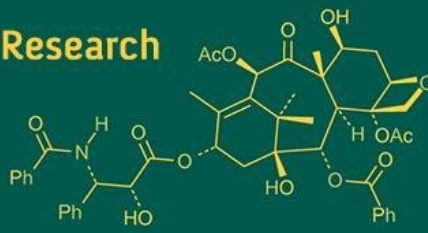


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Successful management of Haemogalactia in a Sahiwal cow: A case report with therapeutic insights

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Abstract

Haemogalactia (blood in the milk) is a common clinical condition observed in dairy animals during early lactation. Homeopathy is an alternative system of medicine, which is emerging due to the antimicrobial resistance. A 6-year-old Sahiwal cow was presented to the Referral Veterinary Polyclinic (RVP), ICAR-IVRI with a 5-day history of blood-tinged milk following parturition. Clinical examination revealed severe mammary edema without external injuries on the udder. Hemato-biochemical examination and serum calcium values were within the normal range. PCR analysis was negative for *Leptospira* spp. and hemo-protozoan disease. California mastitis test (CMT) was performed and found to be negative for subclinical mastitis. Culture of milk did not yield any growth of organism. Milk sample was centrifuged and intact red blood cells were observed, indicating a hemorrhagic origin. Based on these findings, the case was diagnosed as hemaggalactia.

Initially, conventional therapy including intramammary infusion, styptics, anti-inflammatories and proteolytic enzymes did not result in improvement. Subsequently, adjunct homeopathy formulations (Carbo animalis 200c, Silicea 200c and Conium maculatum 200c) was administered orally for 20 days. Gradual improvement was observed, with complete resolution of haemogalactia.

This case highlights the importance of systemic differential diagnosis in Haemogalactia and suggests that adjunct therapeutic approach may be considered in refractory cases.

Keywords: Haemogalactia, Sahiwal cow, differential diagnosis, adjunct therapy

Introduction

Haemogalactia, also referred to as haemaggalactia or hemolactia or hematogalactia, is characterized by the presence of blood in milk and is commonly observed in dairy animals during early lactation period (Constable *et al.*, 2007) [11]. The condition is generally benign and self-limiting but requires differentiation from infectious mastitis, teat injuries, and systemic diseases to avoid unnecessary antimicrobial use (Muhammad and Rashid, 2015) [9].

In recent years, concerns regarding antimicrobial resistance have emphasized the need for judicious antibiotic use and exploration of alternative therapeutic approaches (World Health Organization, 2017) [14].

With increasing concerns regarding antimicrobial resistance, there is a growing emphasis on judicious antibiotic use and exploration of alternative therapeutic strategies. In this context, documenting successful management approaches for non-infectious mammary disorders is of significant clinical relevance.

Etiology

Hemogalactia are multifactorial in nature and may arise either due to physiological or pathological causes. Capillary fragility and diapedesis immediately after calving or increased mammary vascularity due to hormonal changes are the physiological causes may results in hemogalactia (Purohit *et al.*, 2014) [10]. Other pathological causes include, bacterial disease such as Leptospirosis and traumatic injury to the teat and udder. In the context of diapedesis, haemorrhage occurs immediately after calving, is a condition frequently noticed in dairy calves due the passage of RBCs from the capillary walls into the alveoli of mammary tissue. During calving, the mammary gland and teat will get hyperaemic congestion, undergo uniform distribution, subsequently resulting in the extravasation of blood. Leptospirosis is the major factor responsible for causing hemaggalactia in dairy cows, clinically characterized

by pyrexia, inappetence and presence of blood clots in the milk from all the quarters. Physiological edema immediately after parturition, predisposes to the passage of blood in milk. External trauma or injury to the udder and teat may result in hemaggalactiae. Various bacteria induces systemic infections, resulting in intravascular hemolysis, capillary damage, causes subsequent pink discolouration of milk (Balhara *et al.*, 2016) ^[2]. Other factors such as feeding of toxic plants belonging under Rubiceace family, leads to the reddish discoloration of milk. Also, Thrombocytopenia (George *et al.*, 2008) ^[5] or coagulation disorders and ascorbic acid or Vitamin C deficiency are the conditions leads to the presence of blood in the milk (Muhammad and Rashid, 2015) ^[9]. The causative agent should be identified for the timely diagnosis and successful therapeutic intervention.

