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Bovine dystocia caused by carpal and shoulder flexion: A case report

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Abstract: The term dystocia comes from the Greek (dys – difficult, tocos – birth). The condition represents the inability of the fetus to pass through the birth canal. Dystocia is a major cause of increased mortality during labor. This clinical case describes a difficult parturition in a four-year-old Holstein Friesian cow. The animal was seen early in the morning with signs of non-progressive labor. Obstetric examination revealed a dead fetus in anterior longitudinal presentation, dorsal position, flexed left thoracic limb at the carpal joint and flexed right thoracic limb at the shoulder. The diagnosis was dystocia due to fetal disposition. The malposition was corrected by manual manipulation followed by fetal extraction.

Keywords: bovine; dystocia; carpal; shoulder; flexion

INTRODUCTION

Dystocia represent prolonged and difficult labor that often require obstetric intervention (Abera, 2017). In order to establish the cause, a detailed obstetric examination is performed, including history, general condition of the mother, the condition of the soft and bony birth canal, and the condition of the fetus. The causes of dystocia are considered in two groups - of maternal and fetal origin (Youngquist and Threlfall, 2006). The maternal causes are: uterine atony, non-opening of the cervix, congenital and acquired defects of the soft birth canal due to the size and defects of the pelvis, torsion of the uterus (Youngquist and Threlfall, 2006). The fetal causes includes: Fetal dispositions including - presentation, position and posture, excessive size of the fetus (feto-pelvic disproportion), fetal malformations, twins, dead and emphysematized fetus (Roberts, 2004). The probability of spontaneous labor in the presence of fetal dispositions is unlikely (Abera, 2017). The prognosis varies from case to case and according to the cause, but it is generally believed that the longer the dystocia is prolonged, the worse the prognosis (Roberts, 2004).

The localization of the fetus during labor is defined by the terms: presentation, position and posture. Presentation is the relation between the longitudinal axis of the fetus and the maternal birth canal. Position indicates the surface of the maternal birth canal, to which the fetal vertebral column is applied. Posture refers to the disposition of the movable appendages of the fetus (Noakes et al., 2009). The reduction in fetal movements during the righting period can be a primary cause of fetal malposture. During hypoxia, fetal movements are either markedly diminished or there are erratic limb and head movements (Noakes et al., 2019), which Holland et al. (1993) surmised could contribute to the development of abnormalities of posture. The malposture of the forelimbs can involve carpal flexion or shoulder flexion affecting one or both forelimbs. Incomplete extension of the elbow, which causes dystocia in mares is seldom encountered in the cow (Jackson, 2004). Usually, malposition is corrected manually and with the help of obstetrical tools, such as ropes, rope guides, repository forks, etc. If the correction does not take place in about 15-30 minutes, it is appropriate to proceed to another

method of providing obstetric assistance (Abera, 2017).

CASE PRESENTATION

Examination

The patient was a 4-year-old Holstein Friesian cow. The animal is raised on a dairy farm with a capacity of 500 animals in the Plovdiv region, Bulgaria. The diet of the cow includes a silage and concentrate mixture. The prevalence of dystocia on the farm is low, according to the owners. From the anamnesis, we found that this was the animal's second birth, the first being normal. Farmers reported that they noticed non-progressive labour, with no indication of when it started, possibly early in the morning of the same day. The pregnancy proceeded normally and the birth was expected in this period. The cow was inseminated artificially. The patient was in good general condition. Examination showed the presence of contractions and a visible fetal head, but the absence of the thoracic limbs - Figure 1(a). The lack of fetal reflexes indicated that it was



Figure 1(a). Absence of visible thoracic extremity

non-viable. Its size allowed it to pass through the mother's pelvis. The calf was situated in a anterior longitudinal presentation, dorsal position, the posture was incorrect, with the left thoracic extremity flexed in the carpal joint and the right in the shoulder.

