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Clinical management and resolution of haemagalactia in a lactating dairy cow: A case study

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Abstract

A five-year-old recently purchased Holstein Friesian crossbred cow with a history of two calvings was presented with haemagalactia two days after parturition. Clinical examination revealed severe edema involving both hind quarters of the udder, accompanied by the presence of blood in milk from all quarters. No external injuries were observed, and all vital parameters remained within normal physiological limits. The animal was treated with intra-mammary infusion of adrenaline diluted in distilled water for three consecutive days, along with systemic administration of frusemide and analgesic therapy. Topical application of magnesium sulphate paste was carried out for five days, and oral vitamin C supplementation along with lemon was recommended as supportive therapy.

Keywords: Dairy cow, haemagalactia, mammary gland, udder edema, adrenaline

1. Introduction

The bovine mammary gland is susceptible to a wide range of disorders affecting both milk quality and yield. The mammary gland disorders can be categorized into congenital disorders, physiological, diseases of teats and, and inflammatory (mastitis) and traumatic disorders including haemagalactia [1]. Haemagalactia (haemolactia) refers to the presence of blood or blood clots in milk and is commonly observed in dairy animals during the early postpartum period. Although frequently self-limiting, the condition may result in considerable economic losses owing to reduced milk quality and disposal of affected milk. Haemagalactia can be caused by several factors, such as injury to the udder, fragile blood vessels in the mammary gland, blood flow changes around the time of calving, or infections like Leptospirosis.

The etiology of haemagalactia is multifactorial and includes physiological vascular changes during early lactation, severe udder edema, trauma to the mammary gland, capillary fragility, thrombocytopenia, and infectious diseases such as leptospirosis [2, 3]. Differential diagnosis is essential to distinguish non-inflammatory haemagalactia from infectious conditions such as hemorrhagic coliform mastitis, staphylococcal mastitis, and other severe mammary infections. Early differentiation facilitates prompt therapeutic intervention and helps avoid unnecessary antimicrobial usage [4]. In bovine leptospirosis, particularly during acute infections caused by *Leptospira* serovars Hardjo and Pomona, lactating cows may exhibit a sudden decline in milk production with the secretion of thick, yellowish, blood-tinged milk containing clots [3]. Apart from *Leptospira* spp., certain chromogenic microorganisms, including *Serratia marcescens*, pigmented *Micrococcus* species, and *Monascus purpureus*, can impart a reddish discoloration to milk, thereby mimicking haemorrhage [5]. Severe physiological udder edema and pendulous udders during the periparturient period predispose animals to blood-mixed milk due to increased venous pressure, hyperemia, and diapedesis within mammary tissues [6]. Trauma resulting from mechanical milking, accidental injuries, or self-inflicted lesions may also lead to localized mammary hemorrhage [7]. Furthermore, ingestion of certain plants such as *Rubia tinctorum* (dyer's madder) may cause reddish discoloration of milk without actual hemorrhage. Diagnosis is primarily based on clinical examination and gross observation of milk. A simple sedimentation test may aid differentiation, wherein blood cells settle at the bottom of the container in cases of true hemorrhage, whereas uniform discoloration persists in cases associated with hemolysis or plant pigments [8].

Animals unresponsive to conventional therapy should be evaluated for platelet abnormalities, as thrombocytopenia has also been implicated in haemagalactia [2].

2. Material and Methods

2.1 Case history and clinical observation

A five-year-old Holstein Friesian crossbred cow, recently purchased and in its second parity, was presented with a history of blood-tinged milk from all four quarters for one day. The condition developed two days after calving. The animal was reportedly a high-yielding dairy cow, and the owner could not identify any history of trauma to the udder.

General clinical examination revealed severe edema involving both hind quarters of the udder, with the right hind quarter being more severely affected. Fresh blood was observed in milk obtained from all quarters. The animal was bright, alert, and responsive, and all vital parameters, including rectal temperature, heart rate, and respiratory rate, were within normal physiological limits. No external injuries or lesions were evident on the udder or teats. Milk samples were subjected to the California Mastitis Test (CMT), which yielded negative results, indicating the absence of significant inflammatory changes suggestive of mastitis. Based on clinical findings, a tentative diagnosis of postpartum haemagalactia associated with severe udder edema was made.

2.2 Treatment, results and discussion

The animal was treated with intramammary infusion of 5 mL adrenaline (1:1000) diluted with 15 mL sterile distilled water once daily for three consecutive days. In addition, frusemide was administered intramuscularly at a dose rate of 1 mg/kg body weight to reduce udder edema. Analgesic therapy (Dolopar bolus, two boli orally once daily) was continued for five days. Topical application of 250 g magnesium sulphate paste over the affected udder was carried out daily for five days. Oral vitamin C supplementation and lemon juice were also recommended as supportive therapy to enhance capillary integrity and promote recovery.

Improvement in milk color was evident from the first day of treatment. Progressive reduction in udder edema and blood admixture in milk was observed during the treatment period, and the animal made an uneventful recovery within five days. The mammary vasculature is highly responsive to vasoconstrictors, making local hemostatic therapy particularly effective in managing haemagalactia. Intramammary administration of adrenaline induces localized vasoconstriction, thereby reducing capillary bleeding and facilitating rapid clinical recovery [9]. Supportive therapies aimed at reducing vascular permeability and enhancing capillary stability, such as vitamin C supplementation, further contribute to favorable outcomes [10, 11]. Adjunctive measures, including anti-inflammatory therapy, management of udder edema, and regular milking of affected quarters, are essential to prevent clot formation and maintain patency of the teat canal. Complete cessation of milking is generally discouraged because retained blood clots may obstruct milk flow and predispose the animal to secondary mastitis [9]. Since the etiology of haemagalactia varies considerably, ranging from simple trauma to severe systemic infections, diagnostic evaluation should include appropriate field tests such as CMT or Hotis test to exclude concurrent mastitis and guide therapeutic decisions [12]. Given these overlapping factors, complex cases frequently necessitate a multi-day, multi-pronged therapeutic approach tailored to the specific etiology.

3. Implications & Conclusions

Haemagalactia in dairy cattle is a multifactorial condition requiring careful clinical evaluation to identify the underlying etiology and institute appropriate therapy. Severe mammary hemorrhage may occasionally necessitate advanced interventions such as blood transfusion. Owing to the high sensitivity of the mammary vasculature to vasoconstrictors, intramammary adrenaline remains an effective therapeutic option in cases of non-infectious haemagalactia. Supportive therapies aimed at reducing vascular fragility and udder edema, including vitamin C supplementation and topical osmotic agents, may enhance recovery. As clinical response may take several days, a comprehensive and individualized therapeutic approach is often required.

Further research should focus on the development of rapid point-of-care diagnostic tools for differentiating traumatic, physiological, and infectious causes of blood-tinged milk. Additionally, investigations into genetic determinants of udder vascular integrity, improved transition cow management practices, and the impact of haemagalactia on dairy product safety and quality are warranted.

4. Acknowledgement

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5. Conflict of Interest

None.

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