

Clinical & Therapeutical study on inactive ovaries in Holstein- Friesian cows by using different hormonal regimes.

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Abstract

This study was performed on 45 lactating Holstein -Friesian cows suffered from inactive ovaries for three months postpartum and diagnosed clinically by rectal palpation in the farm of college of agriculture / university of Baghdad, their ages 3-5 years during the period from 2010-2012. These cows were divided randomly in to four groups ,1st group (12 cows) were injected with 0.021mg (5ml) Receptal® I/M, 2nd group(12cows) were given 1000 IU(5ml) eCG I/M ,3rd group (12 cows) injected with 1500 IU (5ml) HCG I/M in one dose and 4th group (9 cows) without treatment (control group). The response rate was 91.8%, 83.3%, 91.6%, and 66.6% for the four groups respectively. While the duration of response (from treatment to estrus appearance) was 7.43±1.56, 10.66±2.37, 8.44±2.41and 67.63%±9.87 in the 1st, 2nd ,3rd, and 4th groups respectively, but the pregnancy rate recorded 90.9%, 80%, 81.8%, 83.3%. The statistical analysis showed that the 1st and 3rd group was recorded significant differences higher ($p < 0.01$) than other groups (2nd and 4th) related with responsive animal and the duration of response also, but the pregnancy rate recorded higher significance in 1st group ($p < 0.01$) compared with 2nd , 3rd and 4th groups. The number of services/ conception was more than 1.5- 2.5 for all groups & not significant, the days open recorded higher significant ($p < 0.01$) in 1st. 2nd and 3rd compared with 4th group (control group).

Key words- hormonal regime, inactive ovaries, Holstein-Friesian, Receptal®, Serigan®, I.V.F-C®

الخلاصة

اجريت الدراسة على ٤٥ بقرة (هولشتاين-فريزيان) الحلوب في كلية الزراعة-جامعة بغداد، للفترة مابين (٢٠١٠-٢٠١٢) وكانت اعمارها من ٣-٥ سنوات، والتي تعاني من خمول المبايض لمدة ثلاثة اشهر بعد الولادة، وقد شخصت بواسطة الجس بواسطة المستقيم. قسمت الابقار عشوائيا الى اربعة مجاميع ، المجموعة الاولى(١٢) بقرة وقد اعطيت ٠,٠٢١ ملغم(٥) مل رسبتال بالعضل، المجموعة الثانية (١٢) بقرة بالعضل ، المجموعة الثالثة (١٢) وقد اعطيت ١٥٠٠ eCG اعطيت ١٠٠٠ وحده دوليه من هرمون GCh بواسطة الضل ايضا، والمجموعة الرابعة(٩) بدون علاج(مجموعة السيطرة). وقد كانت نتائج الاستجابة هي ٩١,٨% ، ٨٣,٣% ، ٩١,٦% ، ٦٦,٦% على التوالي. وقد كانت مدة الاستجابة" من بدء العلاج ولغاية ظهور الشبق" ٧,٤٣ ± ١٠,٥٦ او ١٠,٦٦ ± ٢,٣٧ و ٨,٤٤ ± ٢,٤١ و ٩,٨٧ ± ٦٧,٦٣ على التوالي. ولكن نسبة الحمل في المجاميع كانت ٩٠,٠% و ٨٠% و ٨١,٨% و ٨٣,٣% وللمجاميع الاربعة على التوالي. وقد سجلت المجموعة الاولى والثالثة فرقا احصائيا اكثر من $P < ٠,٠١$ مقارنة بالمجاميع الثانية والرابعة في حالة استجابة الحيوانات للعلاج وكذلك مدة الاستجابة ولكن في حالة نسبة الحمل اظهرت المجموعة الاولى فرقا احصائيا بنسبة $P < ٠,٠١$ متفوقة على المجاميع الثانية والثالثة والرابعة على التوالي. ولم تظهر ايا من المجاميع الاربعة فرقا يذكر في حالة عدد مرات التسفيد. الايام المفتوحة سجلت فرقا احصائيا بنسبة $P < ٠,٠١$ في المجاميع الاولى والثانية والثالثة مقارنة بالمجموعة الرابعة(مجموعه السيطرة).