The underlying mechanism often involves increased vascular permeability and rupture of fragile capillaries, resulting in leakage of erythrocytes into alveolar milk.

Case description

A 6-year-old recently parturient Sahiwal cow (Fig. 1) was presented to the Referral Veterinary Polyclinic (RVP), ICAR-IVRI with the history of presence of blood in the milk for the 5 days post-calving. Clinical examination revealed marked edema (Fig. 2) on the mammary gland along the presence of blood in the milk (Fig. 3) with evidence of external injuries on the teat or udder. All the vital parameters such as rectal temperature, heart rate, respiratory rate, pulse rate was normal except reduced rumen motility. Blood samples were collected for hemato-biochemical examination and serum calcium estimation. In addition,

EDTA blood was collected for the susceptibility of *Leptospira* spp. and hemo-protozoan disease. Hemato-biochemical examination (Table 1) and mineral profile (Table 2) were within the normal range. PCR analysis was negative for *Leptospira* spp. and hemo-protozoan disease. California mastitis test (CMT) was performed (Fig.4) and found to be negative for subclinical mastitis. Culture of milk did not yield any growth of organism. Milk sample was centrifuged at 2500 rpm for 10 minutes to rule out the presence of intact RBCs and lysed RBCs for the snap shot diagnosis of hemorrhage and other causative factors. Centrifuged milk sample showed the sediment of intact red blood cells, which is clearly indicating hemorrhage (Fig.6).

Results and Treatment

Based on these findings, the case was diagnosed as hemaggalactia likely due to capillary fragility and diapedesis associated with early lactation. Initially, the animal was treated with conventional therapy including Inj. Adrenaline (5 ml in 20 ml NS) intramammary infusion, Inj. Ethamsylate 10 ml IM, Inj. Flunixin meglumine @ 2 mg/kg IM and Bol. Serratiopeptidase 2 PO BID for 3 days. Animal did not show any significant improvement following treatment. Subsequently, animal was initiated with adjunct homeopathy formulations using Carbo animalis 200c, Silicea 200c and Conium maculatum 200c. Approximately, 10 drops of each preparation were given orally twice daily for a period of 20 days. Following the treatment, tgradual improvement in milk colour was observed within 10 days, with complete resolution of haemogalactia by the end of treatment period. Marked improvement was found following the therapeutic intervention.



Fig 1: Image showing 6-year-old Sahiwal parturient cow



Fig 2: Image showing blood mixed milk from the Sahiwal cow



Fig 3: Image showing negative California Mastitis Test

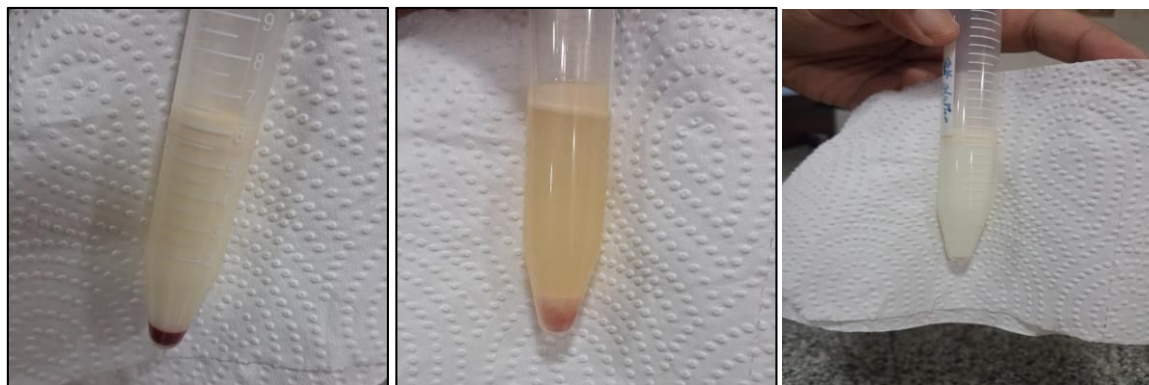


Fig 4: Image showing gradual changes in milk after the homeopathy therapy

Discussion

Haemogalactia during early lactation is primarily associated with vascular congestion and increased capillary fragility of the mammary gland (Purohit *et al.*, 2014) ^[10]. The condition is typically self-limiting within 3-7 days; however, persistence indicates the need for intervention (Smith, 2015) ^[13].

