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Case Study

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Clinical Case Study on Congenital Kyphosis with Vertebral Arthrogryposis in Calf

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ABSTRACT

The present paper reports a typical case of congenital kyphosis and Arthrogryposis in 2 months old Calf unable to walk and was not able to bear weight on hind limbs without support. On radiographic examination space between vertebras was reduced and ventral aspects of vertebras were found to be fused.

Key words: *Congenital, Arthrogryposis, Kyphosis, Calf and Surgery.*

INTRODUCTION

Arthrogryposis is a common permanent joint contracture deformities present at birth [1,2] reported Arthrogryposis for first time in 1950. Clinical condition of arthrogryposis has been reported in sheep, cattle, horses and goats[1,3,4]. The earlier finding have attributed arthrogryposis to either genetic or infective causes (Bunyaviridae). In cattle the incidence of Arthrogryposis is reported to be 37.2% in Lupine endemic areas of United States[5]. Commonly Arthrogryposis is associated with muscular atrophy which is supposed to be of nuerogenic origin[6]. Muscular atrophy in arthrogryposis has been attributed to no or decreased movement by the fetus due to a reduced innervations of muscles during pregnancy[3,4]. The present paper presents a typical case of posterior vertebral arthrogryposis with kyphosis in calf.

History and clinical observations

Three (3) months old crossbred male calf was presented to the teaching Veterinary Clinical Service Complex (TVCSC), Faculty of Veterinary Science and Animal Husbandry, (F.V.Sc and A.H), Alesteng. The calf was presented with history of weakness in hindquarters and was not able to stand without assistance since birth of calf three months ago. Calf was not able to bear weight properly on hindlegs and was not able to walk.due to recumbent conditions the decubital sores were present on lateral aspect of the hindlimbs, forelimbs and facial region.

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Clinical examination revealed excessive angulations of hock joint with convexity directed posteriorly. Both the hindlimbs were having normal angulations of joints upto hock joint from which it was upright. Except these skeletal abnormalities animal was normal in all vital parameters (body temperature, respiration rate, pulse and heart rate). Calf was suckling, urinating, and defecating and taking fodder normally, there was no history of anorexia. Animal was having dorsal curvature of spine in lumbar region (kyphosis). Hind lumbar region was having muscle atrophy and sensations were absent in hind limbs and tail.

On radiographical examination space between lumber vertebras was found to be decreased and excessive dorsal curvature of lumber vertebras was present (kyphosis) with associated abnormalities of the sacrum. Last lumbar vertebras were found to be fused on ventral side. Coccygeal vertebrae of tail were found to arise from last lumber vertebra.

Fig 1: Arthrogryposis of vertebral column of rear region

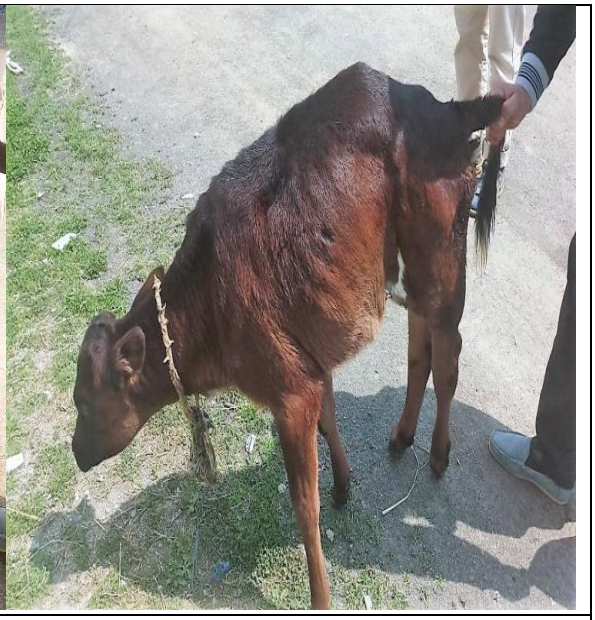

Fig 2: Excessive angulations of hock joint with convexity directed posteriorly

DISCUSSION

Arthrogryposis involve extreme form of contraction of tendons which results in deformity of joints which are extremely flexed or extended. Earlier studies have reported this clinical condition in wide spectrum of species horse, cattle, swine and caprine[7,8] has attributed this clinical condition to genetic components because of indiscriminate inbreeding[9]. has proposed that chromosomal aberrations result in vertebral agenesis and Arthrogryposis. In addition to genetic determinants some plants contain teratogenic compounds if ingested by the pregnant cow can results in Arthrogryposis that have dose dependent effect on fetus[10].