Introduction

The most common causes of anestrus at the postpartum period in cows represented by many reproductive disorders but the inactive ovaries is one of the most important problems which affects the reproductive efficiency in this period(Roche et.al.,1991; Beam & Butler1999; and Robert& Walter 2007). Many factors affect the interval from parturition to the first estrus and conception at the time of breeding; these include energy balance , high milk production , calf removal and early weaning (Arthington& Kalmbacher 2003; Arthington& Minton 2004; Mwaanga& Janowski 2000; and Wiltbank 2005). Administration of GnRh during the early postpartum period has increased early ovulation, the effect on the interval from the calving to conception has been variable(Stevenson& Call 1988; Archblad et.al., 1999;Foot & Rick1990). The LH response produced by GnRh injection in postpartum cows is similar to that seen following its use in cycling cows(Kesler et al., 1977; and Devries& Melendez 2008). GnRh induced ovulation is significantly affected by follicle size and increasing plasma estradiol level at the time of treatment(Hyder & Utlah 2002; and Mwaanga et Al., 2004). Maximum life time, production of milk and offspring can be achieved if calving intervals are one year or less(Rafique et al., 2000; Sattar et al., 2005; and Thomas& Rathwell 1990). Many authors reported that administration of hormones included eCG, GnRh ,progesterone or Hcg during the early postpartum period has increased early ovulation but the effect on the interval from calving to conception has been variable(Foot & Rick 1999; Thatcher et al., 2001; and Yaras &Walton 2000).

This study presents the postpartum anestrus (inactive ovaries) in Holstein- Friesian cows in Iraq and to investigate the different hormonal treatment upon inactive ovaries.

Materials and Methods

The study was conducted on 45 lactating Holstein- Friesian cows suffering from inactive ovaries (diagnosed clinically by rectal palpation) in the farm of the college of agriculture/ University of Baghdad. These cows had treated with different hormonal regimes at day 90 postpartum period according to their parturient dates during the period from 2010- 2012, their ages from 3-5 years, these cows were divided randomly into 4 groups,1st group includes 12 cows injected with GnRh analogue{ Receptal® (Intervet B.V. Booxmeer, Holland)} 0.021mg (5ml)I/M in one dose at day 90 postpartum. 2nd group (12 cows)injected with eCG [Serigan®(Laboratories ovejero, S. A. Leon-Spain)]1000 IU(5ml)I/M, in one dose. 3rd group (12cows) administered by hCG[I.V.F-C(Yougie- dong, Ikan-si, Jonbuk- do, Korea)] 1000 IU(5ml)I/M in one dose also. and the 4th group (9 cows) without treatment (control group) and they considered as a control group. The number of responsive animals, duration of response, number of services per conception, number of conceived animals, days open was recorded as well as the nature of parturition, viability and sex of new born. For analysis of the data we use mean, standard error, Chi-square and F- test according to ,Steel &Torrie (1948).

Results

The results were showed in table-1- represented the type of treatment and response to their treatment, the response were 91.8%,83.3%, 91.5%,and 66.6% in the 1st,2nd,3rd and 4th groups respectively. While the duration from treatment till the estrus appearance was

7.43±1.56 days, 10.66±2.37days, 8.44 ±2.41 days and 67.63 ±9.87days but the pregnancy rate recorded 90.9%, 80% , 81.8% and 83.3%.

Table-2- showed the number of services per conception, number of conceived animals and days open. These reproductive parameters were recorded no significant differences ($p < 0.01$) between all groups about the number of services per conception, while the days open was recorded significant differences ($p < 0.01$) between the 1st, 2nd and 3rd compared with 4th group (control group), but the nature of parturition showed that normal parturition recorded 78.1% compared with 21.9% represented dystocial parturition (due to many causes) while the sex of calves recorded 56.2% male and 43.8% for female, but the viability of calves were 93.7% for alive calves and 6.3% for dead calves.

