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Fetal Mummification in a Doe: A Comparative Case Study

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Fetal mummification is a condition where there is death of the conceptus followed by resorption of fetal fluids and the uterus wraps around the fetus tightly giving an impression of 'mummy'. In this case reports, two different cases of fetal mummifications in goats over a period of one year was observed at the Teaching Veterinary Clinical Complex, Faculty of Veterinary and Animal Sciences, Rajiv Gandhi South Campus, Banaras Hindu University, Barkachha, Mirzapur. The detailed management and treatments are discussed in this short communication.

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Keywords: Fetal mummification; goat; management; treatment; dystocia.

1. INTRODUCTION

Fetal mummification is commonly observed in all the domestic animals but rarely in does and ewes. In does and ewes, this condition is often associated with infectious diseases like toxoplasmosis, chlamydophila, border disease and *Coxiella burnetii* infection (Edmondson et al. 2012). It is most commonly characterized by the death of the conceptus followed by reabsorption of fetal fluids and involution of uterus to an extent that it contracts tightly over the fetus and resembles a contracted hard mass. In exclusion to that, there is a persistence of corpus luteum in most of the times (Noakes et al. 2009). Other potential causes for mummification in a bovine species may include mechanical factors, such as compression or torsion of theumbilical cord (Mahajan & Sharma 2002), uterine torsion (Moore & Richardson 1995), defective placentation (Iron 1999), genetic anomalies (Roberts 1962), abnormal hormonal profiles and chromosomal abnormalities (Roberts 1986). If the fetal membranes are parchment like it is termed as papyraceous mummification and if viscous chocolate coloured exudates filled fetal membranes and fetus, it is termed as haematic mummification and in case of does haematic mummification is commonly observed. After fetal death, the amniotic and allantoic fluids are resorbed, fetal tissues and fetal membranes dehydrate and, eventually, the caruncles disappear. Longer the mummified fetus is retained, the dryer, firmer and leatherier the tissues of the fetus it become (Noakes et al. 2009).

There are certain prerequisite conditions for the manifestation of mummification like the death of fetus must happen after the development of the bones, the uterine environment should be anaerobic and devoid of any bacterial contamination and the uterus along with fetal fluid must be resorbed slowly (Drost 2007). The entire process of mummification takes several weeks, depending on the age of the fetus at the time of death and once all the fluid is completely resorbed, the fetal membranes and uterine wall adhere closely to the fetus and the whole mass becomes brownish black, leathery in appearance and odorless.

2. PRESENTATION OF CASE

2.1 Case 1

A third parity doe was presented with a history of extended gestational period with 15 days, brownish scanty vaginal discharge and difficulty in kidding. The doe was dull, depressed and anorectic with rectal temperature 99.2º found all other vital parameters were in normal range.

Fig. 1. Fetal mummification in two different does: Does affected with fetal mummification condition (A- Dam with single mummified fetus and B- Dam with one live and one mummified fetus) and mummified foetuses C – a dehydrated fetal tissue and fetal membranes, and D- mummified fetus and placenta)

On abdominal palpation, a fetus like mass was felt in pelvic cavity. Further, on Per vaginal examination revealed, fetal head and legs in the vaginal cavity. Vaginal passage was lubricated with liquid paraffin. Subsequently, traction was applied on the fetal mass and a dead male mummified fetus was removed on per vaginal manipulation. The animal was treated with inj. Pragma™ 0.5 ml I/M, (Cloprostenol sodium 125 mcg OD) inj. Melonex™ 1.5 ml I/M, (Meloxicam 1 mg/kg), inj. Zeet™ 1 ml I/M (Chlorpheniramine Maleate 5-10 mg), inj. Enrogil™ 3 ml I/M (Enrofloxacin 2.5 mg/kg) for 3 days. The treatment also included Bol. Clenex™ 2 (Nitrofurazone, Metronidazole, Urea and Povidone iodine) intra uterine on the day of kidding. The Doe recovered completely post treatment.

