

Successful Treatment of Post Parturient Haemoglobinuria with Acid Inorganic Phosphorus in a Murrah Buffalo

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Abstract

A three year old murrah buffalo was presented to the Large animal medicine unit of Teaching Veterinary Clinical Complex, Namakkal with the history of passing coffee coloured urine, reduced appetite, reduced milk yield, dullness. Clinical examination revealed pale mucous membrane, tachycardia, tachypnea and haemoglobinuria. Haematological examination revealed reduced haemoglobin and haematocrit level and total erythrocyte count. Serum biochemistry showed reduction in phosphorus level. The buffalo was treated successfully with sodium dihydrogen phosphate at twelve hourly interval for five days. An uneventful recovery was recorded.

Key Words: Haemoglobinuria, Buffalo, Dihydrogen phosphate, Anaemia, hypophosphatemia

Post parturient haemoglobinuria is a sporadic disease of high producing buffalo and cattle characterized by rapid intravascular haemolysis, anaemia, haemoglobinuria, weakness, marked decrease in milk production (Mahmut *et al.*, 2009). Diet low in phosphorus or unsupplemented with phosphorus are usually associated with the disease in dairy cattle of North America (Radostitis *et al.*, 2007). Post parturient haemoglobinuria in New Zealand is a herd problem usually affected younger cows and may be related

to copper deficiency (Macwillians *et al.*, 1982).

Feeding of cruciferous plants has been the suspected causes of hypophosphatemia and have been associated with haemolytic anaemia in cows. The exact etiology and pathogenesis still remain unknown because of different etiological factors have been reported to be associated with disease in different parts of world. The paper reports a case of post parturient haemoglobinuria due to hypophosphatemia and its successful therapeutic management.

Case History and Observation

A primiparous Murrah buffalo was brought to the Teaching Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal with the history of passing coffee coloured urine, reduced appetite, reduction in milk yield and dullness for the past five days. The animal calved 35 days back. Clinical examination revealed pale mucous membrane, normal rectal temperature, tachypnea, tachycardia, haemoglobinuria and reduced ruminal motility. Haematology revealed a haemoglobin concentration 5.6g %, haematocrit 18%, total erythrocyte count $3.8 \times 10^6/\text{cumm}$ and total leukocyte count $8.5 \times 10^3/\text{cumm}$.

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The serum phosphorus level was 2.8mg/dl, calcium 8.8mg/dl and potassium 4.4mg/dl. On the basis of clinical signs, haematology and serum biochemistry the case was diagnosed as post parturient haemoglobinuria due to hypophosphatemia.

Treatment and Discussion

The animal was treated with sodium dihydrogen orthophosphate given intravenously @60g in 300ml distilled water, same dose subcutaneously at twelve hour interval along with supportive treatment with iron dextran 5ml intramuscularly on alternate days for a period of five days. The animal recovered successfully after five days of treatment.

Decreased serum phosphorous in the present study were in accordance with the reports of *Kurundkar et al.* (1981). Hypophosphatemia resulted due to low dietary intake of phosphorus and heavy drainage of phosphorous through milk particularly in high milk yielding animals(*Radostits et al.*, 2007). Fodders grown on phosphorous deficient soils are consequently low in phosphorous content and prolonged feeding on such fodders can lead to hypophosphatemia (*Akhtar et al.*,2007). *Duranni et al* (2008) reported low haemoglobin concentration, haematocrit values and erythrocyte count which indicated severe anaemia. Hypophosphatemia results in decrease in red blood cell glycolysis and adenosine triphosphate (ATP) synthesis. Subnormal concentration of ATP predispose red blood cells to altered function and structure, a loss of normal deformability and an increase in fragility and haemolysis with

resultant haemoglobinemia and haemoglobinuria (*Radostits et al.*, 2007).

Administration of organic phosphorous intramuscularly along with inorganic phosphorous(sodium dihydrogen phosphate) along with 10% dextrose and subcutaneously and orally has been shown to give better results (*Mohammad et al.*, 2001). Administration of 60g sodium acid phosphate in 300ml of distilled water, a similar dose subcutaneously at twelve hourly on three occasion and similar daily doses by mouth along with calcium and haematinic during convalescence (*Radostits et al.*, 2007). In this case the low level of phosphorous could be due to low content of phosphorous in the soil and in the diet.

Conclusion

Supplementation of acid inorganic phosphorous can be successfully used for the therapeutic management of post parturient haemoglobinuria due to phosphorous deficiency in a buffalo.

References

- Akhtar, M.Z., Khan, A., Khan, M.Z. and Muhammad, G. Haematobiochemical aspects of parturient haemoglobinuria in buffalo.2007. *Turk. J. Vet. Anim. Sci.* **31**: 119-123.
- Durrani, A.Z., Nadeem Kamal, A.R. Shakoori, Younus, R.M. 2010. Prevalence of post parturient haemoglobinuria in buffalo and therapeutic trials with toldimfos sodium and tea leaves in Pakistan. *Turk. J. Vet. Anim. Sci.* **34(1)**: 45-51.

- Kurundkar, V.D., Deshpande, B.D., Singh, B., Anantwar, L.G. Biochemical and pathological changes in clinical cases of haemoglobinuria in buffaloes.1981. *Indian J. Anim. Sci.* **51**: 35-38.
- Macwilliams, P.S., Searcy, G.P., Bellamy, J.E.C. 1982. Bovine post parturient hemoglobinuria: a review of the literature. *Can. Vet. J.* **23**: 309-312.
- Mahmut, O.K., Guzelbektes, H., Sen, I., Coskun, A. and Ozturk, AS. 2009. Post-Parturient Haemoglobinuria in Three Dairy Cows: A Case Report. *Bull. Vet. Inst. Pulaway*, **53**: 421-423.
- Muhammad, G., Saqib, M., Athar, M. 2001. A rational approach to diagnosis, treatment and control of parturient haemoglobinuria (red water) in buffaloes and cattle. *Pak. Vet. J.* **21**: 214- 219.
- Radostits, O.M., Clive, C. Gay, Kenneth W. Hinchcliff, Peter D. Constable. 2007. Post parturient haemoglobinuria. In *Veterinary Medicine-A textbook of the diseases of the cattle, horse, sheep, pigs and goats*, 10th edition, Saunders Elsevier Ltd, Philadelphia, p. 1682-1683.