The present calf was of normal body weight without any other associated congenital defects. The present finding is contrarily to earlier findings which have reported other associated defects with Arthrogryposis[8,11]. The calf in present was found to have reduced sensation in hind portion of body which can be attributed to reduction in number of motor neurons[12]. Reduction in motor neurons results in reduced locomotor capacity and fibrosis of the joints, predisposing joints to fixation *i.e.* arthrogryposis[13]. No sensation was present in hind limbs which could be probably due to the malformation/incomplete genesis of spinal cord.

The prognosis of survival of calves affected with arthrogryposis is poor[3]. The condition of arthrogryposis worsens with growth due to secondary effects caused by increased stress of weight gain[10].

CONCLUSION

The condition of arthrogryposis is a congenital condition caused by wide spectrum of etiological agents which includes teratogenic compounds, genetic determinants and infective cause. Various research findings have been attributed inbreeding as major cause for arthrogryposis. The disease has a poor prognosis so the etiological agents of disease should be identified and ameliorated.

REFERENCES

1. Leipold, H. W. and Dennis, S. M., Congenital defects affecting bovine reproduction. In: Morrow D.A. (*ed*), *Current Therapy in Theriogenology.WB Saunders Co.*, Philadelphia, pp. 177-199 (1988).
2. Panter, K. E., Gardner, S. T., Lee, J. A., Pfisher, M. H., Ralphs, B. L., Stegelmeier, James, L. F., Important poisonous plants of the United States. In: Gupta R.C. (ed), Veterinary Toxicology: Basic and Clinical Principles. *Academic Press Elsevier*, pp. 837-842 (2007).
3. Sprake, P., Diseases of the bones, joints and connective tissues. In: Smith BP. (*ed*), *Large Animal Internal Medicine*. St. Louis: Elsevier Mosby p. 1106 (2015).
4. Green, B. T., Panter, K. E., Lee, S. T., Welch, K. D., Pfister, J. A., Gardner, D. R., Stegelmeier, B. L., & Davis, T. Z., Differences between Angus and Holstein cattle in the Lupinus leucophyllus induced inhibition of fetal activity. Toxicon: *Official Journal of the International Society on Toxinology*. **106:** pp 1–6 (2015).
5. Shupe, J. L., James, L. F., & Binnis, W., Observations on crooked calf disease. *Journal of the American Veterinary Medical Association*. **151(2):** pp 191–197 (1967b).
6. Hartley, W. J., & Wanner, R. A., Bovine congenital arthrogryposis in New South Wales. *Australian Veterinary Journal*. **50(5):** pp 185–188 (1974).
7. Latshaw, W. K., Veterinary developmental anatomy: a clinically oriented approach published by B.C Decker, *C V Mosby & Co*. PP 144 (1987).
8. Agerholm, J. S., Bendixen, C., Andersen, O. and Arnbjerg, J., Complex vertebral malformation in Holstein calves. *Journal of Veterinary Diagnostic investigation*, July 13 283-289 (2001).
9. Jones, C. J., Persomus elumbis (*vertebral agenesis and arthrogryposis*) in a still born Holstein calf Veterinary Pathology, **36:** 44 (1999).
10. Keeler, R. F., James, L., Shupe, J., & Vankampen, K., Lupine-induced crooked calf disease and a management method to reduce incidence. *Journal of Range Management*, **30(2):** pp. 97–102 (1977).
11. Kitano, Y., Yamashita, S. and Makinoda, K. A., congenital abnormality of calves suggestive of a new type of arthropod borne virus infection. *Journal of Comparative pathology*, **111(4):** 427-437 (1994).
12. Van Huffel, X., Weyns, A., Van Nassauw, L., Cockelbergh, D., & De Moor, A. ,Decreased number of alpha-motoneurons in the cervical intumescence of calves with arthrogryposis multiplex congenita of both thoracic limbs. *Veterinary Research Communications*, **12(2-3):** pp 237–243 (1988).
13. Green, B. T., Lee, S. T., Panter, K. E., & Brown, D. R., Piperidine alkaloids: human and food animal teratogens. Food and Chemical Toxicology: An *International Journal Published for the British Industrial Biological Research Association*, **50(6):** pp 2049–2055 (2012).