Hormonal treatments of inactive ovaries in Iraqi cows and Buffaloes

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Abstract

This study was conducted on thirty four cows and twenty five buffaloes aged between 3.5- 7 years old in Abu-grab and White gold village at Baghdad suburban. Clinical diagnosis of inactive ovaries was performed by rectal palpation and accomplished by a history of anestrum for at least 3 months postpartum. The cows and buffaloes were randomly divided into 4 groups and treated as follows, G1: 12 cow and 7 buffaloes injected with 1000 I.U eCG (Folligon, Intervet) I.M, G2: 7 cows and 5 buffaloes injected with o.5 mg GnRH analogue I.M (Fertagyl, Intervet). G3: 8 cows and 7 buffaloes injected with 1000 I.U. eCG and o.5 mg GnRH analogue I.M. , G4 : 7 cows and 6 buffaloes injected with 1000 I.U. eCG I.M. and 1500 I.U. hCG (Chorulon, Intervet) I.M. All the treated animals were left free with males to ensure mating.

Results of cows responded to various treatments and showed signs of estrus were 9/12 (75%), 3/7 (42.85%), 7/8 (87.5%), and 6/7 (85.71) in G1, G2, G3, and G4 respectively, While the durations of response were 4.12 ±2.1 days, 6.48±2.9 days, 4.89 ±2.8 days and 4.11 ±2.6 days in the same sequence of groups. The number of cows which subsequently became pregnant were G1: 5/9 (55.55%), G2: 1/3 (33.33%), G3: 4/7 (57.14%) and G4: 3/6 (50%). While the number of buffaloes responded to the same treatments and showed signs of estrus were 5/7 (71.42%), 2/5 (40%), 6/7 (85.71%), and 5/6 (83.33%) in G1, G2, G3, and G4 respectively. The durations of response were 4.66 ±2.25 days, 6.1 ±2.82 days, 3.92±1.9 days and 3.5±1.3 days. The number of buffaloes which subsequently became pregnant were G1: 3/5 (60%), G2: ½ (50%), G3: 3/6 (50%), G4: 3/5(60%). It was concluded that the use of GnRH alone gave a significantly lower effect in treating cases of inactive ovaries and also the use of GnRH or hCG with eCG as a combination did not give an additional improvement in results of treating the same cases in both types of animals.

استخدام علاجات هرمونية مختلفة لعلاج حالات خمول المبايض في الأبقار والجاموس العراقي

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الخلاصة

استخدمت في هذه الدراسة 34 بقرة و25 جاموسة تراوحت أعمارها بين 3.5– 7 سنوات في منطقة أبو غريب وقرية الذهب الابيض بضواحي بغداد. تم تشخيص خمول المبايض في تلك الحيوانات من خلال جس المبايض عبر المستقيم إضافة إلى تاريخ الحالة الذي يؤكد انعدام الشبق لفترة لا تقل عن ثلاثة أشهر بعد الولادة. قسمت الأبقار والجاموس إلى أربعة مجاميع علاجيه: الأولى: 12 بقرة و7 جاموسات حقنت 1000 وحده دولية eCG فولكون بالعضل. الثانية: 7 أبقار و5 جاموسات حقنت 0.5 ملغم GnRH فرتاجيل بالعضل. الثالثة: 8 أبقار و7 جاموسات حقنت 1000 وحدة دولية eCG إضافة إلى 0.5 ملغم GnRH بالعضل. الرابعة: 7 أبقار و6 جاموسات حقنت 1000 وحدة دولية eCG فولكون إضافة إلى 1500 وحدة دولية hCG كوريولون بالعضل. تركت جميع الحيوانات المعالجة طليقة مع الذكور لضمان التزاوج. كانت نتائج مجاميع الأبقار المعالجة والتي أظهرت

