Laparoscopic Evaluation of Ovarian Responses for Iraqi Local Goats to Different Superovulatory Regimen

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Abstract

A total number of 20 Iraqi local breed goats were allotted randomly at four groups (5 goats for each) and treated by different hormonal regimes Group A given PMSG (Folligon ®) 1000 IU. I.M, Group B given LH-FSH (Pluset ®) 500 IU-I.M, group C given urofollitrophin FSH (Metrodin® HP) 450 IU. I.M and group D were leaved as a control. The responses to these hormonal regimes were evaluated by laparoscopy. The number of corpora lutea and large non-ovulatory follicles were considered for evaluation. Results of the present study indicated that the goats treated with urofollitrophin (FSH) had the largest number of (CLS) and large non-ovulatory follicles.

تقييم استجابة المبايض لبرامج فرط الإباضة المختلفة باستخدام تقنية الناظور البطني

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الخلاصة

استخدمت 20 معزة عراقية محلية تم قسمت إلى أربعة مجاميع (كل مجموعة تضم 5 معزات) وعوملت ببرامج هرمونية مختلفة, المجموعة أ حقنت بهرمون مغذي الاقناد مصل دم الأفراس الحوامل فوليكـــون1000 وحدة دولية عن طريق العضل, المجموعة ب أعطيت الهرمون اللوتيني–الهرمون المحفز للجريبات (بلوسيت) 500 وحدة دولية عن طريق العضل, المجموعة ت أعطيت هرمون المحفز للجريبات (مترودين) 450 وحـــدة دولية عن طريق العضل في حين تركت المجموعة من غير علاج كمجموعة سيطرة. تم تقييم الاستجابة للبرامج الهرمونية باستخدام جهاز الناظور البطني, من خلال حساب عدد الأجسام الصفراء والجريبات الكبيرة الغيـــر إباضية, أظهرت نتائج الدراسة زيادة معنوية في إعداد الأجسام الصفراء والجريبات الكبيرة الغير إباضية فـــي مجموعة المعز المعاملة بهرمون المحفز لنمو الجريبات المترودين مقارنة بالمجاميع الأخرى.

Introduction

Superovulation is the process by which ovaries are stimulated to release more than the normal number of ova, for purposes of genetic improvement of live stock in conjunction with embryo transfer technique (1). In goat, superovulation was readily achieved by treatment with different forms of exogenous gonadotropins. The most commonly used hormonal preparation in eCG (2), fresh dried follicle stimulating hormone preparation from either horses (HAP) (3), sheep (SAP) and pigs (FSHP) (4), combination of FSH and LH activity (5). Meanwhile no report was available about the use of urofollitrophim (FSH) to induce superovulation in goat. Although most of these

studies have been done on seasonal breeding goat, high variability of Superovulatory responses to the last mentioned gonadotropin regimens in goat have been recorded. Several reports described Iraqi local goats as non seasonal breeder (6), and there are no reports available about the use of different hormonal regimen to induce supervulation in these animals. Therefore the current study has been planned and performed to evaluate the Superovulatory responses of different gonadotropins hormones regimens in Iraqi local goat with laproscopy.

Materials and Methods

Twenty multiparous (3-4) years of age local Iraqi goats were used in the present study in tear 2001. All animals were received vaginal sponges containing 40mg of fluorogeston acetate (FGA) (Syncro-Part ® Sanofi Animal Health-France) for 12 days before they were allotted to four groups of 5 goats per group. Groups A, B and C were superovulated with eCG (Folligon® Intervet International B.V. Boxmeer-Holland), FSHP-LHP (Pluset®Barcelones Spain), and Urofollitrophin (FSH) (Metrodin-HP® Industria Farmacentical SERONO S.P.A) respectively. Whereas goats in group D were injected 5ml (IM) of normal saline and left as a control group. The Superovulatory regimens of the last mentioned gonadotropins were summarized in Fig 1, 2, 3, 4. The degree of ovarian responses to the previous mentioned gonadotropin regimens depending on the number of corporal lutea Fig. (5) and large non-ovulatory follicles Fig. (6) were performed by laproscopy (endoscope) wolf-Germany) as described by Al-Ahmed (2002) Fig. (7), statistical analysis of the data were performed using ANOVA (F-test) and t-test.

