Int.J.Curr.Microbiol.App.Sci (2020) *9*(5): 1058-1062

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 9 Number 5 (2020)**
Journal homepage: http://www.ijcmas.com

Original Research Article https://doi.org/10.20546/ijcmas.2020.905.116

Comprehensive Clinical Evaluation of Recumbent Cows with Musculoskeletal Disorders - A Study of 179 Downer Cows

S. Sivaraman*, G. Vijayakumar, G. A. Balasubramaniam, S. Dharmaceelan and P. Selvaraj

Department of Veterinary Clinical Medicine, Veterinary College and Institute, Namakkal, Tamil Nadu 637 002, Tamil Nadu Veterinary and Animal Sciences University, Chennai 600 051, India

**Corresponding author*

Keywords

Recumbent cows-Musculoskeletal disorders –clinical signs

Article Info

Accepted:
10 April 2020
Available Online:
10 May 2020

A B S T R A C T

Recumbent cow syndrome or Downer cow refers to cows that become recumbent and fail to rise. Five hundred and fifty six cows presented in recumbency to veterinary hospital, Namakkal district of Tamil Nadu during the period June 2015 to May 2019 were studied. The musculoskeletal disorders was 32.19 per cent (n= 179).The various musculoskeletal disorders contributing for recumbent cow in the presence study included peroneal nerve paralysis (28.49 per cent), radial nerve paralysis (13.41 per cent), stifle joint injury (21.79 per cent), tibial nerve paralysis (14.53 per cent), sciatic nerve paresis (7.82 per cent), hip dislocation (6.70 per cent), gastrocnemius muscle rupture (3.35 per cent) and others including obturator nerve paresis, hip fracture, femur fracture and peroneus tersius muscle rupture (7 per cent). The pathagnomonic clinical signs of recumbent cows with musculoskeletal disorders were listed in detail.

Introduction

Recumbent cow syndrome or Downer cow refers to cows that become recumbent and fail to rise. The syndrome is caused by several etiological factors including hypocalcaemia, hypokalemia, hypophosphatemia, septicaemia, muscle damage, botulism, blood protozoan diseases, intoxication, peritonitis, ruminal acidosis etc. Prolonged recumbency results in varying degrees of ischemic necrosis of major muscles of the hind limbs, particularly the semitendious muscle and muscles caudal to stifle. Prolonged compression of the muscle leads to tissue anoxia, cell damage and inflammation which cause swelling; the

swelling causes a further increase in pressure which limits tissue perfusion and leads to a detrimental cascade of events. Once the animal become recumbent due to any primary etiology later it will go for the secondary recumbency which will complicate the cases and its recovery (Huxley, 2006). This study was undertaken to record the clinical signs of musculoskeletal for the early diagnosis and to decide the therapeutic strategies of the recumbent cows presented to Veterinary Hospital, Veterinary College and Research Institute, Namakkal in Tamil Nadu.

Materials and Methods

Cows that were brought to the Large Animal Medical unit of Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal in recumbency were utilized for the study. Clinical examination of the animal was undertaken as per standard methods Radostits, O.M *et al.,* (2000).The various musculoskeletal disorders contributing for recumbent cows in the presence study were peroneal nerve paralysis, radial nerve paralysis, stifle joint injury, tibial nerve paralysis, sciatic paresis, hip dislocation, gastrocnemius muscle rupture and others including obturator nerve paresis, hip fracture, femur fracture and peroneus tersius muscle rupture. The data obtained were analysed and presented.

Results and Discussion

Five hundred and fifty six recumbent cows were presented during the study period with various etiologies. The musculoskeletal disorders included of 179 cases. (32.19 per cent) The various musculoskeletal and nervous disorders contributing for recumbent cow in the presence study included peroneal nerve paralysis (28.49 per cent),radial nerve paralysis (13.41 per cent), stifle joint injury (21.79 per cent), tibial nerve paralysis (14.53 per cent), sciatic nerve paresis (7.82 per cent), hip dislocation (6.70 per cent), gastrocnemius muscle rupture (3.35 per cent) and others including obturator nerve paresis, hip fracture, femur fracture and peroneus tersius muscle rupture(7 per cent). Poulton, P. (2015) reported typical clinical sign noticed in cows with peroneal nerve paralysis was knuckling of fetlock while dropped elbow was noticed in radial nerve paralysis.

Crepitation of the affected bone was noticed in fracture of bones while hock joint touching the ground was noticed in gastrocnemius muscle rupture. Huxley (2006) reported that fractures (femur, pelvis), dislocations (hip, sacro iliac) and muscular (rupture of the hind limb adductors or gastrocnemius or severe bruising due to heavy falls onto concrete could cause be considered as primary causes of recumbency in cattle. Cow with peroneal nerve paralysis was seen standing with the digit knuckled over onto the dorsal surface of the pastern and fetlock. The hock appeared to be overextended. In mild cases, the fetlock knuckle over intermittently during ambulation. In severe cases, the dorsal surface of the hoof was dragged along the ground, and sensation to the dorsum of the fetlock was often decreased. Testing of reflexes demonstrated that hock flexion was absent, but stifle and hip flexion are normal. Constable *et al.,* (2017)

Proximal radial paralysis - the elbow was dropped, the carpus and fetlock were in partial flexion, and the limb was usually dragged. In distal radial paralysis, because the triceps muscles remained functional, dropping of the elbow was minimal. However, paresis affecting carpal and fetlock position was present. Radial nerve paralysis was seen primarily in adult cattle after prolonged lateral recumbency due to pressure ischemia over the lateral aspect of the humerus.

