Clinical & therapeutical study on inactive ovaries in Holstein-Friesian cows by using GnRH analogues.

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Abstract

This study was performed on 45 lactating Holstein – Friesian cows suffered from inactive ovaries for three months post partum and diagnosed clinically by rectal palpation in the form of the college of Agriculture / University of Baghdad , their ages 3-5 years during the period from 2010-2012. These cows were divided randomly into 4 groups, 1st group (12 cows) were injected with 0.021mg (5 ml) Receptal I/M, 2nd group (12 cows) were given 500 µg (5ml) Cystorelyin I/M, 3rd group (12 cows) injected with 0.5 mg (5 ml) Fertagil 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 oestrus appearance) was 7.43 ± 1.56 , 10.66 ± 2.37 , 8.44 ± 2.41 and 67.63 ± 9.87 in the 1st, 2nd, 3rd and 4th groups respectively, but the pregnancy rate recorded 90.9%, 80%, 81.8% and 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 ($p < 0.01$) 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).

Introduction

The most common causes of the anestrus at the post partum period in cows represented by many reproductive disorders but the inactive ovaries is one of the most important problems which affected on reproductive efficiency in this period (1, 2 and 3). 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 (4, 5, 6 and 7). Administration of GnRH during the early post partum period has increased early ovulation, but the effect on the interval from calving to conception has been variable (8, 9

and 10), the LH response produced by GnRH injection in post partum cows is similar to that seen following its use in cycling cows (11 and 12). GnRH induced ovulation is significantly affected by follicle size and increasing plasma estradiol level at the time of treatment (13 and 14). Maximum life time, production of milk and offspring can be achieved if calving intervals are one year or less (15, 16 and 17). This study presents the post partum anestrus (inactive ovaries) in Holstein – Friesian cows in Iraqi and to investigate the different GnRH analogue treatment upon inactive ovaries.

Materials and Methods

This 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 treated with different

analogues of GnRH at day 90 of post partum period according to their parturient dates during the period from 2010-2012, Their ages 3-5 years, these cows were divided randomly into 4 groups, 1st group included 12 cows injected with GnRH analogue

[Receptal (Intervet B.V.Booxmeer, Holland)] 0.021 mg (5ml) I/M in one dose at day 90 post partum, 2nd group (12 cows) injected with GnRH analogue [Cystorelyn (CEVA.SANTE-ANIMAL-Spain)] 500µg (5ml) I/M in one dose, 3rd group (12 cows) administered by GnRH analogue [Fertagil (Intervet-International, Holland)] 0.5mg (5ml) I/M in one dose also and 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 newborn. For analyses of the data used mean, standard error, Chi-square and F-test according to (18).

Results

The results were showed in table -1- represented the type of treatment and response to their treatment, response cows 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 day, 10.66±2.37day, 8.44±2.41day and 67.63±9.87 day 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, response animal, duration of response and pregnancy rate.

Groups	No. of animals	Type of treatment	Response of animals		Duration of response (days)	Pregnancy rate	
			No.	%		No.	%
G1	12	GnRH (Receptal) 0.021mg (5ml) I/M	11	91.8	7.43±1.56	10	90.9
			a		a	a	
G2	12	GnRH (Cystorelyn) 500µg (5ml) I/M	10	83.3	10.66±2.37	8	80
			b		b	b	
G3	12	GnRH (Fertagil) 0.5mg (5ml) I/M	11	91.8	8.44±2.41	9	81.8
			a		a	b	
G4	9	Control group (without treatment)	6	66.6	67.63±9.87	5	83.3
			c		c	b	

*different letters mean 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±SE	N	D	M	F	D	A
1	12	10	2.02±0.41a	134.36±8.27a	7	3	6	4	9	1
2	12	8	1.98±0.62a	137.35±9.15a	7	1	4	4	7	1
3	12	9	2.13±0.43a	136.85±7.42a	7	2	5	4	9	0
4	9	5	2.23±0.13a	196.63±8.26b	4	1	3	2	5	0
Total	45	32	-----	-----	25	7	18	14	30	2
					78.1					
					21.9%		56.2%	43.8%	93.7%	6.3%

*different letters mean significant differences $p < 0.01$.

