

---

## MEDICAL MANAGEMENT OF POST-PARTUM HYPOCALCEMIC ALLIED HYPOKALEMIC ALERT DOWNER COW

P. Mohan<sup>1\*</sup>, Kalaiselvan Elangavan<sup>2</sup>, G. J. Renukaradhya<sup>3</sup>,  
Swetha<sup>4</sup>, and Sashidhar Ballari<sup>5</sup>

<sup>1\*</sup> Associate Professor and Head<sup>2</sup>,

Assistant Professor Department of Veterinary Surgery and Radiology<sup>3,4</sup>,  
Assistant Professor, Department of Veterinary Gynaecology and Obstetrics<sup>5</sup>,  
Assistant Professor and Head, Department of Veterinary Pathology,  
Veterinary College, Gadag-582101

\*Corresponding author Email: [drmohantnr@gmail.com](mailto:drmohantnr@gmail.com)

---

### ABSTRACT

A cross bred cow after fortnights of second calving has presented to the Veterinary Dispensary, Panrutti, Tamilnadu with the history recumbency, voiding habits were normal. On vital signs examination absence of abnormal findings except no fluid thrill on rumen percussion, drastic drop in milk as compared to previous day. On detailed blood profiling hypocalcemia and low potassium were noticed. The cow treated systematically using standard dosages of Injection Calcium Borogluconate and subcutaneously, followed by Inj. Tolfenamic acid (NSAID) Inj. Chlorpheniramine maleate, Inj. Methylcobalamine, Inj. Sodium Acid Phosphate and Potassium Chloride 120 gram powder twice daily (*per os*) till the rise up. On fourth day from initial therapy successful recovery was documented via rising, voiding and feeding habits.

Based on the systemic therapy response and diagnosis the case of hypocalcemic-hypokalemic alert downer cow was treated lucratively.

**Keywords:** Downer cow syndrome, Post-partum, Hypocalcaemia, Hypokalemia, Cross Bred Cow

### INTRODUCTION

The downer cow is defined as post-parturient recumbent cow that does not get up even after two successive treatments with calcium (Geetha and Gnanraj, 2017). 'Downer cow' or 'Post parturient recumbency' is also described a cow that is so injured, weak sick to stand or walk (Carolyn *et al.*, 2007). Downer cow is the cow that remains on sternal recumbency for more than 24 hours after initial down, and refractory to primary therapy (Merck's Vet. Manual, 2005). The affected animals are usually bright and alert but are unable to stand. Depending upon the symptoms

observed the downer cow can be of two types i.e. 'Alert downer' and 'Non-alert downer'. Alert downers are more and less active, showing normal appetite, defecation and urination and normal body temperature. They usually positioned as sternal recumbency, crawling with forelimbs to get up but could not raise the hind quarter. This condition is borne to nerve injury during parturition time and due to potassium depletion owing to prolonged recumbency (Kronfeld, 1976). The non-alert downers are signs with critically ill and are in lateral recumbent position, chronic inappetance, dull and depression. Due to constant pressure from the floor upon pressure points of non-alert downers tends to have pressure sores.

During recumbent the legs are splayed with one either side of the body (Sack *et al.*, 2002). Because the adductors are innervated by the obturator nerve, an animal adopts a base wide stance or, in recumbency, a sitting position with both hind limbs extended forward. There is considerable risk that the adductor muscle will be damaged and that permanent recumbency will result. Further this syndrome always associated with hypocalcemia, calcium depletion may arise owing to reduced calcium absorption in the digestive tract due to poor appetite (Chakrabarti, 2016).

## CASE HISTORY AND OBSERVATIONS

The cow was alert and normal temperature (100.9 F), respiration (24 / min), rumen motility (2/ 5 min), elevation of heart rate (86 beats / min). The cow was able to hold its head up, exhibited wagging of tail with perineal response (Van Metre *et al.*, 2001). No musculoskeletal abnormalities were observed on physical examination. The drop in milk yield along with decreased muscle tone found during examination. The decreased blood calcium (6.7mg/dL) and potassium (1.36 mmol/L) levels were ascertained in blood biochemical evaluation.

## TREATMENT AND DISCUSSION

The animal was treated with injection, Calcium Borogluconate 200 ml intravenously and 250 ml subcutaneously, Inj.Tolfenamic acid a nonsteroidal anti inflammatory drug (NSAID) was administered at the dose rate of 2 mg/kg b.wt, Inj.Chlorphenaramine maleate 10 ml, intramuscularly, Inj.Methylcobalamine 10 ml, intravenously, and advised Sodium Acid phosphate (SAP) and potassium chloride (KCL) 120 gram for three days twice daily from day two. The case was ruled out for Acute ruminal acidosis as there was no diarrhea, fluid thrill upon percussion on the left paralumbar fossa, Udder was examined



Downer cow before treatment

and ruled out for coliform mastitis, udder and milk were normal in consistency. The case had no history of caesarean section, peritonitis and no history of any sort of physical injury.

