Vol 20 No 1, p 109-111

Short Communication

FOETAL ARTHROGRYPOSIS IN A CAMEL (*Camelus dromedarius*): A CASE REPORT

Amit Kumar, Mitesh Gaur, Sunil Kumar Raiya, Swati Ruhil, Kamlesh Jeengar, Vikas Choudhary, Mahesh Kumar, J.S. Mehta and G.N. Purohit

Department of Veterinary Gynaecology and Obstetrics, College of Veterinary and Animal Sciences, Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan, India

Dystocia of foetal origin is more common in the camels as compared to maternal dystocia (Purohit *et al,* 2011; Purohit, 2012) and causes include foetal maldisposition, foetal dropsical conditions and foetal monsters. Foetopelvic disproportion and monstrosities were considered rare in camel (Arthur *et al,* 1999). Foetal monstrosities reported for camel include *Schistosoma reflexus* (Elias, 1991; Gabra, 1993), Anencephaly (Sonfada *et al,* 2009) and *Perosomus elumbis* (Purohit *et al,* 2011). Likewise, hydrocephalus (Abubakr *et al,* 1998) and foetal anasarca (Tibary and Anouassi, 1997) are the reported foetal dropsical conditions.

Arthrogryposis is a congenital malformation characterised by curvature of the limbs, multiple articular rigidity and muscular dysplasia (Nawrot *et al,* 1980; Jubb *et al,* 1993). It is described in humans and in animals including cattle (Selvaraju *et al,* 2009), buffalo (Shukla *et al,* 2008; Singh *et al,* 2008), sheep and goat (Ali, 2011), pig (Leipold *et al,* 1978), horse (Maaskant *et al,* 2010; Mayhew, 1984) and African Elephant (Gage, 2003); Kittens (Bright *et al,* 2007) and puppies are infrequently affected (Greene *et al,* 1973; Jubb *et al,* 1993). However, similar cases have not been observed in camels. In the present study a case of arthrogryposis is reported in a male camel calf delivered by laparohysterotomy.

Case Report and Treatment

A female camel 6 to 8 years of age, in third parity, was presented at the Clinics of Department of Veterinary Gynaecology and Obstetrics, College of Veterinary and Animal Science, Rajasthan University of Veterinary and Animal Sciences, Bikaner, almost 24 hours after the onset of 2nd stage of labor with history of dystocia and handling by the local practitioners with prolonged attempts at delivery per vaginum. As a result, the birth canal was severely inflammed and oedematous alongwith a first degree perineal tear. Laparo-hysterotomy was done to remove the foetus.

The visibly exhausted and dehydrated camel was first treated with fluid replacement, antibiotics and analgesics to improve the general condition (Cebra *et al,* 1997). The camel was secured in sternal recumbency and premedicated with xylazine (0.25 mg/kg) intravenously (Gahlot, 2000) alongwith local infiltration anaesthesia (80-100 ml of 2% lignocaine hydrochloride). Animal was then taken in right lateral recumbent position (Purohit, 2012).

An oblique left ventrolateral laparohysterotomy was performed as per the described procedure (Elias, 1991; Purohit, 2012). An arthrogrypotic foetus was taken out with great difficulty as there was severe immobility of joints with muscle atrophy resulting in a rigid and irrevocably convoluted posture. Foetus had distorted extremities of the limbs and the neck was also twisted backward to one side. The detached foetal membranes were removed manually and uterus was subsequently cleaned with normal saline and metronidazole. The uterus was sutured with Cushing pattern using chromic catgut no. 3 followed by clearing of seroral surface of uterus with normal saline to lodge off any blood and fibrin clots. The uterus was then replaced back and 20 IU of oxytocin was injected in the uterine musculature. The peritoneum and transverse abdominus muscles were surured. Similarly internal oblique and external oblique muscles were sutured in two layers using Ford interlocking pattern with chromic catgut no. 3. Skin was subsequently closed with interrupted horizontal mattress sutures using sterile silk. A povidone iodine gauze was fixed on the suture line with the help of three superficial skin 'stay' sutures.

Post operative care included fluid replacement therapy and intramuscular administration of

SEND REPRINT REQUEST TO AMIT KUMAR email: dr.amit1172@gmail.com

Amoxycillin & Salbactum (Amoxirum forte, Virbac India) 4g at 12 hours interval, meloxicam (Melonex, Intas pharma) 125mg at 12 hours interval for a period of 7 days. Antihistaminic (Avilin vet, MSD Animal Health) 15ml was given intramuscularly. Additionally serratiopeptidase (Serakind, Mankind Pharma) 120mg was administered orally at 12 hours interval for 3 days to reduce the inflammatory swelling at operative site. Recovery was uneventful.

Discussion

In the present case examination of the foetus revealed contractures and ankylosis of all the joints with variable degree of flexion and extension (Fig 1) and hence termed as arthrogryposis. The foetus also featured torticollis. In the present case the flexion of joints and neck resulted in the dystocia in the camel. Forced extraction is seldom indicated in such cases as it may lead to serious trauma to the uterus and the birth canal. Hence laparohysterotomy was attempted to relieve the foetal arthrogryposis and was found effective without any post-operative complication.