علامات شبق هي 9/ 12 75% و7/3 42.85% و7/8 87.5% و7/6 85.71% في كل من المجاميع 1 و2 و3 و4 على التوالي. كما ان فترة الاستجابة كانت 4.12±2.1 يوم و6.48 ±2.9 يوم و4.89±2.8 يوم و4.11±2.6 يوم على التوالي أيضا. أما عدد الأبقار التي حملت فيما بعد فكانت م1: 5/9 (55.55%) وم2: 3/1 33.33% وم3: 7/4 57.14% وم4: 6/3 50%. اما نتائج مجاميع الجاموس التي استجابت لنفس العلاجات وأظهرت علامات شبق فكانت 7/5 71.42% و5/2 40% و7/6 85.71% و6/5 83.33% في المجاميع 1و2و3و4 على التوالي. وبالنسبة إلى فترات الاستجابة فكانت 4.66±2.25 يوم و6.1±2.82 يوم و3.92±1.9 يوم و3.5±1.3 يوم على التوالي. أخيرا فان عدد الحيوانات التي حملت كانت م1: 5/3 60% وم2: ½ 50% وم3: 6/3 50% وم4: 5/3 60%. وقد أستنتج من الدراسة ان استخدام GnRH لوحده قد أعطى أوطأ استجابة بالمقارنة مع باقي العلاجات. كما ان استخدام مزيج GnRH أو hCG مع الـ eCG لم يعطي تحسن ملحوظ بالاستجابة في كل من الأبقار والجاموس.

Introduction

Inactive ovaries and anestrous in both cows and buffaloes are usually leads to prolonged calving intervals and the resultant is an extensive economic loss (1). Reasons of inactive ovaries have been investigated and categorized by many authors as high lactation or extensive milking (2), malnutrition (3) and puerperal and organic diseases(4). Unfortunately, due to a number of variables, in age, weight. Diet and management, hormones do not always give consistent results (5). The incidence of inactive ovaries was recorded by many authors at several countries as 18.18% in Indian cattle (6) and 3% in Indian cattle and buffaloes (7), 7% in Egyptian buffaloes (8), 78.5% in Russian cattle (9), 36.6% in Japan in high producing cows and 36.1% in medium producing Holstein cows (10), 11% in cattle in Poland (11), 15% in dairy cattle in France (12), 8.5% in high yielding dairy cows in middle east (2), 26% in cows in Germany (13). 2.7% - 56.03% in Iraq according to (14) and (15). It was suggested by(16) that fertility in buffalo is considerably lower than in cattle. Gonadotrophic hormones were used by a large number of researchers in treating inactive ovaries and they got a variable degrees of response according to the circumstances of their experiments. This study was conducted to investigate the effect of using a variety of hormonal treatments in treating cases of inactive ovaries in both cows and buffaloes.

Materials and Methods

Thirty four of the cross breed Iraqi cows and twenty five of the local Iraqi buffaloes were used in this study. The age of the animals ranged between 3.5-7 years and all of them suffered from anestrous and inactive ovaries for at least 3-4 months post partum. Rectal palpation of the ovaries and uterus of such animals showed smooth, small and firm nonfunctional ovaries in the majority in addition to flaccid uterus.

Cow and buffaloes were randomly divided in to 4 groups and treated as follows: G1: 12 cow and 7 buffaloes injected with 1000 I.U. eCG I.M (Folligon, Intervet), G2: 7 cows and 5 buffaloes injected with 0.5 mg GnRH analogue I.M (Fertagyl, Intervet), G3: 8 cows and 7 buffaloes injected with 1000 I.U. eCG I.M. and o.5 mg GnRH analogue I.M. G4: 7 cows and 6 buffaloes injected with 1000 I.U. eCG I.M. and 1500 I.U. of hCG (Chorulon, Intervet) I.M. All the animals treated were left free with males to ensure mating with an advice to the owners to improve feeding and keep watching the signs and behavior of estrus for two weeks. The durations of response to various treatments were recorded by the appearance of signs or behaviors of estrus as well as male attraction and acceptance. Rectal palpation for pregnancy diagnosis was performed

within 2-3 months later. Statistical analysis of F- test and Chi- square were used according to Steel and Torrie (17).

Results

Results of cows responded to various treatments and showed signs or behaviors of estrus in Table 1, were 9/12 (75%), 3/7 (42.8%), 7/8 (87.5%), and 6/7 (85.71) in G1, G2, G3 and G4 respectively. While the durations of response were 4.12 ±2.1 days, 6.48± 2.9 days, 4.89± 2.8 days and 4.11± 2.6 days in the same sequence of groups. The number of cows which subsequently became pregnant were 5/9 (55.55%), 1/3 (33.33%), 4/7 (57.14%) and 3/7 (42.8%) respectively.