Table-1- showed the type of treatment , animal response, duration of response and pregnancy rate.

Groups	No. of animals	Type of treatment	Response of the animals No. %	Duration of response	Pregnancy rate No. %
G1	12	eCG (Serigan) 1000IU(5ml)I/M	11 91.8 a	7.43±1.56 A	10 90.9 a
G2	12	hCG(I.V.F-C) 1500I.U(5ml)I/M	10 83.3 a	10.66±2.37 A	8 80 b
G3	12	GnRh(Receptal) 0.021mg(5ml)I/M	11 91.8 a	8.44±2.41 A	9 81.8 b
G4	9	Control group Without treatment	6 66.6 c	67.63±9.87 c	5 83.3 b

*Different letters means significant differences $p < 0.01$.

Table-2- showed the number of services /conception, days open, and nature of parturition.

Groups	No. of animals	Conceived animals	No. of Services/ Conception		Days Open		Nature Of Parturition		Sex Of Calves		Viability	
			M ± SE		M±SD		N	D	M	F	D	A
1	12	10	2.02±0.41 a		134.36± 8.27 a		7	3	6	4	9	1
2	12	8	1.98± 0.6 a		137.35± 9.15 a		7	1	4	4	7	1
3	12	9	2.13±0.43 a		136.85± 7.42 a		7	2	5	4	9	0
4	9	5	2.23±0.13 a		196.63± 8.26 a		4	1	3	2	5	0
Total	45	32	-----		-----		25 78.1 %	7 21.9%	18 56.2%	14 43.8%	30 93.7%	2 6.3%

Different letters means significant difference (p<0.01).
N-normal, D-dystocia, M- male, F- female, D- dead, A- alive.

Discussion

Our study was directed to the group of cows with slow involution of the reproductive system in an attempt to stimulate the changes in these cows soon after parturition needed for initiation of pregnancy at the desired time. The early postpartum treatment with GnRH usually resulted in hastening the onset of ovulation and normal estrous cycle activity in clinically normal dairy cows(Kesle et al.,1977). The initiation of cyclic activity, with the completion of several cycles before insemination, seems to be a key factor in enabling cows to maintain a high reproductive rate (Foot et al.,1999). The result revealed that the responsive animals and duration of response in 1st and 3rd group were recorded superior significant difference (p<0.01) compared with the 2nd and 4th group, also the 2nd group recorded a higher significant differences (p<0.01) with the 4th group (control group) (Robert& Walter 2007; Arthington& Kalmbacher 2003; Arthington& Minton2004; and Stevenson& Call 1988). this results agreement with Mwaanga & Janowski 2000; Archblad et al.,1990; Kesler et al.,1977; and Hyder & Utlah 2002). The pregnancy rate was significantly higher (p<0.01) in the 1st group compared with the 2nd, 3rd and 4th group(Arthington & Kalmbacher 2003; and Archblad et al.,1990). There are no significant differences between all groups related with the number of services per conception (Mwaanga et al., 2004). While the days open was recorded superior significant differences (p<0.01) between 1st, 2nd and 3rd group compared with 4th group, these result agreed with(Foot& Rick1999; Kesler et al.,1977;and Hyder& Utlah 2002), and reported by authors (Mwaanga & Janowski 2000; Stevenson &Call 1988; Sattar et al., 2005; and Thomas& Raathwell 1990) . these results which explain the role of the hormonal treatments for improving the reproductive parameters. The dystocia parturitions rate were recorded 21.9% in all groups as well as they recorded 93.7% which

represents a live newborn and 6.3% for the dead(Hyder & Utlah 2002; Rafique et al., 2000; and Sattar et al., 2005).

It was concluded that the using of hormonal regimes in early postpartum which indicated to reduce the reproductive problems especially inactive ovaries.

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