Treatment

As a result of the examination and diagnosis, we drew up a plan for providing obstetric assistance, which included manual manipulation of the limbs and extraction of the fetus. First, the fetus wedged in the pelvis was pushed back into the uterus to provide space for the correction of the posture of the fetal limbs. We then proceeded to correct the carpal flexed posture using the classic method described by Jackson (2004) and Vasilev et al. (2015). The limb was fixed with the hand in the metacarpal region and was initially pushed backwards and dorsally, after which the hoof was grasped in the hand and brought towards the pelvic inlet. After successful extension - Figure 1(b), the limb was fixed with an obstetric rope. To correct the posture of the right limb, we proceeded in a similar way. Again the fetus was carefully pushed into the uterus. The flexed limb at the shoulder joint was initially brought into a carpal flexion, for this purpose the humerus was grasped with the hand and pulled towards the soft birth canal, after which the carpal flexion posture was corrected in the manner described for the left limb. The two limbs thus adjusted were fixed with obstetric ropes - Figure 1(c). After the successful correction of the fetal posture, we proceeded to its extraction. To do this, an assistant pulled the limbs fixed with ropes, while the obstetrician guided the fetal head. The direction of extraction was initially parallel to the mother's spine - Figure 1(d), due to the fact that the fetus had entered the pelvic cavity with its greater part. After passing the shoulders, the direction of extraction was ventral - Figure 1(e).

Postpartum period

The animal was treated with four intrauterine tablets - Oxivet 500 mg. (Provet Animal Health Care), 3.5 ml. Oxytocin 10UI/ml (Biovet) to stim-



Figure 1(b). Left thoracic extremity after correction



Figure 1(d). Extraction of the fetus



Figure 1(c). The two extremities after correcting their posture



Figure 1(e). Extraction of the fetus

ulate uterine activity and placental separation. Fifty milliliters of calcium borogluconate 20% (Vetprom) was also administered. The owners reported that the placenta separated in the normal period. Ten days after delivery, regular examinations were carried out to follow the involution of the uterus and rule out the possibility of the development of postpartum complications caused by the dystocia.

DISCUSSION

Difficult parturitions are the main reason for the increase in the mortality rate during the natal and early postnatal period. The high mortality rate of dystocia was described by Bleul (2011), who found that this condition accounted for 12.2% of neonatal deaths. Ansari-Lari (2007) reported a mortality rate of 1.5% to 58.8% depending on the severity of dystocia. From the analysis of Khudhair et. al (2020) it is clear that the mortality rate can reach 85.1%, and even more in some types of malposition of the calf. This clinical case confirms the significant risk that accompanies difficult labour in large ruminants, as well as the importance of prompt obstetric assistance.

The present case shows that the malpositioned fetus (with carpal and shoulder flexion) could not pass through the maternal birth canal without obstetric intervention, which supports the contention of Abera (2017). The thoracic limbs, flexed at the carpal and shoulder joints wedged into the bony birth canal, and thus the fetus cannot be expelled by the mother's own efforts. We support the statement of Dimitrov (2003), that the fetus positioned in this malposted manner should not be extracted, because this would lead to serious damage to the mother's organism. This is the reason why uterocontracting agents are contraindicated in such situations. We also found that the classical method of manual posture correction described by Jackson (2004) and Vasilev et al. (2021) is a fast and reliable method for providing obstetric assistance.

It is known that dystocia increase the risk of retention of placenta (ROP) (Mahnani et al.

2021). ROP can lead to a longer calving interval, delayed post-delivery service interval, reduced conception rate, infertility, loss of milk production, the costs of veterinary service and drugs (Jemal, 2016). Because of this fact, we have chosen to use a proven therapy for the normal course of the postpartum period. A number of authors recommend the use of uterine ecboic agents to accelerate the time to completion of the third stage of labor (Beagley et al., 2010; Jemal, 2016) We used Oxytocin to stimulate uterine activity and contractions and placental separation, a treatment also used by Al-Amin (2018). Some authors report that the use of antibiotics in cases of ROP is controversial (Beagley et al., 2010), while others find that tetracyclines, antibiotics commonly used for intrauterine treatment in cattle, inhibit MMPs, 68 and might therefore interfere with the normal placental detachment mechanisms (Eiler and Hopkins, 1992; Kaitu'u et al., 2005). Because of this fact, we chose antibiotic pessaries containing oxytetracycline, to reduce the risk of postpartum infection. In conclusion, the postpartum therapy chosen led to the separation of the placenta at the normal time for this period, and we also did not observe a postpartum infection.

CONCLUSION

Based on the current case and literature review, it can be concluded that the malposture of the fetal extremities leads to the inability of the fetus to pass through the birth canal, as well as to fetal mortality if the case is prolonged.

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