Inj. Adrenaline mixed with 20 ml Normal Saline by intramammary route as per (Sivaprasad *et al.*, 2024) ^[12] for the arrest of haemorrhage. Animal didn't show any improvement on the colour of milk. The lack of response to conventional therapy in the present case suggests that the underlying pathology may not be inflammatory or infectious in nature, but rather vascular.

Homeopathic interventions have been explored as alternatives to antibiotics in livestock, particularly in organic farming systems (Camerlink *et al.*, 2010) ^[3]. Although evidence remains limited, some studies have reported beneficial effects in mammary gland disorders (Doehring and Sundrum, 2016; Kashif *et al.*, 2024) ^[4, 7].

Further, homeopathy formulation using the combination of Carbo animalis 200c, Silicea 200c and Conium maculatum 200c was administered. After 10 days of therapy, the milk colour was gradually changed and significant improvement

was observed after 20 days of treatment. Silicea has the absorptive effect on favours and scar tissue (Muhammad and Rashid, 2015) ^[9]. (Kumar, 2020) ^[6] has used this combination to treat fibrosis in cows. (Maldrewar, 1996) ^[8] has stated that conium maculatum acts on glandular system resulting in reducing the indurations by altering its structure. (Johri and Barberwal, 2023) ^[11] has reported that, the anti-inflammatory property of carbo animalis attenuates the udder swelling. Silicea has its role in removing the foreign material from the udder tissues and carbo animalis assists in the improvement of circulation to the mammary tissue.

For the clinical improvement, a comprehensive approach should be undertaken for the differential diagnosis and therapeutic approach. The flowchart (Fig.5) highlights a stepwise clinical and laboratory approach for accurate diagnosis and rational treatment.

Following the introduction of adjunct homeopathic therapy, gradual clinical improvement was observed. Although the mechanism of action remains unclear, similar observations have been reported in limited veterinary studies. However, it is important to emphasize that evidence supporting homeopathy in veterinary medicine remains inconclusive, and further controlled clinical trials are required to establish its efficacy.

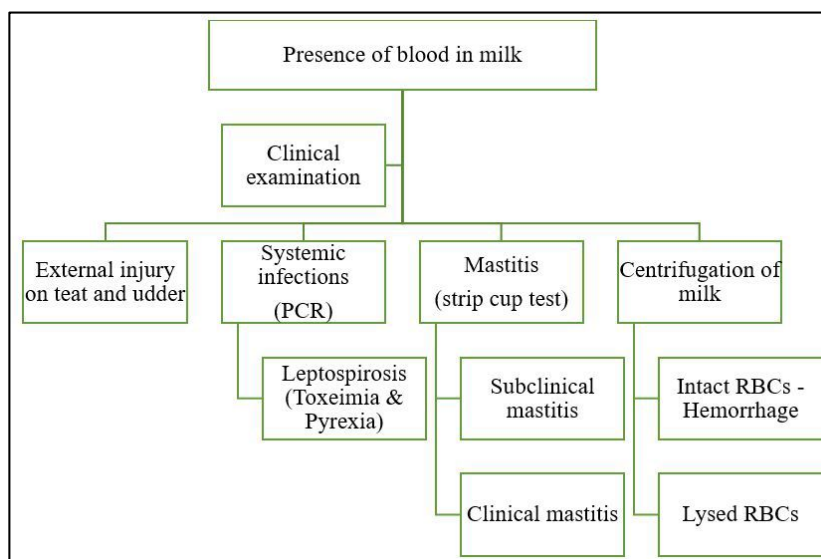


Fig 5: Diagnostic algorithm for differentiation of Haemogalactia from mastitis, trauma, and systemic diseases in dairy cows.

Conclusion

Hemogalactia is a benign, self-limiting condition commonly seen in early lactation dairy cows. Proper clinical examination and laboratory screening are essential to

differentiate it from mastitis. Conservative management without antibiotics is sufficient in most cases.

This case demonstrates that clinical improvement may be observed following adjunct therapeutic approach when

conventional treatment fails. However, further controlled studies are needed to validate these findings.

Conflict of Interest

There is no conflict of interest in publishing the paper.

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