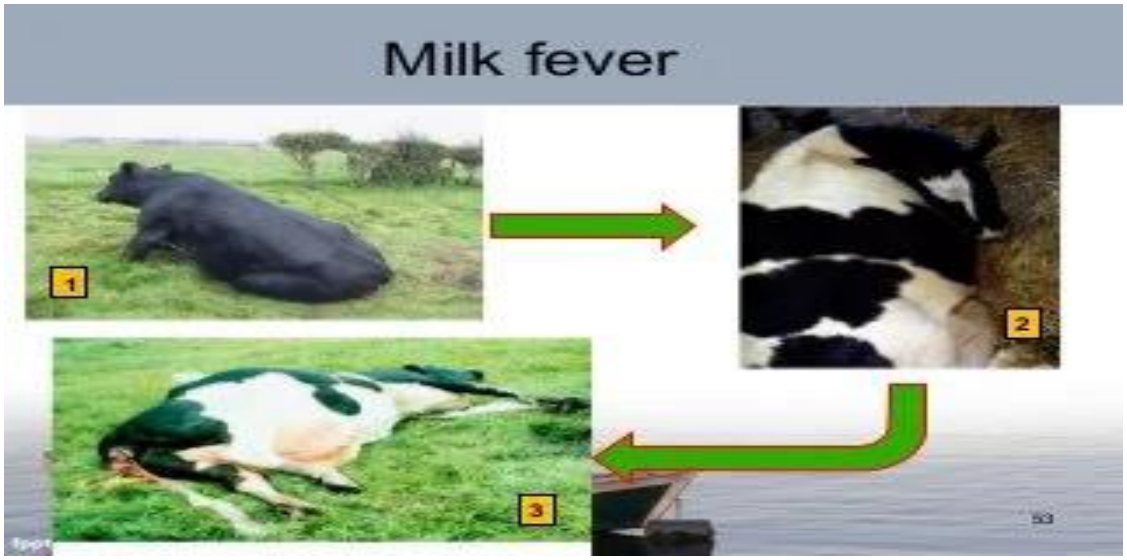

Figure 1. Stages of milk fever

Symptoms:

Clinical symptoms of milk fever vary with the stage of disease:

I Stage - prodromal stage

II Stage - Sternal recumbency

III Stage - Lateral recumbency

Stages of Milk fever:

Stage-1	Stage-2	Stage-3
• Hypersensitiveness • Excitement and tetany • Muscular tremor of head and limbs	• **Sternal recumbency** with lateral kink (S shaped posture)	• Pulse – impalpable • Limbs – flaccid, unable to get up

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• Disinclined to eat and move • Grinding of teeth • Protruding tongue • Stiff hind limb • Animals ataxic and falls easily	• No tetany found but animal is unable to get up • Muzzle – dry • Skin and extremities – cold • Temperature – Subnormal (97-101°F) • Pupil – dilated – no reflex • Relaxation of anus and loss of anal reflex- dung in rectum • Circulatory system - decrease heart sound – veins cannot be raised • Weak pulse, forced expiratory grunt and ruminal stasis	• Bloat if untreated – animal dies within a period of 12 – 24 hrs • Milk fever with hypomagnesaemia and hyperphosphatemia • Tetany and hypersensitiveness beyond 1st stage • Tetanic convulsion by touch or sound • Heat and respiratory rate- accelerated Death occurs due to respiratory failure

Diagnosis of Milk fever:

- Characteristic clinical signs.
- Sign related with serum levels of Ca, Mg, P.
- Estimation of Ca, P and Mg serum levels.
- Post mortem – pale muscle surrounded by normal color.

Treatment:

- Parentral injection of calcium salt (dose 1 gram per 45 kg body weight).
- Inj. calcium boro-gluconate (calborol)-450 ml (half i/v and half s/c)
- Inj. Vitamin D3-8 mg(i/m) single dose 3-10 days before parturition.
- Give ammonium chloride orally @ 23-25 gm over last few weeks of pregnancy increasing to 100gm/day at calving orally twice a day.

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Figure 2. Calcium Borogluconate (Treatment for milk fever)

Prevention:

- Dietary management Ca (<20gm /day) and P (<35 gm /day) during the transition period.
- Feed low Ca and normal level of P for 2 weeks prior to parturition. (Ca:P 1:3.3)
- Avoid sudden change in the diet (3- or 4-days' time for the change).
- Dietary **anion cation balance** (higher number of anions, in compare to cation).

Conclusion

In conclusion, milk fever presents a significant challenge in dairy management, particularly within the critical 72-hour window postpartum. Its incidence is influenced by factors such as age, breed, diet, and parity, with Jersey cows being particularly susceptible. The etiology involves complex interactions including calcium deficiency, impaired absorption, hormonal imbalances, and dietary factors. Clinical manifestations progress through distinct stages, necessitating prompt diagnosis and intervention. Treatment typically involves calcium supplementation, often administered parenterally, alongside supportive measures. Prevention strategies focus on dietary management, gradual dietary transitions, and maintaining appropriate mineral balances. Overall, a comprehensive understanding of milk fever and its management is essential for ensuring the welfare and productivity of dairy herds.

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