Treatment of Inactive Ovaries in Cows and Buffalos Heifers using a variety of Hormones

D.J. Khammas  
Coll. of Vet.Med./ Unive. of Baghdad

N.A.K.M. Ali  
Coll. of Vet.Med./ Unive of Hawler Medical

Abstract

This study was conducted on twenty nine cows heifers aged between 15-20 months and twenty two buffalos heifers aged between 20-30 months in Abu-Ghrabe and Al-Thahab Al-Abiadh villages at Baghdad suburban. On palpation all of the animals were suffering from inactive ovaries in addition to a history of an-estrum. Heifers of cows & buffalos were randomly divided into 4 groups and treated as follows G1 include 9 cows heifers and 7 buffalos heifers injected with 1000 I.U.(eCG) PMSG. I.M. (Folligon, InterVet). G2 include 6 cows heifers and 5 buffalos heifers injected I.M. with 0.5 mg GnRH analogue (Fertagyl, InterVet). G3 include 7 cows heifers and 5 buffalos heifers injected I.M. with 1000 I.U. PMSG and re-injected with 0.5 mg GnRH after 24 hr. G4 include 7 cows heifers & 5 buffalos heifers injected I.M. with 1000 I.U. PMSG and re-injected with 1500 I.U. hCG (Corulon, InterVet) after 24 hr. All the treated animals were left free with sires to ensure mating. Results of cows heifers responded & showed signs of estrus were 8/9 (88.8%), 4/6 (66.6%), 7/7 (100%) and 6/7 (85.7%) in G1, G2, G3 & G4 respectively. While the durations of response were 6.56±2.16 days, 7.22±3.52 days, 5.60±2.25 days and 6.74±2.18 days in the same sequence of groups. The number of heifers which subsequently became pregnant were G1 = 7/8 (87.5%), G2 = 2/4 (50%), G3 = 5/7 (71.4%) & G4 = 4/6 (66.6%). While the number of buffalos heifers responded to the same treatments & showed signs of estrus were 5/7 (71.2%), 2/3 (40%), 3/5 (60%) & 3/5 (60%) in G1, G2, G3 and G4 respectively. The duration of response were 6.14±2.06 days, 7.17±2.55 days, 5.93±2.12 days and 5.95±2.02 days in the same sequence of groups. The number of the buffalos heifers which subsequently became pregnant were G1= 3/5 (60%), G2 = ½ (50%), G3 =3/3 (100%) & G4 = 2/3 (66.6%).

Introduction

The period of puberty is a complex process associated with interaction by genetic, somatic, exogenous factors and increasing sensitivity of genital tract tissues to hormonal stimulation (1). Inactive ovaries and delayed puberty in both cows & buffalos heifers may lead to an extensive economic loss (2). The reasons of such conditions were investigated by several researchers and they suggested that the bad management, malnutrition, under weight, parasitism and other exhausting diseases are accused (3, 1, 4). The incidence in Indian cattle and buffalos was 3% (5), in Indian cattle 18.8% (6), in Egyptian buffalos 7% (7), while in Iraq it was 1.5%, 2.7% and 56.03% according to (8), (9) and (10) respectively. It was suggested that fertility in buffalos is considerably lower than in cattle (11). Gonadotropins were widely used in treating inactive ovaries and revealed a variable degrees of response according to the circumstances of the experiments (12, 13). The present study was conducted to investigate the effect of using a variety of hormonal treatments in both cows & buffalos heifers in treating an inactive ovaries.