In this present case had low potassium level (Hypokalemia) and treated by supplementing it, this is in agreement with (Kronfeld, 1976). Further, the cow was recumbent for more than 24 hours which is in agreement with Merck's Vet. Manual, (2005). Sack *et al.*, (2002) has reported that when recumbent the legs are splayed with one either side of the body, whereas this case splaying of legs were not noticed. Muscle weakness may occur due to reduced calcium which results in recumbency leading to downer cow syndrome. Hypophosphataemia may be due to increased activity of parathyroid hormone



Downer cow after treatment

and loss of phosphorus through milk. Downer cow is a disease condition which is always associated with hypocalcaemia; calcium depletion may arise owing to reduced calcium absorption in the digestive tract due to poor appetite (Chakrabarti, 2016).

Although in this patient recovery noticed on fourth day, Phillip, 2015 carried out an experiment on 103 numbers of downers cow with satisfactory level of nursing and observed that 18 numbers of cows had recovered by day 3 and 31 numbers of had recovered by day 7 and the remaining 54 cows had recovered eventually. However, Radostitis *et al.*, (2000) reported recovery of a downer cow after 14 days of sternal recumbency. The case report by Geetha and Tensing (2017) recorded crossbred Jersey downer's cow

showed symptoms of sternal recumbency and recovered after 30 days of treatment. Hypokalemia may be attributed to reduction in the resting potential of cell membrane which results in decreased excitability of neuromuscular tissue and muscle weakness (Radostits *et al.*, 2007); this finding similar with our potassium profile, hypokalemia further augments recumbency of downer cow. So the case report suggests that early therapy and response monitoring might have incurred success.

### **SUMMARY**

A cross bred cow after fortnights of second calving has presented to the Veterinary Dispensary, Panrutti, Tamilnadu with the history recumbency, voiding habits were normal. On vital signs examination absence of abnormal findings except no fluid thrill on rumen percussion, drastic drop in milk as compared to previous day. The animal was treated with injection, Calcium Borogluconate 200 ml intravenously and 250 ml subcutaneously, Inj. Tolfenamic acid a nonsteroidal anti inflammatory drug (NSAID) was administered at the dose rate of 2 mg/kg b.wt, Inj. Chlorphenaramine maleate 10 ml, intramuscularly, Inj. Methylcobalamine 10 ml, intravenously, and advised Sodium Acid phosphate (SAP) and potassium chloride (KCL) 120 gram for three days twice daily from day

two. The cow treated systematically using standard dosages of Injection Calcium Borogluconate and subcutaneously, followed by Inj. Tolfenamic acid (NSAID) Inj. Chlorphenaramine maleate, Inj. Methylcobalamine, Inj. Sodium Acid Phosphate and Potassium Chloride 120 gram powder twice daily (*per os*) till the rise up. On fourth day from initial therapy successful recovery was documented via rising, voiding and feeding habits. Based on the systemic therapy response and diagnosis, it was concluded that the case of hypocalcemic-hypokalemic alert downer cow was treated successfully.

### **Acknowledgement**

We acknowledge with thanks Dr. V. Rajesh, Veterinary Assistant Surgeon, V. Agaram, Villupuram, Tamil Nadu - 605 105 for his salient contribution in field and providing data for this write up.

### **REFERENCES**

- Carolyn, L. Stull, Michael, A. Payne, Steven, L. Berry and James P. R. 2007. A review of the causes, prevention, and welfare of nonambulatory cattle. *J. Am. Vet. Med. Assoc.* 231 (2): 227-234.
- Chakrabarti, A. 2016. Text book of Clinical Veterinary Medicine. 4<sup>th</sup> Edn. Kalyani Publishers, New Delhi, pp. 667-671

- Constable, P. D., Hinchcliff, K. W, Done, S. H. and Grunberg, W. 2017. *Veterinary Medicine - A text book of the diseases of cattle, horses, sheep, pigs, and goats*. 11<sup>th</sup> Ed.. Elsevier, St. Louis, Missouri. pp. 1693-1699.
- Geetha, T. and Tensingh Gnanaraj, P. 2017. Successful Therapeutic Management of a Downer Cow. *Indian Veterinary Journal* 94 (05): 58-59. Retrieved from <https://pdfs.semanticscholar.org>.
- Kronfeld, D.S. 1976. Management of downer cows. *Mod. Vet. Prac.*, 57:599.
- Sack, W, Wensing, C.J.G, Dyce, K.M, 2002. Obturator paralysis. In: *Textbook of Veterinary Anatomy*, Saunders, pp. 169-172.
- Phillip J. Poulton (2015). Examination, diagnosis, prognosis and management of downer cows. PhD Thesis submitted to Faculty of Veterinary and Agriculture Sciences, The University of Melbourne. 24-28pp
- Radostitis, O.M., Gay, C.C., Hinchcliff, K.W. and Constable, P.D. 2007. *Veterinary Medicine- A text book of the diseases of cattle, horses, sheep, pigs and goats*. 10<sup>th</sup> Ed.. Elsevier. W.B. Saunders Company, Philadelphia. pp. 2045–2050
- Radostits, M. R., Clove, C. G., Blood, D. C. and Kenneth, W. H. 2000. *Veterinary Medicine*, 9<sup>th</sup> Ed. W.B. Saunders Company Ltd. New York, USA. pp. 1435
- Van Metre, D. C., Callan, R. J. and Garry, F. B. 2001. Examination of musculoskeletal system in recumbent cattle. *Food Anim. Comp.* 23(2): S5-S13