

Treatment Protocol for Cow Suffering from Haemogalactia / Haemolactia

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Abstract

Fresh blood in milk of a cow aged more than 10 years and history of Ampicillin sodium and Cloxacillin sodium intramammary infusion was observed. The case was intervened with injection of Gentamicin sulphate @ 2mg/Kg BW, intramuscular daily for 5 days along with injection of Vitamin B Complex @10 ml on alternate days and Meloxicam @ 0.5 mg/Kg BW, daily for 5 days. Blood sample of cow was tested for leptospirosis with a negative report. Treatment was changed to Streptopenicillin @ 2.50 gmintramuscular daily along with injection of Chlorphenaramine maleate @ 10 ml intramuscular daily for 5 days. The cow did not recover with aforesaid treatments. Finally, treatment was changed to Cefixime/Cephalosporin @ 2.5 gmintramuscular daily for 5 days along with Boric Acid powder (8 gm) and Alum (8 gm) mixed with sugarcane molasses given orally for 7 days to stop bleeding. Turmeric powder was suggested at the dose of 200 gm orally on first day followed by 50 gm daily for 10 days; then continued @ 25 gm daily for another 20 days to strengthen immunity and to tackle the infection. The cow was recovered with last set of treatment in a course of 10 days. Water in well was chlorinated and cattle owner was advised to use bleaching powder@30-50 gm at an interval of 15 days. In conclusion, combined treatment of Cephalosporin + Boric Acid +Alum + Turmeric powder has reduced the number of hemolactiadays and it does not have any negative effect on milk production.

Keywords: Hemolactia, Haemogalactia, economic loss, diagnosis, treatment, control

Introduction

Blood in the milk is called as haemolactia or haemogalactia. In normal physiological state, hemolactia is occurred at the end of the lactation or first few days of lactation and this will not be continued more than 14 days. Hemolactia is due to various aetiologies. Hemolactia is due to diapedeas in the alveoli of mammary gland. This occurs frequently immediately after calving and this may occur at any lactation stage. Therefore, higher quantity of RBCs is available in the milk as look as reddish or pinkish milk and red cream and red sediment at the bottom. On the other side, harsh milking by hand or machine causes damage of the epithelial lining in the teat cistern inturn induce haemorrhage by diapedeas is considered as pathological (Heidrich and Renk, 1967). Trauma or injury in udder and teat is another common cause of hemolactia. Dark brown coloured as like unclotted venous blood in the udder section indicates severe haemorrhage from a major vein of the udder, which is another cause of hemolactia (Ayaz, 1999). Pendulous and severe udder edema especially in high milk producing cows predispose to hemolactia.

There are several infections caused by bacteria (*Leptospiraspp*, *Serratiamarcescens*, *Brevibacteriumerythrogenes*, *Micrococcus cerasinus*, *M. roseus*, *M. chromidrogenes rubber*, *Sarcinarubra*, *Lactorubefaciensgruber* etc.) or viruses and red yeast (*Monascuspurpureus*) induces intravascular hemolysis and capillary damage in udder which inturn reddish or pinkish discolouration of milk (Balhara *et al.*, www.buffalopedia.cirb.res.in/). Leptospirosis causes cold mastitis (mastitis without sign of inflammation) and hemolactia in dairy animals especially in endemic area of leptospiral infection. In leptospiral infected cattle, hemolactia is appeared in all four teats and milk is thick in constancy and contains blood and milk clots. Flaccidity of udder is another characteristic clinical feature of cold mastitis induced by leptospira. Non-specific clinical signs such as fever, haemoglobinuria, abortion, loss of appetite and decreased milk production are observed. Mastitis would be developed after few days of these clinical signs (Champawat *et al.*, 1984). Feed or fodder contains natural toxins of dyes causes reddish discolouration of milk, which is due to feeding of fodder with group of family

belonging to *Rubiaceae* (*Rubiactinctorum*). Certain plant toxin is also present in Ranunculi, Poplars, Conifers, Alders etc. may also cause capillary damage which inturn causes reddish or pinkish discolouration of milk. Moldy sweet clover (Dicoumarin poisoning) feeding also causes hemolactia. Leafy plants such as spurge (*Euphorbia*) and sedge and shave grasses contain a red dye which in-turn induce reddish or pinkish discolouration of milk (Bahara *et al.*, www.buffalopedia.cirb.res.in/).

