

Effect of Prostaglandins F2 α on the Evaluation of Vaginal Epithelial Cells of Iraqi Ewes during Puerperium

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Summary

This study was carried on 24 adult multipara Iraqi ewes in experimental farm related to College of Veterinary Medicine, University of Baghdad during 2005. This study revealed the effect of prostaglandin F2 α during puerperium period through the evaluation of vaginal epithelial cells by using vaginal smear methods. Intramuscular injection of 1 ml prostaglandin F2 α (Iliren®) (tiaprost-trometamol=0.196mg) was done in the 4th days after parturition to 12 ewes. The vaginal smears were taken in the 4th, 16th and 28th days. Histological examination revealed that the intermediate epithelial cells were a predominant. Keratinized cells were takes place in all epithelial cells. Vacuolations were present in the cytoplasm of epithelial cells, meanwhile presence of WBCs in the 16th and 28th days were obvious. This indicates the benefit usage of prostaglandin F2 α during puerperium period to accelerate ovarian rebound.

تأثير هرمون البروستوكلاندين F2 α على تقييم خلايا ظهارة المهبل للنعاج العراقية خلال

فترة النفاس

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فرع الجراحة والتوليد كلية الطب البيطري / جامعة بغداد / بغداد، العراق

الخلاصة

أجريت هذه الدراسة على 24 نعجة عراقية متعددة الولادة في الحقل التجريبي لكلية الطب البيطري، جامعة بغداد خلال عام 2005 لدراسة تأثير هرمون البروستوكلاندين F2 α أثناء فترة بعد الولادة لتقييم الخلايا المهبلية الظهارية بواسطة طريقة المسحات المهبلية. تم حقن 1 مل من هرمون البروستوكلاندين F2 α (Iliren®) (tiaprost-trometamol=0.196mg) في اليوم الرابع بعد الولادة لـ 12 نعجة. أخذت المسحات المهبلية في الأيام 4، 16 و 28. أظهر الفحص النسيجي أن الخلايا الظهارية الوسطية تكون سائدة. ظهر التقرن في كل الخلايا الظهارية. وجدت الفجوات في هيولي الخلايا الظهارية في اليوم 16.

بينما لوحظ ظهور خلايا الدم البيضاء في العينات المفحوصة في اليوم 16 و 28. يشير البحث فائدة استخدام هرمون البروستوكلاندين $F2\alpha$ خلال فترة بعد الولادة ليسرع النشاط المبيضي.

Introduction

The puerperium period involve four main subsequent changes. The most important one is the uterine involution which showed rapid shrinkage and contraction during 3rd to 10th day postpartum and completed by 20-25th days (1 and 2). Many researchers noted different characteristics of vaginal epithelium to diagnose the estrus cycle phases, pregnancy and post parturition. These different characteristics were related to the hormonal effects and ovarian activity (3; 4; 5; 6; and 7). Neama (8) classified the vaginal epithelium into three types, while (9) found that there were four types of vaginal epithelium. All those researchers depending on the cell shape except Dudek (10) who classified these cells into three different diameters as superficial (40-65 μ m), intermediate (20-40 μ m) and parabasal (12-15 μ m) in the postpartum period. This study was conducted to investigate the effect of one injection of prostaglandin $F2\alpha$ in order to note the ovarian activity through the examination of vaginal epithelium.

Materials and Methods

Twenty-four (24) postpartum healthy adult multipara ewes, age 2.5 years which related to the farm of Veterinary Medicine College were used during spring 2005. Injection of prostaglandin $F2\alpha$ (Ilerin produced by Intervet company contain tiaprost-trometamol 0.196mg) was done for 12 ewes at the 4th day after parturition, while 12 other ewes were left as control group. The vaginal smears were taken according to the method of Neama (8) on the 4th, 16th and 28th day postpartum. These smears were stained by methylene blue (11). Measurement for the diameter of vaginal epithelial cells was done by using oculometer (12). Statistical analysis was calculated by LSD method (13).

Results

The results of present study indicated the significant differences ($P<0.01$) were noted in the intermediate of vaginal epithelial cells of the ewes received prostaglandin $F2\alpha$. These intermediate vaginal epithelial cells measured (25-32 μ m). In this study, it has been found a significant ($P<0.01$) increase in the intermediate vaginal epithelial cells which occurred by the 4th, 16th and 28th day after parturition (Table 1, Figure 1) in comparison with parabasal and superficial vaginal epithelial cells as reach 12.5-22 μ m and 37-46 μ m respectively. The percentage of vaginal epithelium cells reach their maximal value in the 16th day

post parturition (Table 1). The vaginal epithelial cells of the control group (Table 1) revealed that the highest percentage of the superficial cells in the 4th day was found as 94.0±2.5%, parabasal cells was 50.0±7.7% in 16th day, while in the 28th day, the highest of the intermediate cells was found 75.0±7.7%.

It was noticeably evident that there were no significant differences in the keratinization of the vaginal epithelial cells between the animals received prostaglandin and control group.

Presence of vacuoles in the cytoplasm of the vaginal epithelial cells which measured 2.5-3µm in diameter in treated and control ewes (Figure 2) were evident. Presence of WBCs in the 16th and 28th days in ewes received prostaglandin and control one was identified (Table 2).