Fig.1 Radial paralysis

Fig.2 Tibial paralysis

Fig.3 Sciatic and Tibial paralysis

Fig.4 Peroneal nerve Paralysis

Fig.5 Obturator nerve paralysis

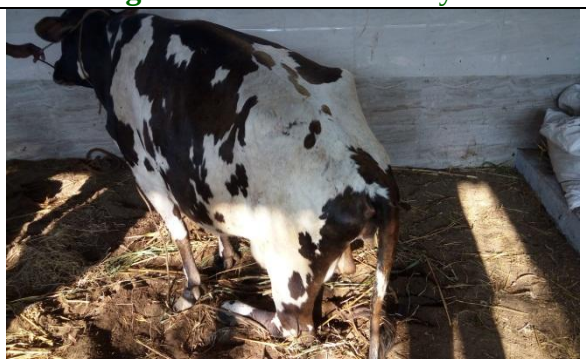

Fig.6 Gastrocnemius muscle rupture

Fig.7 Stifle Dislocation

Fig.8 Rupture of Peroneus tersius muscle

Clinical signs included inability to extend (bring forward) the elbow, carpus, and digits. The leg was dragged, which abraded the fetlock (Fig.1).

Tibial nerve paralysis

The hock joint was over flexed (dropped hock syndrome) and the fetlock was partially flexed. The gastrocnemius appeared to be longer than normal and gave the impression that it or its tendon could be ruptured. The fetlock was buckled, but the animal could walk and bear weight, although its attempts to do so were awkward. (Fig 2)

Sciatic nerve paralysis

Persistent knuckling of fetlock and slight "dropping" of the hock (Fig.3).

Peroneal nerve paralysis

Complete knuckling of fetlock was noticed. (Fig 4)

Obturator nerve paralysis

It occurs immediately after calving. Inability to adduct the hind limbs. Both the hind limbs extended towards the elbow. rupture Cows with obturator nerve paralysis assumed base-wide stance during standing and a sitting position with both hind limbs extended forward during recumbency was observed. (Fig 5)

Gastrocnemius muscle rupture

Hock remained flexed. When the animal attempted to stand, it rested on the hock and distal portion of the limb on the ground. Crepitation of the affected bone was noticed in fracture of bones while hock joint touching the ground was noticed in gastrocnemius muscle (Fig 6).

Stifle injury

Crepitus was evident when the tibia was rotated internally with one hand placed with the other hand on the tube calcanei. These animals also had swelling at the femoropatellar joint. The greater trochanter was displaced dorsally from its normal position in cows with coxofemoral joint luxation and the affected limb appeared shorter than the normal side when extended. During the manipulation of the hind limb for full abduction, adduction and moving the coxofemoral joint through its full range of flexion and extension, crepitus was felt in cows with femoral or pelvic fractures In case of cows with femur fracture at or distal to the level of the greater trochanter, the remainder of the hind limb did not move with the greater trochanter during abduction and adduction of the limb and flexion and extension of the hip (Fig 7).

Peroneus tersius muscle rupture- Hock was abnormally extended, while the stifle remains flexed. The animal cannot advance the limb normally, the calcanean tendon was flaccid and the hooves were dragged. A specific diagnostic feature was that the limb could be pulled backward without any resistance from the animal (Fig 8). The clinical signs of the musculoskeletal disorders of recumbent cows were documented in detail and were in accordance with the following authors findings (Huxley, 2006; Van Metre *et al.*, 2001), Poulton, (2015).

Acknowledgements

The authors are thankful to the Director of Clinics Tamil Nadu Veterinary and Animal Sciences University, Chennai 600 007 and the Dean, Veterinary College and Research Institute, Namakkal 637002 for the facilities provided during the study.

References

Constable, P. D., K. W. Hinchcliff, S. H. Done and W. Grunberg, 2017.Veterinary Medicine - A Textbook of the Diseases of Cattle, Horses, Sheep, Pigs and Goats, 11th edition,Saunders, USA, pp. 436-621.

Huxley J., 2006. Assessment and management of the recumbent cow. *In Pract.*, 28:176-184.

Poulton, P. 2015. Examination, diagnosis, prognosis and management of downer cows, Ph. D. thesis submitted to The University of Melbourne.

Radostits, O.M., I. G. J. Mayhew and D. M. Houston, (2000) Veterinary Clinical Examination and Diagnosis. W.B. Saunders, London.pp – 10-25

Rosenberger, G., 1979. Clinical examination of cattle. 2nd edn., Verlag Paul Parey, Berlin and Hamburg, Germany. pp. 184-212.

Van Metre, D. C., Callan, R. J., and Garry, F. B, 2001.Examination of the musculoskeletal system in recumbent cattle. *Compendium*, 23: 5-24.

How to cite this article:

Sivaraman. S., G. Vijayakumar, G. A. Balasubramaniam, S. Dharmaceelan and Selvaraj. P. 2020. Comprehensive Clinical Evaluation of Recumbent Cows with Musculoskeletal Disorders - A Study of 179 Downer Cows. *Int.J.Curr.Microbiol.App.Sci.* 9(05): 1058-1062.
doi: https://doi.org/10.20546/ijcmas.2020.905.116