

## **THE RELATIONSHIP BETWEEN THE LEVELS OF SERUM CALICIUM AND EVIDENCE DYSTOCIA IN EWES**

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### **ABSTRACT**

The present study was carried out in ewes to investigate the causes of dystocia and economic effect, reared in Basrah governorate (Basra – Iraq) .

The current study was started from August 2017 to May 2018 , and conducted on 60 ewes, 1.5-10 years old. Animals were divided into two groups,

First treated group: 40 ewes suffered from dystocia. and the

Second normal group: 20 ewes with normal parturition served as a healthy control.

Ewes with dystocia were diagnosed on the bases of clinical inspection .

The study showed that the ewes that suffered from dystocia have a low serum level of calcium compared with control group.

### **INTRODUCTION**

Dystocia means difficult birth and defined as the problem which interferes with normal birth (5). Dystocia is one of the highly important issues which causes an economic loss either through death of dam, lamb or both (1), or through its effect on reproductive system by causing some conditions such as uterine infection, gangrenous metritis (2-3), retained placenta and long lambing intervals (4).

Dystocia or difficult birth in a small ruminants, is a common condition among sheep and goat resulting in huge loss in animal wealth profits to farmers either due to death of new born or dam or adversely affects dam fertility (6), Furthermore, contributing issues are represented by the risk of inducing trauma and infection due to complication of the case in addition to the treatment coast which may decrease future

fertility (7). The incidence of dystocia formed more than (50%) of the reproductive problems (8).

Calcium is the third element in the second group of the periodic table with an atomic number 20 (9). It is extremely viable element in the body, and constitutes over 99% in a part of the bone, and 1% in the blood and other extracellular fluids while a very little is found intracellular (10).

Calcium deficiency is mostly very common during parturition or within few days following parturition. The P ratio of calcium, alteration may affect ovarian function through its blocking action on pituitary gland. This results in prolongation of first estrus and ovulation, delayed uterine involution, increased incidence of dystocia, retention of placenta and prolapse of uterus (11). Calcium deficiency may be primary through an absolute deficiency in the diet or secondary through related with other factors such as, principally an excess of phosphorus intake, other interactive element or due to deficiency in levels of vitamin D (12).

Hypocalcaemia is considered the most common metabolic disorder in ewes. Calcium requirements of a ewe depend on age, growth and reproductive stage. While calcium deficiency is often seen in the periparturient period, at any time from several weeks pre-lambing to 4-6 weeks after. Occurrences during lambing can have an effect on parturition stopping the cervix from fully dilating. It can be precipitated by poor, or imbalanced nutrition and external stressors. It is often referred to as 'stagers' by farmers which can be confusing as many of us are more used to this referring to hypomagnesaemia in cattle. The disease often lasts hours rather than causing sudden death and progresses from incoordination to recumbency and finally coma. Animals respond rapidly to an injection of calcium Borogluconate. Diagnosis is often made empirically in the field, observing the response to treatment but blood levels can be checked. Attention to diet, feeding plan and delivery, condition score, foetal load and avoiding unnecessary stress is critical to avoiding this condition (13).

## **MATERIAL AND METHODS**

The study was conducted on (60) local ewes breed, their age was varied between 1.5-10 years old. The ewes divided into two groups, first group included (40) dystocia affected animals, the second group included (20) animals with normal parturition.

Most of the animals were treated at the consultant veterinary hospital of College of Veterinary Medicine /University of Basrah and at private registered veterinary clinics. The study was carried out in Basra province –Iraq and commence from August 2017 to May 2018.

#### **Collection of blood sample:**

The blood samples (5 ml) were collected from each animals [(20) ewes with normal parturition and (40) ewes suffered from with dystocia], in a clean, sterilized, and plane test tubes via jugular vein puncture. The s serum was separated from blood samples by centrifugation at (3000 r/m) for 10 minutes. Then, serum samples were stored at (-20 c°) until further analysis. The concentration of serum macro minerals (Calcium) has been determined by using commercial kits (Cormay S.A. China).

Procedure:

1. 300 µl of the kit reagent.
2. 3 µl from the serum sample.
3. Determine of the wave length at 670 nm.

Reaction time is 19 minutes.

## **RESULTS**

Data gathered from laboratory examinations of the present study demonstrated a significance reduction in serum level of calcium ( $4.82 \pm 0.87$ ) mg/dl with dystocia affected dams as compared to the normal dams ( $8.03 \pm 2.20$ ) mg/dl.

#### **Statistical analysis:**

The significance of variations between dystocial animals and normal parturition animals were statistically analyzed using student t-test  $P \leq 0.05$  .

**Table: Values of serum calcium levels (mg/dl) in dystocia and control groups (n=20)**

Animals group	Calcium serum Level
Dystocia	4.82± 0.87*
Control group	8.03 ± 2.20

\* means a significant differences between groups at ( $p \leq 0.05$ )

Note: Mean± SD

## DISCUSSION

The incidence of dystocia has received a significant attention in the last few decades worldwide as a result of economic losses in production and reproduction. Even though, several epidemiological studies mentioned the occurrence dystocia in Iraq, estimation of dystocia in Al-Basra province is relatively scarce and requires complete reporting since ewes constitutes an important portion of animal wealth. Hence, our study involved addressing the risk factors to reduce the incidence of dystocia. Risk factors involved in this study represented by age, lamb sex, frequency of lambing, number of foetuses during lambing, and environmental factor. But this research dealt with the result and discussion only one side of these factors is the effect of the level of calcium on occur the dystocia in ewes because this factor of great importance on the physiological aspect in all the animals.

The results of the present study demonstrated that calcium level significantly ( $P \leq 0.05$ ) reduced in dystocial animals compared to the control (Majeed *et al.*, 1993 and

Sharma, 2015) illustrated in earlier study that hypocalcemia predisposes the animals to dystocia . Furthermore, the disturbance in the calcium metabolism and its utilization by the tissue results in atonia or amyotonia of genital organ specially in the uterus, since calcium is a critical factor for muscular contraction process.

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