Materials and Methods

The present study was conducted on twenty nine cows heifer aged between 15-20 months & twenty two buffalos heifer (aged between 20-30 months) in Abu-Ghrabe and Al-Thahab Al-Abiadh village at Baghdad suburban. Inactive ovaries were diagnosed
through the trans-rectal palpation of the ovaries & uterus in addition to a case history of anestrus. Heifers of cows & buffalos were randomly divided in to 4 groups and treated as follows : G1 include 9 cows heifers and 7 buffalos heifers injected with 1000 I.U. PMSG (Folligon, InterVet) I.M. , G2 = 6 cows heifers and 5 buffalos heifers injected with 0.5 mg GnRH analogue (Fertagyl, InterVet) I.M. , G3 include7 cows heifers and 5 buffalos heifers injected with 1000 I.U. PMSG (Folligon , InterVet) I.M. and re-injected I.M. with 0.5 mg GnRH analogue (Fertagyl) after 24 hr, G4 include 7 cows heifers and 5 buffalos heifers injected with 1000 I.U. PMSG (Folligon, InterVet) I.M. and re-injected I.M. with 1500 I.U. hCG (Chorulon, InterVet) after 24 hr . All of the animals were left free with males to ensure mating. Statistical analyses were used according to (14).

**Results**

Results of cows heifers which responded to various treatments & began to show signs of estrus were 8/9 (88.8%), 4/6 (66.6%), 7/7 (100%) and 6/7 (85.7%) in G1, G2, G3 & G4 respectively. While the duration of response were recorded as 6.56±2.16 days, 7.22±3.52 days, 5.60±2.25 days & 6.74±2.18 days in the same sequence of groups. The number of cows heifers which subsequently became pregnant were G1 ( 7 from 8 , 87.5%), G2 ( 2 from 4, 50%), G3 ( 5 from 7, 71.4%) and G4 ( 4 from 6 , 66.6%). While the number of buffalos heifers which responded to the same regimens and doses of treatments and showed signs of estrus were 5 from7 (71.2%), 2 from 5 (40%) , 3 from 5 (60%) and 3 from 5 (60%) in G1,G2,G3 and G4 respectively .The durations of response were 6.14±2.06 days , 7.17±2.55 days , 5.93±2.12 days and 5.95±2.02 days in the same sequence of groups. The number of buffalos heifers which subsequently became pregnant were G1 ( 3/5 (60%), G2 ( ½ (50%), G3 ( 3/3(100%) and G4 ( 2/3 (66.6%).

Table 1- The response of inactive ovaries in cows heifers to different hormonal treatments.

<table>
<thead>
<tr>
<th>Group No.</th>
<th>No. of animal used</th>
<th>Treatments Used</th>
<th>No. of animal responded</th>
<th>Duration of response (days)</th>
<th>No and % of pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>(Folligon) PMSG 1000 IU</td>
<td>8 (88.8%)</td>
<td>6.56±2.16</td>
<td>7 (87.5%)</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>(Fertagyl) GnRH 0.5 mg</td>
<td>4 (66.6%)</td>
<td>7.22±3.52</td>
<td>2 (50%)</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>PMSG 1000 IU &amp; GnRH 0.5mg</td>
<td>7 (100%)</td>
<td>5.60±2.25</td>
<td>5 (71.4%)</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>PMSG 1000 IU &amp; hCG 1500 IU (Chorulon)</td>
<td>6 (85.7%)</td>
<td>6.74±2.18</td>
<td>4 (66.6%)</td>
</tr>
</tbody>
</table>

N.B: The hormones of (Intervet, International Co. Holland) were injected i.m.
Table 2: The response of inactive ovaries in buffalo’s heifers to different hormonal treatment.

<table>
<thead>
<tr>
<th>Group No.</th>
<th>No. of animals used</th>
<th>Treatments used</th>
<th>No. of animals responded</th>
<th>Durations of response (days)</th>
<th>No. and % of pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>PMSG 1000 IU (Folligon)</td>
<td>5 (71.23%)</td>
<td>6.14±2.02</td>
<td>3 (60%) a</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>GnRH 0.5 mg (Fertagyl)</td>
<td>2 (40%) c</td>
<td>7.17±2.25</td>
<td>1(50%) b</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>PMSG 1000 IU &amp; GnRH 0.5 mg</td>
<td>3 (60%) b</td>
<td>5.93±2.12</td>
<td>3 (100%) c</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>PMSG 1000 IU &amp; hCG 1500 IU (Chorulon)</td>
<td>3 (60%) b</td>
<td>5.95±2.02</td>
<td>2 (66.6%) a</td>
</tr>
</tbody>
</table>

N.B: The hormones of (Intervet, International Co. Holland) were injected i.m.