Cattle suffered with diseases which create low blood platelet count (thrombocytopenia) induce reddish or pinkish discolouration of milk due to leakage of blood into milk (George *et al.*, 2008). Other causes of hemolactia include vitamin C deficiency (Heidrich and Renk, 1967), rough milking and acute or chronic mastitis (Bahara *et al.*, www.buffalopedia.cirb.res.in/). Hemolactia induces economic losses to the dairy farmers because rejection of milk and treatment cost. This condition is sporadic in general, however, several lactating dairy cows affected at a time. Hemolactia in crossbred cattle as in present case report has not been reported earlier in Andaman and Nicobar Islands.

Case history and treatment

A resident of North Wandoor, South Andaman, Andaman and Nicobar Islands, Mr. B. Loknadhan visited

ICAR-CIARI, Port Blair with a complaint of fresh blood in milk of a cow aged more than 10 years and history of Ampicillin sodium and Cloxacillin sodium intramammary infusion that failed to recover condition of the cow. Scientists of ICAR-CIARI intervened the case with injection of Gentamicin sulphate@2mg/Kg BW, IM daily for 5 days along with injection of Vitamin B Complex@10 ml on alternate days and Meloxicam@0.5 mg/Kg BW, daily for 5 days. Blood sample of cow was tested for leptospirosis with a negative report. Treatment was changed to Streptopenicillin@ 2.5 gm IM daily along with injection of Chlorphenaramine maleate @10 ml IM daily for 5 days. The cow did not recover with aforesaid treatments.

Finally, treatment was changed to Cefixime/ Cephalosporin@2.5 gm IM daily for 5 days along with Boric Acid powder (8 gm) and Alum (8 gm) mixed with sugarcane molasses given orally for 7 days to stop bleeding. Turmeric powder was suggested at the dose of 200 gm orally on first day followed by 50 gm daily for 10 days; then continued @25 gm daily for another 20 days to strengthen immunity and to tackle the infection. The cow was recovered with last set of treatment in a course of 10 days. Water in well was chlorinated and cattle owner was advised to use bleaching powder@30-50 gm at an interval of 15 days (Figure 1).



Milk color before treatment intervention



Milk color after 2 days of treatment



Milk color after 4 days of treatment



Milk color after 10 days of treatment

Figure 1. Effect of Cephalosporin + Boric Acid + Alum + Turmeric treatment in haemolactia in dairy cattle

Discussion

Hemolactias diagnosed based on the clinical signs. If you collect and undisturbed the suspected milk in a transparent glass container for a few hours, blood clot will appear at the bottom of the container indicates haemorrhage in the udder. Uniform reddish discoloration throughout the milk and no sedimentation indicates there is lysis of RBCs (George *et al.*, 2008). Centrifugation of the suspected milk with a speed of 2500 rpm for 10 min results in visible RBC sedimentation at the bottom of the transparent glass tube. In suspected cases, in which extremely little or hidden blood in milk, Benzidinetest or Hemocultslide test (Smith-Kline Diagnostics) is suitable to confirm the presence of hemolactia.

Blood platelet count estimation is another way to diagnose the causes of hemolactia as thrombocytopenia is one of the causes of hemolactia (George *et al.*, 2008). Surf field mastitis test is used to rule out mastitis as a cause of hemolactia. For this test, equal quantity of 3% solution of Surf excel house hold detergent is mixed with milk sample of each quarter separately and formation of gel indicates the blood is due to the presence of mastitis (Muhammad *et al.*, 2010). Centrifugation of fresh milk decides the reddish or pinkish discoloration is due to either intact RBCs (haemorrhage in the udder) or due to lysed RBCs (leptospirosis or any other systemic microbial infections

or due to red dye in fodder). Alternatively keep the sample of milk in undisturbed condition for several hours in a transparent glass container if centrifuge is not available and then observe for RBC sedimentation at the bottom of the container. RBC bead formation at the bottom of the centrifuge tube suggests severe haemorrhage in the udder or teat.

Different treatment strategies are to be adopted according to aetiologies. Intravenous administration of 300-450 ml of calcium borogluconate plus magnesium and phosphorous is the standard and suitable treatment (Radostits *et al.*, 2007). Treatment need to be repeated daily for 2-3 days as calcium is a coagulant. Parenteral coagulants have higher cure rates as compared to calcium borogluconate (Radostits *et al.* (2007). Injection Adrenochromemonosemicarbazone (5 mg/ml; 8-10 times for a cow or buffalo) or injection Tranexamic acid (500 mg/ml; 10-15 ml for a cow or buffalo) can be used to treat a cow or buffalo suffering from hemolactia (Muhammad *et al.*, 1997). However, injectable coagulants are not effective in the treatment of hemolactia in cows and buffaloes (Eddy and Clark, 1982, Ayaz, 1999).

