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Transverse foetal presentation complicated by arthrogryposis multiplex congenita causing dystocia in a ewe: A case report

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Abstract

A rare case of maternal dystocia due to transverse foetal presentation complicated by Arthrogryposis Multiplex Congenita (AMC) in a multiparous ewe is reported. A ewe in its third parity was admitted to the Department of Veterinary Gynaecology and Obstetrics, College of Veterinary Science, Proddatur, with a history of unsuccessful labor straining for 24 hours. Vaginal examination revealed a transverse foetal presentation, with all four foetal limbs simultaneously palpable within the pelvic canal. During corrective mutational operations to relieve the dystocia, clinicians encountered severe, rigid joint contractures in all four limbs of the foetus. Following successful extraction via obstetrical manoeuvres, a definitive diagnosis of Arthrogryposis Multiplex Congenita was confirmed based on the characteristic multiple congenital joint deformities, highlighting the challenge this foetal anomaly poses to normal ovine parturition.

Keywords: Arthrogryposis Multiplex Congenita (AMC), ewe, transverse presentation

Introduction

Arthrogryposis multiplex congenita (AMC) is a rare congenital disorder characterized by multiple joint contractures present at birth, accompanied by muscle weakness and fibrosis. It is a clinical manifestation associated with more than 300 different genetic and non-genetic disorders that impair normal foetal movement during development (Rink *et al.*, 2011) ^[1]. The etiology of arthrogryposis multiplex congenita (AMC) remains incompletely understood. However, any condition that restricts normal foetal joint movement during gestation can lead to the development of joint contractures. Reduced foetal mobility prevents the normal stretching and growth of tendons, muscles, and periarticular connective tissues, resulting in fixed contractures of one or more joints at birth (Navti *et al.*, 2010) ^[2].

Case history

A Ewe in its third parity was presented to DVCC, college of veterinary science, proddatur with a history of unsuccessful labor for 24 h. As per amnesis reported by owner animal had completed its term with ruptured water 6h prior to presentation. After clinical examination it was revealed that animal had pyrexia (106°F) elevated heart rate (95 beats /minute) and pale mucous membranes.

Treatment

Animal was stabilised after administration of DNS (100 mL, i/v), Dexamethasone (1 mL, i/v) and metrogyl (100 mL,i/v). To attain epidural anesthesia 2 mL of 2% lignocaine hydrochloride was given into sacrococcygeal space. Per vaginal examination was done which revealed foetus was in transverse ventral presentation (Fig 1). Lubrication was achieved by saturated CMC solution. The faulty presentation was corrected by required mutational operations. Soon dead foetus was extracted after application of traction. The dead foetus had multiple congenital joint contractures in all four limbs. Gross examination revealed a Arthrogryposis multiplex

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congenital (Fig 2). Supportive treatment was continued for 3 days.

Discussion

Arthrogryposis in newborn ruminants is characterized by congenital joint contractures accompanied by joint enlargement and rigidity. The condition primarily results from abnormalities of the musculoskeletal or nervous system, including myogenic defects such as muscle dysplasia or amyoplasia, as well as neurogenic atrophy caused by the absence of motor neurons in the spinal cord or demyelination of peripheral motor nerves. The development of arthrogryposis has been associated with multiple etiological factors, including inherited recessive genetic defects, intrauterine viral infections, and maternal ingestion of teratogenic plants during gestation (Singh *et al.*, 2020) [3]. Newborn animals affected with arthrogryposis are frequently stillborn and often exhibit varying degrees of autolysis, indicating foetal death several days before parturition. Arthrogryposis is commonly accompanied by other congenital malformations, including palatoschisis (cleft palate), brachygnathia, scoliosis, lordosis, kyphosis, hydranencephaly, and torticollis, reflecting the multisystem developmental abnormalities associated with the condition (Khodakaram *et al.*, 2014) [4].

In this current report arthrogryposis was combined with lordosis, brachygnathia and kyphosis as in this case most of severely affected young ones were born dead often cause dystocia sometimes may lead to embryotomy (Greber *et al.*, 2013) [5]. Arthrogryposis occurring in the absence of central nervous system lesions has been documented in ruminants born to dams that grazed on pastures during gestation. Consistent with these observations, no gross or histopathological lesions were detected in the central nervous system in the present study. The etiology of arthrogryposis is multifactorial and may involve hereditary factors, exposure to teratogenic agents such as toxic plants consumed by the dam during pregnancy, foetal or neonatal denervation, nutritional deficiencies including vitamin A and selenium (with or without concurrent manganese deficiency), and prenatal exposure to anthelmintic drugs such as parbendazole and carbendazole.

According to some authors the primary diagnosis of arthrogryposis could be established during routine ultrasonographic examination by identifying reduced or absent foetal movements and abnormal foetal posture. But in present case even after routine USG during late pregnancy conclusion could not be drawn about this condition (Navti *et al.*, 2010) [2]. These findings should prompt a comprehensive evaluation of the foetal anatomy, with particular emphasis on the musculoskeletal system and joint morphology. Common ultrasonographic features include fixed flexion deformities of the limbs, micrognathia, abnormalities in amniotic fluid volume, limb malformations, cerebral ventriculomegaly, dysmorphic craniofacial features, and intrauterine growth retardation. In such cases, the primary challenge for veterinary obstetricians is to accurately assess both foetal and maternal prognosis to provide informed guidance to the animal owner and formulate an appropriate clinical management and therapeutic plan.



Fig 1: Traction of foetus



Fig 2: Arthrogryposis

Conclusion

Arthrogryposis is a congenital musculoskeletal disorder characterized by permanent joint contractures resulting from impaired foetal movement during gestation. The condition has a multifactorial etiology involving genetic, nutritional, infectious, toxic, and neurogenic factors, and is frequently associated with other congenital anomalies. Early prenatal diagnosis through ultrasonographic evaluation of foetal movement, posture, and joint morphology plays a crucial role in identifying affected fetuses and assessing the severity of associated abnormalities. Prompt diagnosis enables accurate prognostic assessment, facilitates appropriate clinical decision-making, and supports informed counselling of animal owners. A comprehensive understanding of the etiopathogenesis, diagnostic features, and clinical implications of arthrogryposis is essential for effective case management and for developing preventive strategies aimed at reducing its occurrence in livestock populations.

Conflict of Interest

Not available

Financial Support

Not available

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