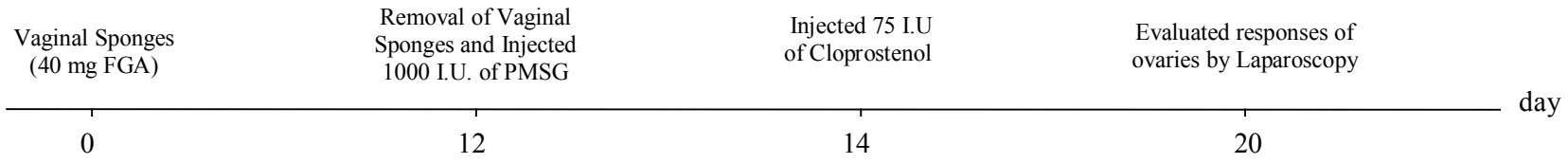

Fig. (1) Hormonal regimen of group (A)

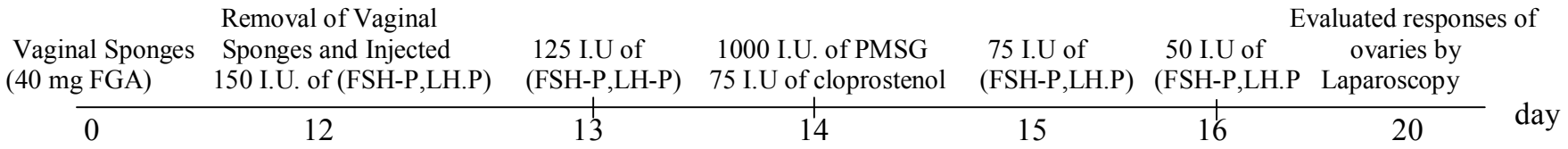

Fig. (2) Hormonal regimen of group (B)

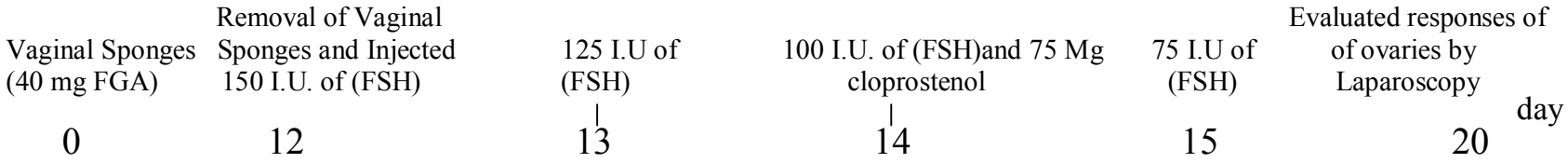

Fig. (3) Hormonal regimen of group (C)

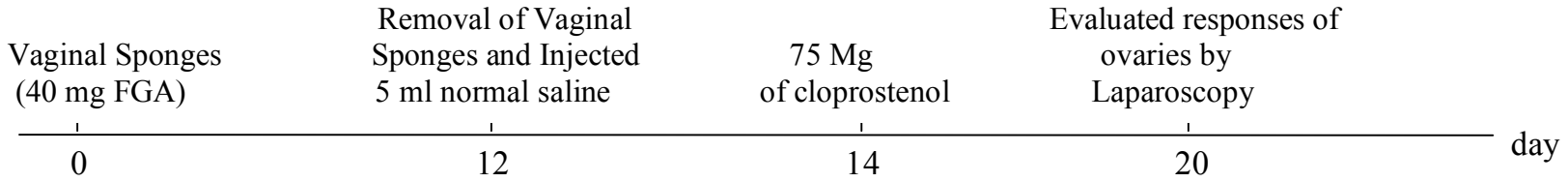

Fig. (4) Hormonal regimen of group (D)