Intramammary infusions of coagulants such as injections Thrombonar or Thombostst (Park Devis Pharma) are also recommended (Hungerford, 1990). A strong solution of 2000 units/ml is used in the affected quarters

the intramammary infusion for a local coagulant effect after complete milked out. This treatment is very useful especially in severe or emergency cases of hemolactia. It is well documented that the blood circulatory system of the udder is very sensitive to the vasoconstrictor action of adrenaline (Heidrich and Renk, 1967). Therefore, Adrenaline (1:1000) can be used as subcutaneous injection to treat hemolactia in cows and buffaloes. In severe case of hemolactia, 5 ml of adrenaline is mixed with 20 ml of normal saline and this mixed solution should be infused into the teat with hemolactia or reddish or pinkish milk (Venkatesan *et al.*, 2017). Ergot alkaloids (like Ergono vinemaleate: Ergometrine; methylergometrine hydrogen maleate: Methergine; ergotamine tartrate and dihydroergotamine) have a variable degree of vasoconstrictor effect and thus can also be used in treatment of hemolactia when haemorrhage is from a small blood vessels in the udder or teat. Injection Sergotonine (Rhône Merieux, France) is also used to treat hemolactia. Each 100 ml of this injection contains double sulphate of 5-hydroxytryptamine and creatinine (0.25 g), ergometrine maleate (0.02 g) and isotonic saline solution q.s. to 100 ml. Dose is 3-4 ml per 100 kgBWt intramuscularly in cows, buffaloes and mares and repeated after 48 hours. Dissolve 30 tablets of vitamin-C (500 mg tablet) in 500 ml of water and administer as a drench. Further, hyper vitaminosis C is not generally adverse to the cattle instead it is beneficial.

Cows and buffaloes are suffering from hemolactia can be treated with the following recipe (antioxidants): dissolve 15 sachets of Acetylcysteine (200 mg per sachet) in 500 ml of water. Filter this solution with 4 layer muslin cloth. Add one liter of warm 5% dextrose normal saline solution with this filtered solution and administer slow intravenously. This injectable solution should be warm upto body temperature and then inject intravenously. After 30 min, administer 30 tablets of vitamin-C in the form of a drench. Repeat intravenous injection and oral administration of vitamin-C table for 2-3 days. Camphor (*Camphora officinarum*) is used to treat hemolactia as oral or injectable form in buffaloes (Raval *et al.*, 1998). Camphor contains volatile acid, which has a styptic action. Camphor (two tablets) in banana twice a day helps to treat hemolactia in buffaloes. Affected animal

recovers within 3-5 days. Camphor can probably be more effectively given in an injectable form i.e. 30-60 ml of camphorated oil into the pectoral muscle (Udall, 1954). This camphorated oil can be formulated by mixing 20 parts of camphor powder (finely ground) in 80 parts of olive oil or cotton oil (Milks, 1964). If the aetiology of hemolactia is not known, antibiotics should be given as in the form of injection and intramammary route (Hungerford, 1990). Lincomycin and Spiramycin together is penetrating extremely well into the udder. In leptospiral mastitis, Streptopenicillin @ 25 mg/kg B Wt intramuscular for 3-5 days is the best drug to treat hemolactia. Blood transfusion of 4-6 litres from a healthy donor is to be considered when the animal is suffering from thrombocytopenia and any other coagulation defects are suspected as the cause of hemolactia (George *et al.*, 2008). The aetiology of thrombocytopenia should be diagnosed properly and to be treated according.

