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Arthrogryposis multiplex congenita in a ewe: A case report

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Abstract

A two years old ewe was brought to the TVCC, LUVAS, Hisar having history of complete parturition, ruptured water bag and straining since 24 hours still unable to deliver fetus. Clinical examination revealed that ewe was suffering from dystocia due to trans-ventral presentation of the fetus with multiple congenital joints contractures in all four limbs which was described Arthrogryposis multiplex congenital condition after being extracted outside.

Keywords: Arthrogryposis multiplex, congenita, TVCC, LUVAS

Introduction

The congenital defects, such as structural and functional anomalies of tissues, organs, and systems occur in embryonic or foetal development stages in most animal species. First time, Stern (1923) ^[1] used the term “arthrogryposis” (arthron: joint, gryposis: bent) to describe the multiple congenital contractures disorder. Arthrogryposis multiplex congenita (AMC) is a rare congenital disorder with multiple joint contractures accompanied by muscle weakness and fibrosis linked to more than 300 different disorders (Rink *et al.*, 2011) ^[2]. The etiology still remains unclear but generally anything that inhibits normal joint movement before birth can result in joint contractures since tendons connecting to the joint are not stretched to their normal length (Navti *et al.*, 2010; Witter *et al.*, 2002) ^[3, 4]. In sheep first time Roberts Frazer (1929) ^[5] described AMC in the sheep and considered it to represent a recessive lethal trait. Since that time there have been periodic reports of AMC in lambs with the prevalence of 7% (Morley *et al.*, 1954) ^[6]. Edwards *et al.* (1989) ^[7] found that most ewes giving birth to lambs with arthrogryposis syndrome deceased due to dystocia.

Case history and observations

A two years old ewe was brought to the TVCC, LUVAS, Hisar in the month of March, 2019. According to owner time of parturition was completed, water bag ruptured and ewe was straining to deliver the kid from yesterday morning but unable to deliver the kid. The animal was dull and depressed. Clinical examination revealed rectal temperature (39.2°C), heart rate (92 beats/min), respiratory rate (58 cycles/min) and pale mucous membranes.

Treatment

After taking the history 2 ml of 2% lignocaine hydrochloride was administered between 2nd and 3rd intercoccygeal joint to attain epidural anaesthesia to prevent straining during per vaginal examination. After proper lubrication of the birth canal, per-vaginal examination was done (Fig.1) which revealed trans-ventral presentation as cause of dystocia since all the four limbs were present in the vaginal passage of the sheep. The faulty presentation was corrected by mutation and all precautions were taken to avoid damage to the dam's reproductive organs. Thereafter, delivery of the dead fetus was carried out using traction (Fig.2). The dead fetus had multiple congenital joints contractures in all four limbs. Close gross examination revealed that the fetus was suffering from Arthrogryposis multiplex congenital (Fig.3). The ewe (Fig.4) was administered with Inj. Oxytocin (10 IU, i/v), Inj. DNS (100 ml, i/v), Inj. metrogyl (100 ml i/v), Inj. Enrofloxacin (5mg/kg B.Wt, i/m), Inj. Chlorpheniramine maleate (30 mg, i/m) and suspension utronic (5ml, p.o., bid). The antibiotic and antihistamine was continued for three days.



Fig 1: Per vaginal examination was done to find the cause of dystocia



Fig 2: Application of traction after correction of faulty presentation



Fig 3: Arthrogryposis multiplex congenita in lamb



Fig 4: Ewe after delivery of the lamb

Discussion

Arthrogryposis can often occur in newborn ruminants with enlargement and rigidity of joints. The rigidity is a primary muscle injury, dysplasia/amyoplasia or neurogenic atrophy resulting from the absence of motor neurons in the spinal cord or demyelination of motor nerves. This change may occur due to involvement of recessive hereditary characteristics, viral infections, or poisonous plant ingestion (Marcolongo-Pereira *et al.*, 2010) [8]. To prevent the economic losses to the farmers initial steps prerequisite to be taken should comprise early diagnosis of the disease. Antenatal ultrasound examination can be the best tool in establishment of the correct diagnosis. Movement is essential for the normal development of joints and the peri-articular tissues (Wierzba *et al.*, 2011) [9]. The primary diagnosis is made when a lack of mobility and an abnormal position is noted in routine ultrasound scanning. These findings should guide the practitioner to a careful assessment of foetal anatomy and joints. The most common detailed ultrasound scan findings are fixed flexion deformities, micrognathia, altered amniotic fluid volume, limb deformities, cerebral ventriculomegaly, dysmorphic features, and growth retardation (Navti *et al.*, 2010) [3]. In these cases, the challenge for obstetricians is to evaluate the foetal and maternal prognosis, in order to offer the most accurate counselling to the owner of the animal and to be able to formulate a therapeutic action plan.

Conclusion

Arthrogryposis is not a specific disease but syndrome which is seen in congenital contractures. The etiologies are multiple and can be maternal or foetal, neurogenic or myogenic and the prognosis depends principally on the etiology. Identifying the etiology of congenital contractures remains uncertain until today and is an important area of research for prenatal diagnosis.

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