Discussion

For the attainment of puberty weight which is the dominant factor in comparison to the age of the heifer, delayed puberty is usually associated with exogenous factors like the improper ambient temperature, lack of shade, deficiency of minerals & trace elements as well as protein and diseases particularly wasting diseases (15,16). Some authors recommends cross breeding & exploiting heterosis in order to overcome the improper exogenous factors (17). Leptin treatment can advance the onset of puberty in both restricted & ad lip fed animals since it acts as permissive signal that enables puberty to occur (4). From the results of table (1) the number of cows heifers which showed signs of estrus ranged from 66.6% - 100%, this could indicates that the establishment of follicular development has approved in the majority of the treated heifers which agreed with findings of (12). However GnRH give a significant lesser response at P< 0.01 in inducing follicular growth & development since it needs multiple & sequential doses to obtain an optimum effect (18,19). Another researcher suggested that large doses of GnRH are more effective in treating inactive ovaries (20). Also in results, the number of cows heifers which subsequently became pregnant are encouraging particularly in G1, G3 and G4 but still GnRH in G2 is the lowest in the list since its half life is short & needs multiple and sequential doses to obtain an optimum effect (1, 21, 12) and it has been also proved by several workers that its effect is restricted mainly in inducing ovulation (12). Some authors prefer the priming of the reproductive system with compounds of progesterone before the use of PMSG or GnRH (22, 23). The durations of response were almost close to each other in G1 and G4 but shorter in G3 and longer in G2, perhaps due to its indirect action on the ovaries (24,25) and may also depends on the reserve of gonadotrophins in the anterior pituitary gland (26, 27). Results in Table (2) indicates that the percentage of buffalo heifers responded & showed signs of estrus were relatively lower than that of cows heifers perhaps due to follicular atresia or silent heat syndrome (1) and this may indicate that hormonal treatment alone could have a minor potential for ovarian activity and may need a supportive improvement to overcome the stressors (28). The durations of response were almost similar to that of cows heifers but the number and percentage
of pregnancy was relatively lower in G1 and higher in G3 compared to cows heifers probably due to the lower number of buffalos heifers used. It is worth to notice that the results of G3 and G4 in both types of animals were not so or significantly variable from that in G1 which may indicate that the use of GnRH or hCG had a minor effect when given as a combination with PMSG & it could be more beneficial if they were given at estrus to induce ovulation (29). In conclusion GnRH alone gave a significantly lower effect in treating cases of inactive ovaries and also the use of GnRH or hCG with PMSG as a combination did not give an additional improvement in results of treating the same cases in both types of animals.

References


علاج حالات خمول المبايض في اباكير الابقار والجاموس باستخدام برامج هورمونية مختلفة

ضياء جعفر خماس
كلية الطب البيطري / جامعة بغداد
نضال عبد القادر محمد علي
كلية الطب / جامعة هولير الطبية

الخلاصة

أجريت هذه الدراسة على تسعة وعشرين من اباكير الابقار بعمر 5-12 شهرًا وعلى اثنين وعشرين من اباكير الجاموس بعمر 2-02 شهرًا في منطقة أبو غريب وقريه الذهب الابيض في ضواحي بغداد. تم تشخيص خمول المبايض من خلال جس المبايض والرحم من خلال المستقيم اضافة إلى تأريخ الحالة المتمثل بانعدام الشبق.