N =normal, D=Dystocia, M=male, F=female, D=dead, A=alive.

Results

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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 dystocia parturition (due to many causes) while the sex of calves recorded 56.2% male and 43.8% for female, the viability of calves were 93.7% for alive calves and 6.3% for dead calves.

Discussion

The results revealed that the responsive animals and duration of response in 1st and 3rd group were recorded superior significant differences ($p < 0.01$) compared with 2nd and 4th group, also the 2nd group recorded higher significant differences ($p < 0.01$) with 4th group (control group) (3, 4, 5 and 8), this results agreement with 6, 9, 11 and 13. The pregnancy rate was significantly higher ($p < 0.01$) in 1st group compared with 2nd, 3rd and 4th groups (4 and 9). There are no significant differences between all groups related with the number of services per conception (14), while the days open was recorded superior significant differences

($p < 0.01$) between 1st, 2nd and 3rd group compared with 4th group, these results agree with 10, 11, 13 and reported by many authors (6, 8, 16 and 17) and these results which explain the role of 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 represented a live newborn and 6.3% for dead (13, 15 and 16). It was concluded that the using of hormonal regimes in post partum which indicated to reduce the reproductive problems especially inactive ovaries.

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Principles and procedures of

دراسة سريرية وعلاجية لحالة خمول المبايض في ابقار الهولشتاين – فريزيان باستخدام نظائر الهرمون المحفز لهرمونات القند.

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الخلاصة

اجريت الدراسة على 45 من ابقار الهولشتاين – فريزيان الحلوب والتي تعاني من حالة خمول المبايض لثلاثة اشهر بعد الولادة وتم تشخيصها سريريا بواسطة الجس عبر المستقيم في مزرعة كلية الزراعة / جامعة بغداد ، تراوحت اعمارها من 3-5 سنوات للفترة من 2010-2012 ، قسمت هذه الابقار عشوائيا الى اربعة مجاميع ، المجموعة الاولى (12 بقرة) تم حقنها 0.021 ملغم (5 مل) ريسبيبتال بالعضل ، المجموعة الثانية (12 بقرة) اعطيت 500 مايكوغرام (5 مل) سيستوريلين بالعضل ايضا ، اما المجموعة الثالثة (12 بقرة) حقنت 0.5 ملغم (5 مل) فرتاجيل بالعضل وبجرعة واحدة وتركت المجموعة الرابعة (9 ابقار) بدون علاج كمجموعة سيطرة. كانت نسبة الاستجابة 91.8% ، 83.3% ، 91.6% و 66.6% للمجاميع الاربعة على التوالي. وكانت فترة الاستجابة (من العلاج الى ظهور الصراف) 1.56 ± 7.43 ، 2.37 ± 10.66 ، 2.41 ± 8.44 و 9.87 ± 67.63 في المجاميع الاولى والثانية والثالثة والرابعة على التوالي . بينما سجلت نسبة الحمل 90.9% ، 80% ، 81.8% و 83.3% للمجاميع الاربعة ، وقد اظهر التحليل الاحصائي ان المجموعة الاولى والثالثة كانت الاعلى بمستوى معنوية 0.01 مقارنة المجموعتين الثانية والرابعة بالنسبة لاستجابة الحيوانات للعلاج وفترة الاستجابة ، بينما كانت نسبة الحمل في المجموعة الاولى اعلى بمستوى معنوية 0.01 مقارنة مع المجاميع الثانية والثالثة والرابعة . كان عدد التلقيحات /الاخصاب اكثر من 1.5-2.5 لكل المجاميع وبدون فارق احصائي . وسجلت الايام المفتوحة اعلى فرق احصائي بمستوى معنوية 0.01 في المجموعة الرابعة مقارنة مع المجاميع الاولى والثانية والثالثة .