2.2 Case 2

An emergency case of dystocia in a primiparous black Bengal doe was brought to the TVCC, FVAS, BHU, Barkachha, Mirzapur. The rectal temperature of 100°F. heart rate 78/min, respiration rate 23/min, with slight inappetence. The animalwas active and alert. The doe was stabilized by giving inj. DNS 70 ml I/V (Dextrose 5 gm and Sodium chloride 0.9 gm), and inj. Introvit™ B-complex- 5 ml I/M, Further per vaginal manipulation revealed that cervix was completely open and fetal legs were palpable. A live male fetus was removed by mild traction per vaginally on proper lubrication of vaginal passage with CMC gel (Carboxyl Methyl Cellulose powder) and using epidural anesthesia (0.5 ml Epidurally by using lignocaine hydrochloride 2% with 0.5 ml Normal Saline). Further examination revealed, one more fetus which was found deep in abdominal cavity and was removed by traction per vaginally. The second fetus removed by traction was mummified one. The doe was treated with inj. Pragma™ 125 mcg I/M, (Cloprostenol sodium 125 mcg) inj. Melonex™ 1 ml I/M (Meloxicam 1 mg/kg), inj. Zeet™ 1 ml I/M (Chlorpheniramine Maleate 5-10 mg), and inj. Enrogil™ 1.5 ml I/M (Enrofloxacin 2.5 mg/kg). In exclusion to that, Clenex bolus 2 I/U (Nitrofurazone, Metronidazole, Urea and Povidone iodine) was administered intra uterine. The doe recovered completely with normal feeding and watering on next follow up day.

3. DISCUSSION

In the case study 1, the gestational period was prolonged than the normal gestation period and the extended period observed was 15 days. This prolonged gestation period might be due to lack of stimulation of the hypothalamic pituitary adrenal axis (Mahajan et al. 2022). The doe was emaciated and in its third parity. The etiological factors for fetal mummification might be deficiency of protein and energy which correlated with study of (Pugh & Baird 2012). Fetal death in domestic animals occurs in the middle or last third of the gestation without abortion and luteolysis, rather followed by autolytic changes in the fetus, absorption of placental and fetal fluids, involution of the maternal placenta and mummification of the fetus (Roberts 1971) was observed.

In the case study 2- fetal mummification was noticed in twin pregnancy upto the term. In most cases, primiparous females are more susceptible to mummification than multiparous animals, (Moller 2001). Fetal mummification, which affects both single and twin fetuses, is rare in does. It is linked to four main etiological factors: Border disease, Chlamydophila, Toxoplasmosis, and *Coxiella burnetii* infection. The findings of this case study suggest that, the retention of the mummified fetus must be due to another live fetus and the persistent corpus luteum. In this case, the fetal death might have happened due to fetal mummification. Fetal mummification in goats can occurs due to death of fetus *in utero* and it is a obstetrical condition more likely associated with twin pregnancy (Tutt 1997). Also, the mummified fetus had not affected the livability of the other co-twin fetus similarly reported by (Hemalatha et al. 2018). The observations of this study are similar with (Tutt 1997, Bhardwaj & Kumar 2014, Dushyant et al. 2019, Koli et al. 2023, Ogbu et al. 2011), where they also observed a mummified fetus along the normal live fetus but (Ogbu et al. 2011) reported fetal mummification in all the three fetuses at different developmental stages (Lefebvre et al. 2009), stated that Since early fetal mortality is unpredictable and subject to an assortment of factors, including the cause of fetal mortality, differences in pregnancy between species, stage of the gestation period at fetal death, and the number of fetuses. Fetal mummification in does due to persistant corpus luteum is rare and fetal mummification in goats due to persistant corpus leuteum in the ovary can be treated with prostaglandins similar to cattle (Lefebvre 2015). Mummification is considered as sterile condition where fetal skin is intact, no autolysis wills occurs in this obstetrical condition. So, fertility of a animals does not affects more if treated earlier

(Johnston & Rakshil 1987). Both the cases were managed by prostaglandin, antibiotics, analgesic and intra uterine therapy.

4. CONCLUSION

Fetal mummification in goats is rarely occurring obstetrical condition which can be noticed in single, live fetus and twin pregnancy too. The management of this condition with prostaglandins gives favorable results for further fertility and recovery of animals. Early treatment and management are of utmost important for prevent further complications and uterine infections.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

ETHICAL APPROVAL

Animal Ethic committee approval has been collected and preserved by the author(s)

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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