تم تقسيم اباكير الابقار والجاموس الى اربعة مجاميع علاجية عشوائيا وعولجت كما يلي: المجموعة الأولى: حقن 9 من اباكير الابقار و7 من اباكير الجاموس بـ 0.5222 دوليه من هورمون الراعي PMSG (Folligon, Intervet) بالعضل. المجموعة الثانية: حقن 6 من اباكير الابقار و1 من اباكير الجاموس بـ 2.1 ملغ من مماثلات هورمون GnRH (Fertagyl, Intervet) بالعضل. المجموعة الثالثة: حقن 7 من اباكير الابقار و1 من اباكير الجاموس بـ 0.5222 دوليه من PMSG (Folligon) ثم أعيد حقنها بـ 2.1 ملغ من GnRH (Fertagyl) بعد 02 ساعة. اطلق بعد ذلك جميع الحيوانات مع الذكور لضمان التلقيح الطبيعي. كانت نتائج اباكير الابقار التي استجابت للعلاجات المختلفة واظهرت علامات تدل على الشبق هي: 8 من مجموع 9 (88.8) % و 6 من 7 (85.7) % في كل من المجموعتين. المجموعة الرابعة: حقن 7 من اباكير الابقار و1 من اباكير الجاموس بـ 1500 وحده دولية من هورمون GnRH (Folligon) بالعضل وحقن 7 من اباكير الابقار و1 من اباكير الجاموس بـ 5222 دوليه من هورمون ال hCG (Chorulon) بعد 24 ساعة. أطلقت بعد ذلك جميع الحيوانات مع الذكور لضمان التلقيح الطبيعي. كانت نتائج اباكير الابقار التي استجابت للعلاجات المختلفة واظهرت علامات تدل على الشبق هي: 7 من مجموع 8 (87.5) % و 6 من 7 (85.7) % في كل من المجموعتين.

النتائج: كان عدد اباكير الابقار التي لقحت وحملت لاحقا في المجموعتين الأولى والثانية 5222 دولية من هورمون ال GnRH (Folligon, Intervet) بالعضل وحقن 7 من اباكير الابقار و1 من اباكير الجاموس بـ 5222 دوليه من PMSG (Folligon) ثم أعيد حقنها بـ 2.1 ملغ من GnRH (Fertagyl) بعد 02 ساعة. اطلق بعد ذلك جميع الحيوانات مع الذكور لضمان التلقيح الطبيعي. كانت نتائج اباكير الابقار التي استجابت للعلاجات المختلفة واظهرت علامات تدل على الشبق هي: 8 من مجموع 9 (88.8) % و 6 من 7 (85.7) % في كل من المجموعتين. المجموعة الرابعة: حقن 7 من اباكير الابقار و1 من اباكير الجاموس بـ 1500 وحده دولية من هورمون GnRH (Folligon) بالعضل وحقن 7 من اباكير الابقار و1 من اباكير الجاموس بـ 5222 دوليه من هورمون ال hCG (Chorulon) بعد 24 ساعة. أطلقت بعد ذلك جميع الحيوانات مع الذكور لضمان التلقيح الطبيعي. كانت نتائج اباكير الابقار التي استجابت للعلاجات المختلفة واظهرت علامات تدل على الشبق هي: 7 من مجموع 8 (87.5) % و 6 من 7 (85.7) % في كل من المجموعتين. المجموعة الخامسة: حقن 7 من اباكير الابقار و1 من اباكير الجاموس بـ 1500 وحده دولية من هورمون GnRH (Folligon) بالعضل وحقن 7 من اباكير الابقار و1 من اباكير الجاموس بـ 5222 دوليه من PMSG (Folligon) ثم أعيد حقنها بـ 2.1 ملغ من GnRH (Fertagyl) بعد 02 ساعة. اطلق بعد ذلك جميع الحيوانات مع الذكور لضمان التلقيح الطبيعي. كانت نتائج اباكير الابقار التي استجابت للعلاجات المختلفة واظهرت علامات تدل على الشبق هي: 8 من مجموع 9 (88.8) % و 6 من 7 (85.7) % في كل من المجموعتين.