Earlier workers treated a total of 102 mastitis (fibrosed: 40, non-fibrosed: 62) and five cases each of hemolactia and udder edema in lactating buffaloes with a homeopathic complex consisting of *Phytolacca* 200c, *Calcareafluorica* 200c, *Silicea* 30c, *Balladonna* 30c, *Bryonia* 30c, *Arnica* 30c, *Conium* 30c and *Ipecacuanaha* 30c. Dose of this complex was 10 pills four times daily until recovery. Treatment was 80 and 96.72% effective in cases of fibrotic mastitis and non-fibrosed mastitis, respectively. Recovery period was 21-42 days (fibrosed) and 4-15 days (non-fibrosed). Buffaloes are suffering from udder edema and hemolactia recovered within 2-5 days (Varsheny and Naresh, 2004). These investigators ascribed the effectiveness of this commercial homeopathic preparation in the treatment of mastitis and hemolactia due to anti-inflammatory effect of *Phytolacca* on glandular and fibrous tissue, analgesic effects of *Bryonia*, absorptive effect of *Silicea* on fibrotic and scar tissue, anti-inflammatory effect of *Belladonna*, anti-hemorrhagic and antiseptic effect of *Arnica* and local decongestive effect of *Ipecacuanaha* and *Calcareafluorica*. In addition to standard therapy, an Integrative Therapy with 100g of curry leaves and 1 lemon through oral daily for seven days is also effectively cure hemolactia (Venkatesan *et al.*, 2017). Curry leaf is traditionally used in Ayurvedic medical practice in cases with intestinal bleeding in

human (Alikhan and Khanum, 2005). The client was advised to provide soft bedding and also to avoid knuckling method of milking to help in healing and prevent further damages. Intravenous administration of 500-ml of 0.37% formaldehyde solution with or without intravenous calcium solutions or intramuscular vitamin K injections once per day for 4-8 days cured hemolactia (Ismail, 2016). Etamsylate is a synthetic haemostatic, anti-haemorrhagic and non-thrombogenic drug indicated in cases of capillary bleeding has been used in human and veterinary medicine (Garay *et al.*, 2006). Cows received three consecutive daily doses of etamsylate at 15 mg/kg intramuscularly have cured hemolactia within 3-5 days and milk production was also increased significantly (Fraile *et al.*, 2019).

Widely touted ethnoveterinary practice for treatment of hemolactia in cows or buffaloes consist of dissolving 250 g of turmeric powder in one liter of warm milk, addition of 250 g of *Sambalodeaves* (Indian Wild Pepper *Leaves*) and giving as a drench for 2-3 days. Many farmers resort to oral administration of a cake of Lifebuoy soap dissolved in half to one liter of milk for 2-3 days. This soap is not likely to be toxic because lactating cows are normally fed sponifiedfat to increase milk yield. If several cows or buffaloes in a herd suffered from hemolactia and do not respond to antibiotics and other treatment measures, the herd should be vaccinated against leptospirosis (Hungerford, 1990). A vaccine that contains several strains of leptospira along with other organisms is now commercially available.

Ancillary and supportive treatment is to be given to the hemolactia affected cows. Tape the end of normal quarters and allow the calf to suckle milk from the teat having hemolactia. Calves do not care about blood in milk and do not allow the affected cow/buffaloes to run. Rather keep her tethered as running will aggravate the condition. Application of ice cold water or crushed ice helps in control of haemorrhage through vasoconstriction. The affected animals should be tethered with sand as the bedding material which should be hosted with cold water 3-4 times in a day. Animal suffering with hemolactia should be allowed to sit on cold sand, this leads to vasoconstriction and control of haemorrhage in the udder

or teat. George *et al.* (2008) recommends that the affected teat be milked only once a day. If this approach does not work after several days, milking of affected quarter should be totally stopped. It should be remembered that total stoppage of milking may cause formation of severe clots in the teat. Through cleanliness in the animal shed and on the dairy farm should be instituted as squalid managemental condition predispose to blood in milk. The feed or fodder which is suspected for causing hemolactia should be changed. We attempted various treatment protocols [(Gentamicin sulphate @ 2mg/Kg BW + Vitamin B Complex @ 10 ml + Mel oxim cam @ 0.5 mg/Kg BW), (Streptopenicillin @ 2.5 gm + Chlorphenamine maleate @ 10 ml)], but failed, then finally changed and succeeded with the following treatment regiment, Cefixime/Cephalosporin @ 2.5 gm IM daily for 5 days along with Boric Acid powder (8 gm) and Alum (8 gm) mixed with sugarcane molasses given orally for 7 days to stop bleeding. Turmeric powder was suggested at the dose of 200 gm orally on first day followed by 50 gm daily for 10 days; then continued @ 25 gm daily for another 20 days to strengthen immunity and to tackle the infection.

The cow was recovered with last set of treatment in a course of 10 days. Water in well was chlorinated and cattle owner was advised to use bleaching powder @ 30-50 gm at an interval of 15 days. In conclusion, combined treatment of Cephalosporin + Boric Acid + Alum + Turmeric has reduced the number of hemolactia days and it did not have any negative effect on milk production.

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