

THE MOST COMMON RISK FACTORS OF UTERINE PROLAPSE IN LOCAL GOAT BREEDS

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ABSTRACT : The study aimed to evaluate cases of uterine prolapse in local goat breeds, started from November 2019 to July 2020, and include examination of (20) animals 1.5 to 4 years old. The study was conducted on fifteen (15) goats show uterine prolapsed five (5) clinically healthy goats served as controls. The results show that multipara animals reared in closed places have a high incidence of uterine prolapse compared with those unipara animals grazing in open areas. It was documented that uterine prolapsed occurs more clearly in goats with retained fetal membranes than those without fetal membranes retention. Results were also indicated a significant ($P<0.01$) decrease in serum calcium, phosphorus and magnesium in prolapsed animals compared with controls. It was concluded that multiple parturitions, incorrect management, and retention of fetal membranes might to uterine prolapse. Furthermore, a disturbance in the Ca-P-Mg ratio might to a prolapse of the uterus.

Key words : Uterine prolapse, goats, risk factors.

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INTRODUCTION

Uterine prolapse usually occurs within a few hours after parturition, when the previously gravid uterine horn invaginates and protrudes from the vulva, the condition affects different animal species. The cause is not completely known, however, in animals, the condition is frequently associated with dystocia and hypocalcemia (Youngquist, 1997). Nevertheless in does and ewes might occur with lack of exercise (Drost and Thomas, 1996). Adequate blood concentrations of macro minerals, calcium, phosphorus, magnesium and potassium are necessary for nerve and muscle functions, therefore are of particular concern at calving (Goff, 2006). Hypocalcaemia and hypophosphatemia have been reported consistently in animals as the predisposing factor for dystocia, retention of fetal membranes (Sharma *et al*, 1991; Goff and Horst, 1997; Roche, 2006) and uterine prolapse (Pandey *et al*, 2007). One of the predisposes to uterine prolapse is hypocalcemia that results in a myometrial stress and delays cervical involution (Roberts, 2004).

After a normal delivery, the placenta needs adequate

and regular uterine contractions to expel the placenta outside the uterus. Inadequate secretions of prostaglandin F₂α, oxytocin and serum Ca concentration, which maintain adequate contraction of the uterus, may cause retention of the placenta, increase the risk of dystocia and delay the involution of the uterus (McDowell, 1992). On other hand, it is well-known that deficiencies of some minerals and vitamins stimulate or predispose animals to the retention of the placenta (Alacam, 2002). This study aims to evaluate the effect of some predisposing factors and evaluate some minerals for the incidence of uterine prolapse in local goat breeds.

MATERIALS AND METHODS

This study was conducted in Basrah Governorate on 20 local goat breeds, 1.5 - 4 years old. The study started from November 2019 to July 2020 and all cases were brought to the private clinics for diagnosis and treatment. Animals were divided into two groups: the first group included (15) diseased animals with uterine prolapse, second group included (5) animals served as controls. Card recording data was fulfilled including the age of the animal, address, type of diet, number of parturitions

(multipara or unipara), type of husbandry (indoor or outdoor), and the observation of the presence or absence of the placenta with uterus prolapse. Diseased goats have been examined clinically and showed that the prolapsed uterus was swollen, loaded with a large amount of dirt, dust and contaminated with fecal material and debris (Fig. 1).



Fig. 1 : Uterine prolapse in local goat breeds.

10 mL of blood was drained via jugular vein puncture from each animal; serum was separated and kept at -20°C until analysis. The biochemical analysis includes the estimation of calcium, magnesium, and phosphorus (Accent- 200, Poland) (automatic analyzer accent 200 system, China). Statistical analysis was done using (SPSS) student t-test (Steel *et al*, 2006).

RESULTS

The results of the current study indicated that there is a relationship between the type of husbandry (indoor or outdoor) and the number of delivery (multipara or Unipara) as well as the presence or absence of placental retention. As the study showed the effect of these factors on the incidence of uterine prolapse.

As for the husbandry factor, the results show that the animals raised inside the (indoor) are more likely to have prolapse of the uterus if compared to those who live in open grazing places (outdoor), as shown in (Fig. 2). On the other hand, the study demonstrated that prolapse of the uterus increases with the increase in the number of delivery, as the lowest percentage indicated in unipara animals as shown in Fig. 3. Results were also proved that animals with retained placental membranes have suffered from uterine prolapse as showed in Fig. 4.

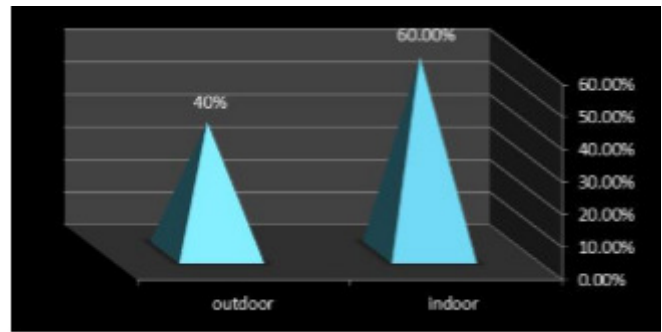


Fig. 2 : Percentage of uterine prolapse according to the type of husbandry.

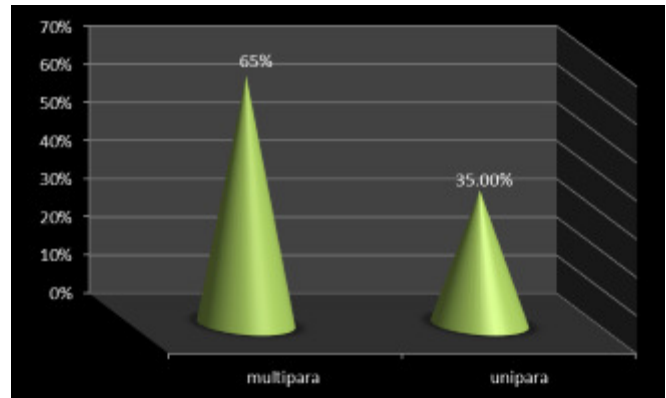


Fig. 3 : Percentage of uterine prolapse according to the number of delivery.

