MANAGEMENT OF DELAYED PUBERTY IN GRADED MURRAH HEIFERS UNDER FIELD CONDITIONS - A PRACTICAL APPROACH

G. Venkata Naidu*, M. Srinivas, N.V.V. Hari Krishna and V. Devi Prasad

ABSTRACT

An investigation was undertaken during the breeding season on 80 graded Murrah buffalo heifers aged 4 - 5 years. The plasma levels of macro (Ca and P) and micro (Cu) minerals were estimated and all the animals under study were fed with cooked horse gram. All the heifers under study were given non-hormonal (utero-ovarian massage and mineral supplementation) and hormonal (Buserelin acetate) treatments. The treatments adopted in this study brought the heifers into estrus with acceptable conception rates.

Keywords: delayed puberty, estrus, fertility, heifers, minerals

INTRODUCTION

Delayed sexual maturity in buffalo heifers is one of the major reproductive problems encountered under village managemental conditions (Gupta et al., 1994). Earlier reports have indicated that hormonal treatments alone were unable to give acceptable estrual events leading to pregnancy (Saini et al., 1986). Exposure to suitable ambient temperature and correction of mineral deficiencies were capable of reducing the age of onset of estrus and conception (Morrow, 1977). To combat acyclicity in delayed pubertal buffalo heifers, different remedial measures have been proposed (Galhotra and Tyagi, 1971; Despande, 1981; Jaimnudeen and Saarifuddin, 1983). In the present study, a combination of different treatments have been tried for initiation of ovarian cyclicity.

MATERIALS AND METHODS

Eighty delayed pubertal graded Murrah buffalo heifers aged between 4 to 5 years that had not come to heat and had no detectable genital abnormalities presented to the Ambulatory Clinics were included in the present study during the breeding season. All the heifers were treated for ectendoparasites. Before initiation of treatment twice weekly gynaeco-clinical examinations were performed per rectally. Blood sampling was done randomly from 10 heifers for estimating serum calcium, phosphorus and copper minerals by utilizing commercial kits. The heifers were divided into four groups, with 20 heifers in each group, and the following treatment regimens were adopted.

Group 1. Heifers were subjected to utero-ovarian massage for 5 minutes at 5 day intervals on two occasions.

Group 2. Mutimineral supplementation with inorganic phosphorus (0.2 gm/ml) 10 ml IM once in 5 days on 4 occasions and Tab Cofecu (copper 200 mg, cobalt 400 mg, iron 100 mg) 2 tabs per day for 10 days orally.

Group 3. Buserelin acetate 10 μg (Receptal 2.5 ml) IM once only.

Group 4. Control animals.

The farmers were advised to feed all the animals included in the present study with 500 gm of cooked horse gram (traditional practice) and to observe the onset of estrus. The heifers in estrus were examined per rectum to confirm estrus signs,
viz., cervical relaxation, uterine tone, presence of matured Graffian follicle, vaginal and cervical mucus discharges and the finings were recorded. The heifers were artificially inseminated with 0.25 ml frozen semen and pregnancy was confirmed per rectum 60 days post AI.

RESULTS AND DISCUSSION

The mean serum calcium, inorganic phosphorous and copper were 9.78 ± 0.67, 3.86 ± 0.45 mg/dl and 1.22 ± 0.11 ppm, respectively. The serum calcium, inorganic phosphorus and copper levels recorded in this study were less than those reported by Singh et al. (2006). The low serum mineral concentration might be due to primarily feeding paddy straw in the area under study, which resulted in delayed puberty and maturity. Since calcium and phosphorous influenced the utilization of other trace minerals which are an integral part of several reproductive pathways, the deficiency could lead to inactive ovaries (Hidiroglo, 1979).

The effects of hormonal and non-hormonal treatments on induction of estrus and conception rates in delayed pubertal heifers were shown in Table 1. Among the treatment groups, GnRH treated heifers (Group 3) recorded highest percent of animals that exhibited estrus, followed by mineral supplementation (Group 2), utero-ovarian massage (Group 1) and control heifers (Group 4). The highest percent of estrus induction in the GnRH-treated group could be due to onset of follicular waves leading to estrus behavior (Thakur and Bhatt 1999). The overall estrus observed in the GnRH-treated heifers was higher than those reported by Thakur and Bhatt (1999) and slightly lower than the observations made by Singh et al. (2006) and Nautiyal et al. (1997). In the present study, utero-ovarian massage yielded 40

Table 1. Effects of hormonal and non-hormonal treatments on induction of estrus and conception rates in delayed pubertal heifers.

<table>
<thead>
<tr>
<th>Parameters under study</th>
<th>Treatments</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group 1</td>
<td>Group 2</td>
</tr>
<tr>
<td>1. No. of heifers treated</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2. No. of heifers exhibited estrus after treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Within 10 days</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>b. 11 - 20 days</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>c. 21 - 30 days</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>8 (40 %)</td>
<td>10 (50%)</td>
</tr>
<tr>
<td>3. Conception Rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Conception rate at induced estrus</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>b. Conception rate at subsequent heat</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>c. Overall conception rate</td>
<td>6 (30%)</td>
<td>8 (40%)</td>
</tr>
</tbody>
</table>
percent estrus induction, and these findings in accordance with those of Galhotra et al. (1971) under farm management. The differences in induction of estrus between treated (utero-ovarian massage, mineral supplementation, and GnRH) and controls were significant (P<0.05).

The overall conception rates observed in the present study were 30, 40, 60 and 20 percent in Group 1, 2, 3 and 4, respectively, which could be due to differences in the treatments. On the contrary, Singh et al. (2006) reported a lower overall conception rate in their GnRH treated group and a higher overall conception rate in the mineral supplementation group than those reported in the present study. These differences could be attributed to location specific managerial practices and environmental factors.

The fertility in delayed pubertal graded Murrah buffalo heifers under village management could be enhanced with non-hormonal and hormonal therapies. Though the hormonal treatment is expensive, it could be suggested in well-managed and well-fed animals under field conditions.

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REFERENCES