Arthrogryposis is described as one of the most frequent defect of the musculoskeletal system and each distinct syndrome could be etiologically different (Greene *et al,* 1973). Arthrogryposis with associated malformations may be hereditary or a phenocopy of the mutant gene(s) effect produced by unknown factors (Nawrot *et al*, 1980). Homozygosity of a single recessive gene has been considered as a cause of arthrogryposis in Hereford, Charolais, Jersey and German Black Pied calves (Greene *et al,* 1973, Nawrot *et al,* 1980). Arthrogryposis combined with hydranencephaly has been described in several breeds and was associated with Akabane virus infection (Konno *et al,* 1982; Konno and Nakagawa, 1982). Arthrogryposis caused by viral infections is associated with abortion, stillbirth and other malformations such as scoliosis, lumbar lordosis, kyphosis, torticollis and hydranencephaly, depending on the age of the foetus during infection (Konno *et al,* 1982).

Fig 1. Arthrogryposis with torticollis in a camel calf.

It seems that arthrogryposis can have a wide variety of expressions and different type of lesions depending on the etiological agent, including genetic factors, and time of foetal development at the moment of the insult.

Reference

Abubakr MI, Ahmed AA and Nayel NM (1998). Hydrocephalus in a born male camel calf. Journal of Camel Practice and Research 5:309.

Ali AMH (2011). Causes and Management of Dystocia in Small Ruminants in Saudi Arabia. Journal of Agricultural and Veterinary Sciences 4(2):95-108.

Arthur GH, Noakes DE, Pearson H and Parkinson TJ (1999). Reproduction in the camel. In: Arthur GH, Noakes DE, Pearson H and Parkinson TJ (eds) Veterinary Reproduction and Obstetrics, WB Saunders, London. pp 659-666.

Bright SR, Girling SL, O'Neill T and Innes JF (2007). Partial tarsal arthrodesis and botulinum toxin A injection for correction of tarsal arthrogryposis in a cat. Journal of Small Animal Practice 48(1):39-42.

Cebra CK, Cebra ML, Garry FB and Johnson LW (1997). Surgical and non-surgical correction of uterine torsion in new world camelids: 20 cases (1990-1996). Journal of American Veterinary Medical Association 211:600-602

Elias E (1991). Left ventrolateral caesarean section in three dromedary camels (*Camelus dromedarius*). Veterinary Surgery 20:323-325.

Gabra HS (1993). Teratology- A monstrous foetus in a one humped camel (*Camelus dromedarius*). Camel Newsletter, ASCAD. pp 17-19.

Gage LJ (2003). Dystocia in an African Elephant (*Loxodonta Africana*). Joint conference of the American Association of Zoo Veterinarians, Association of Reptile and Amphibian Veterinarians and the Nutrition Advisory Group, 4-10 October 2003, Minneapolis, Minnesota. 2003:88.

Gahlot TK (2000). Surgery of dromedary camel. In: Gahlot TK, Singh J (Eds). Selected Topics on Camelids. Camelid Publishers India. pp 286-356.

Greene HJ, Leipold HW, Huston K and Huston K (1973). Bovine congenital defects in calves. American Journal of Veterinary Research 34:887-891.

Jubb KVF, Kennedy PC and Palmer N (1993). Pathology of Domestic Animals. Academic Press; 4 edition. ISBN-13: 978-0123916051

Konno S, Moriwaki M and Nakagawa M (1982). Akabane disease in cattle: Congenital abnormalities caused by viral infection. Spontaneous disease. Veterinary Pathology 19:246-266.

Konno S and Nakagawa M (1982). Akabane disease in cattle: Congenital abnormalities caused by viral infection. Experimental disease. Veterinary Pathology 19:267-279.

Leipold HW, Ely R, Schoneweis D (1978). Arthrogryposis in piglets. Swine Day, Manhattan, K.S., November 9, 1978. pp 38.

Maaskant, A, De Bruijn, CM, Schutrups, AH, and Stout TAE (2010). Dystocia in Friesian mares: Prevalence, causes and outcome following caesarean section. Equine Veterinary Education 22(4):190-195.

Mayhew IG (1984) Neuromuscular Arthrogryposis Multiplex Congenita in a thoroughbred foal. Veterinary Pathology 21:187-192.

Nawrot PS, Howell WE and Leipold HW (1980). Arthrogryposis: An inherited defect in newborn calves. Australian Veterinay Journal 56:359-364.

Purohit GN, Mehta JS, Dholpuria S, Barolia Y, Kumar P, Shekhar C and Yadav SP (2011). Dystocia in dromedary camels: handling and outcome of fourteen cases. Theriogenology Insight 1:15-23.

Purohit GN (2012). Dystocia in camelids: The causes and approaches of management. Open Journal of Animal Sciences 2(2):99-105.

Selvaraju M, Palaniswamy M, Kumaresan A, Napolean RE, Chandrahasan C (2009). Dystocia due to *Arthrogryposis foetus* in a crossbred cow. Indian Veterinary Journal 86(3):299-300.

Shukla SP, Nema SP, Mahor SS, Gupta KP and Garg UK (2008). Dystocia due to foetal arthrogryposis in a she buffalo. Buffalo Bulletin 27(3):220-221.

Singh J, Mideksa B, Pawde AM and Deori S (2008). Foetal arthrogryposis causing dystocia in a pleuriparous buffalo. Buffalo Bulletin 27(4):263-264.

Sonfada ML, Shehu SA, Umar AA and Onyeanusi BI (2009). Anencephaly in a second trimester camel foetus in Sokoto, Nigeria: A case report. Journal of Camelid Science 2:50-52.

Tibary A and Anouassi A (1997). Obstetrics and neonatal care. In: Theriogenology in Camelidae. Tibary A (ed). Abu Dhabi Printing Press, Mina.