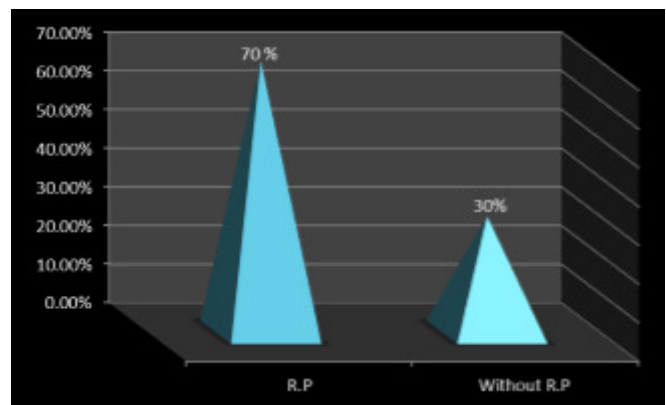


Fig. 4 : Percentage of uterine prolapse according to the presence or absence of placental retention.

As for the results of mineral deficiency in cases that suffer from prolapse of the uterus, it was found that there is a significant decrease in serum calcium level (6.9 ± 0.13) as well as for magnesium (2.2 ± 0.16) and phosphorus (2.4 ± 0.12) comparison with the control group, as shown in Table 1.

Table 1 : The value of serum total calcium, inorganic phosphorus and magnesium.

| Animals groups | No. of goats | Calcium (mg/dl) | Phosphorus (mg/dl) | Magnesium (mg/dl) |
|-----------------------|--------------|------------------|--------------------|-------------------|
| With uterine prolapse | 15 | $6.9 \pm 0.13^*$ | 2.4 ± 0.12 | 2.2 ± 0.16 |
| Control group | 5 | 9.3 ± 0.18 | 4.2 ± 0.15 | 2.1 ± 0.14 |

Mean + SE, * Significant (P<0.01)

DISCUSSION

Uterine prolapse usually occurs during the third stage of parturition at a time when the fetus is pushed out and the fetal membranes are separated from maternal caruncles (Noakes *et al*, 2001).

The study showed that animals that were raised in enclosed places are more likely to be exposed to cases of uterine prolapse when compared with animals grazing abroad and the reason for this can be attributed to the lack of movement of animals raised indoor, especially during pregnancy, which leads to weakness in the muscles of the body in general which in turn can lead to a weakness in the muscles of the uterus, which results in a difficult birth, which forces the animal to push again and again, and this is what leads to the events of prolapse of the uterus. This result is consistent with what the researcher mentioned (Majeed and Taha, 1991).

Abdalsatar (2009) and Levis (1997) indicate that the incidence of prolapse of the uterus increases with age, as large animals in age have found a high rate of cases of prolapse of the uterus, and this is commensurate with what was mentioned in the results of the current study. The researcher explained in his study that aging, which is accompanied by multiple parturitions, can lead to excessive relaxation of the pelvic ligaments and a decrease in the energy reserves of the older animals compared to younger animals (Bhatti *et al*, 2006).

In talking about fetal membranes and their relationship to the events of prolapse of the uterus, we find that there is a relationship between them as the cases of fetal membranes retention have a very big role in causing the aforementioned condition and as many researchers have explained Uterine prolapse may occur after parturition due to excessive traction on the membrane of the fetus, forced fetal extraction, severe relaxation in the perineum and vulval lips (Arthur *et al*, 2001). Moreover, the delay in fetal membrane retention and the constant pushing by the animal in an attempt to get rid of them as well as the weight of their size, all of these factors are the cause of uterine prolapse (Jackson, 2004; Hanie, 2006).

The lack of nutrition and the poor quality of feed can lead to a decrease in mineral levels in the body, especially during pregnancy and this is what leads to being a predisposing factor for the incidence of uterine prolapse cases (Radostits and Henderson, 2017). The relationship between the three minerals, calcium, magnesium and phosphorus is a direct relationship in terms of proportions. Whenever a deficiency or defect occurs in one of these minerals, the other two are affected, as indicated in this

study, as the deficiency of magnesium resulted in one result or another in the lack of calcium, where studies believe that the latter is responsible for metabolism, the calculation of the level and absorption of calcium. This imbalance in these two elements may lead to a deficiency of phosphorous, which we have previously explained together their effect on the events and the creation of appropriate conditions for the events of uterine prolapse, many studies have shown the relationship between Ca-P-Mg ratio and among them (Sathish, 2003; Chaudhary and Singh, 2004).

One of the important minerals in the body is calcium, as its deficiency leads to uterine prolapse events, and the reason for this can be attributed to calcium involvement in causing uterine contractions during parturition. The nature of its strength depends on the percentage of this mineral in the body and it is also believed that calcium and its deficiency are responsible for the relaxation of the ligaments and muscles and this leads to the difficulty of parturition, which in turn leads to preparation for the occurrence of prolapse of the uterus. Moreover, many of the researchers pointed out the relationship between calcium deficiency and uterine prolapse in various animals with whom the results of the current study were compatible (Fubini and Ducharme, 2006; Tahir, 2014).

CONCLUSION

It was concluded that multiple parturitions, incorrect management, and retention of fetal membranes led to uterine prolapse. Furthermore, a disturbance in the Ca-P-Mg ratio leads to a prolapse of the uterus.

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