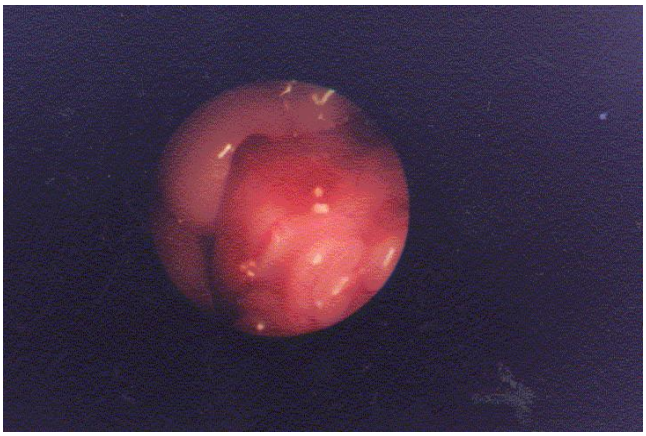

Fig. (5) Corpora lutea on the superovulated ovary

Fig. (6) Non-ovulatory follicles on superovulated ovary

Fig. (7) Laparosocopy (Original Wolf, Germany) to evaluate the Superovulatory responses in goat ovary

Results

The number of corpora lutea was low in all four groups ranging from 5-7 in group A, 4-9 in group B, 9-13 in group C and 1-3 in group D (Table 1). The number of large nonovulatory follicles in all four groups ranging from 3-5 in groups A and B, 2-4 in group C and 1-3 in group D (Table 1). The number of corpora lutea and large non-ovulatory follicles were significantly higher ($p<0.05$)in all three groups (A, B and C) as compared with the group D (Table 1). However, the mean number of corpora lutea in group C were significantly higher ($p<0.05$) compared with groups A and B (Table 1). Meanwhile there was no significant difference between the number of corpora lutea and nonovulatory follicles presented on the right and left ovaries in the four groups (Table 2).

Table (1) Range and mean number of CLS and non-ovulatory follicles on ovaries of goats in four groups

Groups	Range of CLS	Mean of No.	Range of No. of non-ovulatory follicles	Range of No. of non-ovulatory follicles
A	5-7	^{A}6± 0.25	3-5	^{A} 4.2± 0.17
B	4-9	^{A} 6.4±0.32	3-5	^{A} 3.6± 0.20
C	9-13	^{B} 10.6±0.30	2-4	^{A} 3.4±0.40
D	1-3	^{C} 1.8±0.23	1-3	^{B} 1.6±0.20

Mean +SE

There was a significant difference between different letters ($p<0.05$).

Table (2) Mean ±SE and numbers of corpora lutea and non-ovulatory follicles on right and left ovaries of goats in four groups

Groups	Right ovary		Left ovary	
	No. of CLS	No. of non-ovulatory follicles	No. of CLS	No. of non-ovulatory follicles
A	3±0.31	2.4± 0.24	3± 0.44	1.8±0.20
B	3.2±0.20	2±0.00	3.2± 0.66	1.6±0.40
C	5.2±0.37	2±0.31	5.4± 0.50	1.4±0.24
D	1±0.31	1±0.31	0.8± 0.14	0,6±0.24

Mean +SE

There was a significant difference between different letters ($p<0.05$).

Discussion

Iraqi local goats are non seasonal breeding animals with average number of per female is (1.2) in natural breeding (6). The results of the present study clearly indicate that non seasonal-local Iraqi goat responded to superovulation treatment with exogenous gonadotropins in treated group (D). All goats in the four groups exhibited a low degree of variability in the numbers of corpora lultea and non-ovulatory follicles, This results was not agreed with the results of other workers (7, 8). The low variability of ovulation rate in ovaries of goats in the four groups might be due to nutritional and genetic factors. There was non-significant differences between the number of corpora lutea and nonovulatory follicles presented on the right and lift ovaries of goats in four groups, similar observation have been reported by Riha and Cunta (9) in Mohair and Sannen goats. The results showed a significant increase in ovulation rate in the ovaries of goats in-group C comparing with goat in groups A and B. And this could be attributed to the highly purified hormone obtained from human menopausal urine having only FSH activity (Metrodin-HP®). In this regard FSH stimulate both growth and the maturation of ovulatory follicles, it induces the secretion of oestrogns which stimulate the pituitary gland to secrete the endogenous lutenizing hormone (10). Mean while the use of PMSG and LHP Leads to lutenization the ovulatory follicles and reduce the rate of ovulation (3).

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