

EFFECT OF DEFICIENCY SOME MINERALS (CALCIUM ,NON-ORGANIC PHOSPHORUS AND MAGNESIUM) ON OCCURRENCE OF UTERINE PROLAPSE IN LOCAL BUFFALOES BREED IN BASRA PROVINCE .

Mosa Fadiel Abbas , Tahir A. Fahad

Department of Surgery and Obstetrics , College of Veterinary Medicine University of Basrah
, Basrah, Iraq

Key words: buffaloes , serum minerals , uterine prolapse.

ABSTRACT

The present study aimed to determine the macro minerals status (calcium , phosphorus and magnesium) in the local buffaloes breed that suffering from uterine prolapse compared with other buffaloes without uterine prolapse. The study started from August 2015 to May 2016 , and conducted on 100 local buffalo breed, 3-14 years old, reared in Basra province (Basra – Iraq). Animals were divided into two groups, first group included (40) diseased animals with uterine prolapse and the second group included (60) animals without uterine prolapse served as control. Diseased buffaloes were diagnosed on the bases of clinical manifestation, since uterine prolapse were evaluated after 6-72 hours post calving. The results showed that there was a drastic decrease in serum macro minerals levels in prolapsed animals, and calcium serum level was (6.31 ± 0.71 mg/dl), phosphorus (3.69 ± 0.45 mg/dl) and magnesium (2.85 ± 0.18 mg/dl) compared with levels of control animals that showed (10.02 ± 1.52 , 4.97 ± 0.39 , 5.17 ± 0.97) mg/dl of the calcium, phosphorus and magnesium successively. It was concluded that deficiency of calcium, phosphorus and magnesium serum level in the last period of pregnancy and at parturition might be possible causes of post calving uterine prolapse in these buffaloes .

INTRODUCTION

Prolapse of genitalia is one of the major problems causing heavy economic losses to livestock owners through negative influence on the productive and reproductive performance of the buffalo (1). Furthermore, it have been shown that hypocalcemia results in myometrial fatigue and delays cervical involution, both of which could predispose to uterine prolapse (2 ; 3). The reducing values of trace minerals in mother at the time of parturition might also be a

cause of this postpartum prolapse (4 ; 5).The prolapse is visible as a large mass protruding from the vulva, often hanging down below the animal's hock (6). In the period immediately after prolapsed occurs the tissues appear almost normal, but within a few hours they become enlarged and edematous (7).Treatment should begin with restraining and evaluating the patient for the presence of metabolic or musculoskeletal disease and treated as indicated(8). Animals with uterine prolapse treated promptly recovers without complication while delayed treatment could result in death of the animal in a matter of hour or so from internal hemorrhage caused by the weight of the organ which tears the mesovarium and artery (9). The disease was considered as one of the important complication or sequel of abnormal parturition which might lead to economic losses there for the study were aimed to: estimatesome trace elements (calcium, magnesium , and non-organic phosphorus) and to find out the relation of minerals imbalance with uterine prolapse .

MATERIALS AND METHODS

Experimental animals

The present study conducted on local buffalo breed, 3-14 years old. Most of the animals were treated at the consultant veterinary hospital of the veterinary medicine college / University of Basra and at private veterinary clinics . For this purpose , a total of (100) animals were divided into two groups , first group included (40) diseased animals with uterine prolapse and the second group included (60) animals without uterine prolapse (control) .Complete history regarding the clinical status of the disease was obtained.

Blood collection and processing

About (10) ml of blood was collected from (20) animals from each group within 6-72 hours after calving , in clean, sterilized, plane test tubes by jugular vein puncture . Serum was separated from blood samples by centrifugation at (5000 rpm) for 15 minutes, and then the serum samples were stored at(-20 c°) until analyzed for the Calcium , Magnesium and Phosphorus contents. serum calcium concentrations were estimated using the calcium Kit (Accent 200 , China ,Cat. No. 7-247). Serum magnesium concentrations were estimated using the magnesium Kit (Accent 200, China , Cat. No. 7-229). Serum phosphorus level were studied by using the phosphorus Kit (Accent 200 ,China , Cat. No. 7-243). Each of these tests worked by a devicechemistry automatic

analyzer accent 200 system. **Statistical analysis:** The significance of variations between prolapsed animals and non-prolapsed animals were statistically analyzed using (SPSS) student t-test $P \leq 0.05$ (10).

RESULTS

Mean serum values (\pm SE) for calcium, phosphorus and magnesium in control and uterine prolapse affected buffaloes were presented in Table 1. Mean serum calcium concentration in buffaloes suffering from uterine prolapse was 6.31 ± 0.71 mg/dl, while in control animals it was 10.02 ± 1.52 mg/dl. In both groups, mean serum calcium concentration was significantly low ($p \leq 0.05$) in animals that suffering from uterine prolapse compared with that of buffaloes without uterine prolapse. Mean serum values (\pm SE) phosphorus concentration in the serum of buffaloes suffering from uterine prolapse was 3.69 ± 0.45 mg/dl, versus 4.97 ± 0.39 mg/dl in control animals. Serum phosphorus concentration differed significantly ($p \leq 0.05$) in prolapsed animals comparison with control buffaloes. Mean magnesium concentration in the serum of buffaloes suffering from uterine prolapse was 2.85 ± 0.18 mg/dl, while in control animals it was 5.17 ± 0.97 mg/dl. In both groups, magnesium concentration in diseased animals was significantly low ($p \leq 0.05$) compared with the control animals.