Table 1: Effect of prostaglandin F2α on vaginal epithelial cells during puerperium periods of Iraqi ewes. (Mean±S.E.).

Cell types		Parabasal cell (12.5-22µm)	Intermediate cell (25-32µm)	Superficial cell (37-46µm)	Keratinized cell (without nucleus)
animal stages					
N=12 Treated group	4 th day injected ewes	27.75±5.70 ai	71.25±5.40 kl	01.00±0.70 a	46.00±7.80 dk
	16 th day injected ewes	08.70±3.00 ac	91.30±3.00 l	00.00±0.00 a	47.30±7.80 ek
	28 th day injected ewes	20.30±2.30 af	58.70±8.90 jk	21.00±6.90 ag	55.00±1.80 ik
N=12 Control group	4 th day control ewes	33.00±4.40 cj	18.00±2.20 ad	49.00±2.50 fk	53.25±2.20 ik
	16 th day control ewes	50.00±7.70 gk	31.50±5.50 bj	18.50±3.50 ae	48.50±7.40 fk
	28 th day control ewes	28.25±3.90 ai	43.75±7.70 dj	28.00±4.80 ai	52.00±7.70 hk

The numbers represent the mean ± the SE, the small letter represent significant differences at P<0.01.

Table 2: Presence of WBCs during puerperium periods

Puerperium stages	4 th day	16 th day	28 th day
Ewes groups			
Injected group	---	+	---
Control group	---	+	+

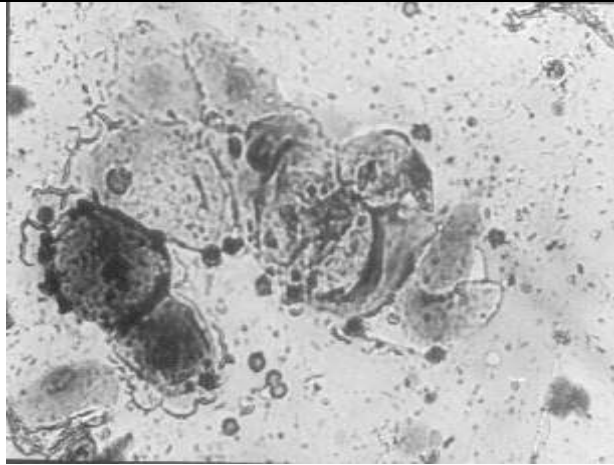


Figure (1): Vaginal epithelial cells with different sizes during puerperium periods in Iraqi ewes.

Methylene blue stain 400X

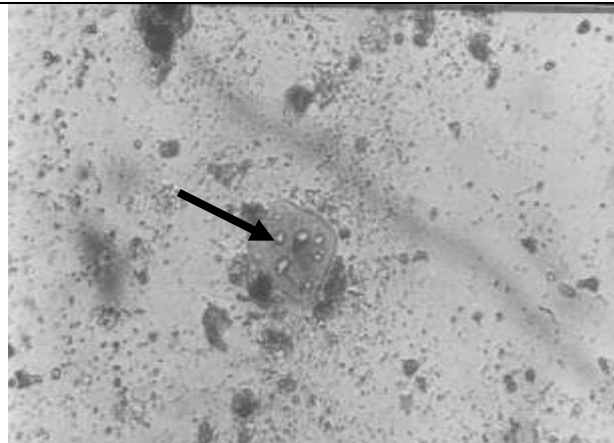


Figure (2): Vacuoles in the vaginal epithelial cells during puerperium periods in Iraqi ewes (arrow).

Methylene blue stain 400X

Discussion

Many researchers use the prostaglandin (PGF₂ α) after parturition in many cases such as (14 and 15). Other workers have described the shape of vaginal

epithelial cells (8 and 16). While (17) registered that the shape of vaginal epithelial cells occur due to pressure of the adjacent cells. The present work involves the study of diameter and arrangement of vaginal cells.

The results of the present study clearly indicate significant increase ($P < 0.01$) in intermediate vaginal epithelial cells in puerperium periods. This coincided with the work of (18) who differentiate superficial and intermediate cells for lactating ewes. Similar results of the 28th day control ewes were found (19). The present work may revealed that the diameter of vaginal epithelial cells were under the effect of hormonal status. This confirmed with the previous studies which conducted in Iraq (8 and 20) and elsewhere in other regions (9; 14 and 21). These results also indicate that the administration of hormonal therapy in post-partum ewes increases detection of ovarian activity 3-10 days less than control ones. This is in agreement with (22 and 23).

In view of our finding, there were no significant differences in keratinization between two groups of ewes. This leads to the suggestion that those keratinized vaginal epithelial cells suffering from apoptosis then it engulfed by WBCs. This is similar to the finding of (24 and 25).

The presence of vacuoles in the 16th day post parturition have been successfully identify in this work. Meanwhile (26) claimed that the vacuoles might be occurred from glycogen consumption during ovarian activity. While Arthur et al. (19) stated that those vacuolation were typical in metestrus phase.

The presence of WBCs in the 16th and 28th day post-partum due to an increase of immunity following estrogenic increase that leads to recovery period. This is in accordance with (27 and 28).

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