Results of buffaloes responded and showed signs of estrus or behaviors in Table 2, were 5/7 (71.42%), 2/5 (40%), 6/7 (85.71%), and 5/6 (83.33%) in G1, G2, G3, and G4 respectively. While the durations of response were 4.66±2.25 days, 6.1 ± 2.82 days, 3.92 ± 1.9 days and 3.5 ± 1.3 days in the same sequence of groups. The number of buffaloes which subsequently became pregnant were 3/5 (60%), 1/2 (50%), 3/6 (50%) and 3/5 (60%) respectively.

Table (1) Represents the response of inactive ovaries in cows to a variety of hormonal treatments

G. No.	No. of Treated Cows	Type of hormonal treatment	No. of cows in estrus	Duration of response (days)	No. of cows became pregnant
1	12	1000 I.U eCG (Folligon)	9(75%) a	4.12± 2.1 a	5 (55.55%) a
2	7	1 mg GnRH (Fertagyl)	3 (42.8%) b	6.48± 2.9 a	1 (33.33%) a
3	8	1000 I.U eCG 1 mg GnRH	7 (87.5%) c	4.89± 2.8 a	4 (57.14%) a
4	7	1000 I.U. eCG+ 1500 I.U. hCG (Chorulon)	6 (85.7%) c	4.11± 2.6 a	3 (50%) a

Note: All of the hormones used are from (Intervet International Co. Holland) and they were injected I.M. The different letters showed significant difference at (P< 0.01)

Table (2) Represents the response of inactive ovaries in buffaloes to a variety of hormonal treatments

G. No.	No. of Treated Cows	Type of hormonal treatment	No. of cows in estrus	Duration of response (days)	No. of cows became pregnant
1	7	1000 I.U eCG (Folligon)	5 (71.42%) a	4.66±2.35 a	3 (60%) a
2	5	1 mg GnRH (Fertagyl)	2 (40%) b	6.1± 2.82 b	1 (50%) B
3	7	1000 I.U eCG 1 mg GnRH	6 (85.71%) c	3.92± 1.9 a	3 (50%) A
4	6	1000 I.U. eCG+ 1500 I.U. hCG (Chorulon)	5 (83.33%) c	3.5± 1.3 a	3 (60%) a

Different letters showed significant difference at (P<0.01)

Discussion

In Iraqi villages, cows and buffaloes are usually reared in small confined houses or farms and subjected to different stressful conditions such as bad hygiene, malnutrition, parasitic infestation and weather changes. These conditions are usually accused as a real factors affecting the activity of the ovaries and agreed with the findings of Zelda (18).

From the results of Table (1) the number of cows which showed estrus ranged from 42.8% - 87.5% this could indicates an establishment of follicular development in nearly half of the treated animals and agreed with the findings of Hafez (19). However GnRH gave a significant lesser result at ($P>0.01$) in inducing follicular growth and development since it needs multiple and sequential doses to obtain an optimum effect (20, 21). Others suggest that large doses of GnRH are more effective in getting better results (22). In results, the number of cows which subsequently became pregnant is still un encouraging in all groups which may indicate that hormonal treatment alone is not so effective without improving the reasons of inactive ovaries (1,23,24) and still GnRH is the lowest in the list ($P<0.01$) since its biological half life is short and its effect is more practical in inducing ovulation (19,25,26). Some authors prefer the priming with compounds of progesterone before the use of eCG or GnRH (27, 28). The duration of response was almost close in all groups except in cows treated with GnRH, they had a significantly longer period since the influence of GnRH on the ovaries is usually indirect (29,30) and may depend on the reserve of gonadotropines in the anterior pituitary (31,32). Table 2 showed the response in buffaloes were almost similar to that of cows since they share them the same circumstances and stressors which may indicate that hormonal treatments needs a supportive improvement in rearing of animals in order to get an optimum ovarian function (23). It is worth to notice that the results in group 3 and 4 in both types of animals are not so variable from that in group 1 which may indicate that GnRH and hCG had a minor effect when given as a combination with eCG and it could be more beneficial if they were given at estrus to induce ovulation (33). In conclusion, GnRH alone gave a significantly lower effect in treating cases of inactive ovaries and also the use of GnRH or hCG with eCG as a combination did not give an additional improvement in results of treating the same cases in both types of animals.

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