Table : Values of serum macro minerals levels (mg/dl) in uterine prolapse and control groups (n=20)

Animals groups	Parameters		
	Calcium serum Level	phosphorus serum Level	Magnesium serum Level
Uterine Prolapse group	$6.31 \pm 0.71^*$	$3.69 \pm 0.45^*$	$2.85 \pm 0.18^*$
Control group	10.02 ± 1.52	4.97 ± 0.39	5.17 ± 0.97

* refer to significant differences at ($p \leq 0.05$)

DISCUSSION

Minerals are an important component of the animals nutrition, they play an important role in metabolism, normal growth and reproduction. Minerals have direct or indirect

effect on the productive and reproductive health of animals (11). Deficiency of some macro minerals as calcium, phosphorus and magnesium may be act as predisposing factor that lead to uterine prolapse in buffaloes (4).

In the present study, there is significant low serum calcium level were recorded in diseased animals. (12;13) were also reported that the occurrence of uterine prolapse might predispose to hypo calcemic in diseased animals. Furthermore, the disturbance in the calcium metabolism and its utilization by the tissue result in atony of genital organ specially the uterus (14).

The second important macro element was phosphorous, which is essential mineral in the body and play an important role in cell metabolism, therefore the maintenance of proper Ca:p ratio is depend on the amount of phosphorous provided (15). In the present study, the results had been shown a low phosphorous level and significant variation in this level between prolapsed animals and control group were recorded. Similar finding had been reported by others (4; 16). The role of phosphorous in phospholipids synthesis might be a main factor to its effect of reproduction and occurrence of uterine prolapse (17). In the present study, there are significant decrease in serum magnesium level in prolapsed animals compared to the control group. Moreover, (13; 4) were also found a similar results. Whereas these results dose not agreed with (18).

Low level of minerals may be resulting from malnutrition and poor quality food such as hay that does not provide adequate amount of macro minerals during the dry period which is necessary for maintenance of these minerals till the calving period (19). Based on the results of the present study, it may be concluded that deficiency of calcium, phosphorus and magnesium might be the possible factor that lead to uterine prolapse in buffaloes.

تأثير نقص بعض المعادن (الكالسيوم ،الفسفور والمغنيسيوم) على حدوث تدلي الرحم في الجاموس المحلي في محافظة البصرة .

موسى فاضل عباس ، طاهر عبد الحسين فهد

فرع الجراحة والتوليد ،كلية الطب البيطري ، جامعة البصرة ، البصرة ، العراق

الخلاصة

هدفت الدراسة الحالية الى تقييم المعادن الكبيرة (كالسيوم وفوسفور ومغنيسيوم) في سلالة الجاموس المحلي التي تعاني من تدلي الرحم مقارنة بالجواميس الأخرى التي لا تعاني من حالة تدلي الرحم . بدأت الدراسة من آب 2015 إلى ايار 2016، وأجريت الدراسة على 100 حيوان (اناث الجاموس) محلي تتراوح اعمارها من 3-14 سنة في محافظة البصرة – العراق . قسمت الحيوانات الى مجموعتين : المجموعة الاولى تتضمن (40) من الحيوانات المريضة بتدلي الرحم والمجموعة الثانية شملت (60) حيوان بدون حالة تدلي الرحم اتخذت كمجموعة سيطرة . الحيوانات المريضة شخّصت من خلال العلامات السريري ، حيث ان تدلي الرحم قيم بعد 6-72 ساعة بعد الولادة . اظهرت النتائج بان هناك نقص في مستوى المعادن الكبيرة في الحيوانات التي تعاني من تدلي الرحم ، حيث بينت النتائج بان مستوى مصل الكالسيوم (0.71 ± 6.31 ملغم/ديسيلتر) ، فوسفور (0.45 ± 3.69 ملغم/ديسيلتر) ومغنيسيوم (2.85 ± 0.18 ملغم/ديسيلتر) مقارنة مع مستوياتها في مصل حيوانات السيطرة ، حيث كانت مستوياتها (10.02 ± 1.52 ، 0.39 ± 4.97 ، 0.97 ± 5.17) ملغم/ديسيلتر لكل من الكالسيوم وفوسفور ومغنيسيوم على التوالي. من خلال هذه الدراسة نستنتج ان نقص كل من الكالسيوم والفسفور والمغنيسيوم في مصل الجاموس الحوامل وخلال الايام الاخيرة من الحمل واثناء الولادة تعتبر من العوامل المهيئة لحدوث حالة تدلي الرحم ما بعد الولادة في الجاموس .

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