OESTRUS BEHAVIOUR AT HORMONALLY INDUCED AND NATURAL PUBERTAL OESTRUS IN INDIGENOUS HEIFERS OF ASSAM

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ABSTRACT

Oestrus was induced in 20 prepubertal indigenous heifers of Assam by applying norgestomet (Crestar) ear implant and 300 IU PMSG. Another 20 heifers that received saline served as control. Oestrus behaviour of the animals was noticed by visual means and by parading vasectomized bull. Among the behavioural symptoms of oestrus genital discharge, acceptance of male and mounting on herd mates and males were predominant in heifers induced to oestrus. Oestrus symptoms were similar in induced and natural pubertal oestrus, though proportion of animals displaying different symptoms varied between the two categories.

Oestrus detection is of paramount importance for successful implementation of breeding programme through artificial insemination. A large segment of cattle population is inseminated at inappropriate stage of oestrus specially in rural areas leading to failure of conception. This is due to inefficient oestrus detection arising from lack of awareness among the farmers of the symptoms of oestrus manifestation. Recognizing behavioural symptoms is essential to determine the success of induction of oestrus in prepubertal heifers following treatment. Report on the behavioural symptoms of natural oestrus in indigenous cattle of Assam is lacking. Present study puts on record the behavioural symptoms at hormonally induced oestrus in prepubertal indigenous heifers of Assam as compared to that at natural pubertal oestrus.

Twenty prepubertal indigenous heifers (Bos indicus) of Assam aged 20 to 24 months weighing 70 to 90 kg were selected for hormonal induction of oestrus in the present experiment. Another 20 prepubertal indigenous heifers of Assam aged 25 to 28 months and weighing 85 to 117 kg were included as control animals. The heifers were allowed to graze during day time and offered concentrate mixture as per Ranjhan (1998). They were provided water ad libitum during the whole period of study. All the animals were examined rectally to ensure that they had no corpus luteum and were observed for at least 45 days for non occurrence of oestrus symptoms prior to treatment. Each of the heifers that were treated for induction of oestrus received 3 mg norgestomet (17 - α - acetoxy - 11 β - methyl - 19 - norpreg - 4 - ene - 3, 20 dione) ear implantation (Crestar) for a period of 9 days. Immediately after placing of the ear implant each animal was injected intramuscularly with a 3 mg norgestomet plus 5 mg estradiol valerate (Crestar injection, 2 ml). Each treated animal also received an i.m. injection of 300 IU PMSG (Folligon) on day 9 of implant insertion i.e., also the day of implant removal. In the control group, each animal was given 2 ml normal saline i.m. for two occasions i.e., on the corresponding days of Crestar and PMSG injection in the treated group. Following treatment all the experimental heifers were observed closely at 6 hr intervals for onset of oestrus both by visual means as well as by parading vasectomized bulls. While introducing vasectomized bulls, they were allowed to stay with the heifers for at least 45 minutes per exposure for detection of oestrus. The control heifers were further observed for at least twice in a day until they exhibited oestrus

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naturally. When the experimental heifers were detected in oestrus different behavioural symptoms of oestrus were recorded.

All the prepubertal indigenous heifers treated with "Crestar" plus PMSG exhibited oestrus after 26 to 32 hr of PMSG treatment. Behavioural symptoms of oestrus recorded in indigenous heifers of Assam following hormonal induction of puberty and in control heifers at natural pubertal oestrus are presented in Table 1. Both the hormonally treated and control heifers exhibited behavioural symptoms of acceptance of male and genital discharge in cent percent cases. Mounting on herdmates was shown by 100 per cent treated heifers, while it was only 65 per cent in control heifers at pubertal oestrus. Foote and Onuma (1970) and Seidel et al. (1971) also reported that gonadotropin-treated calves pre-treated with progesterone showed mounting behaviour during induced oestrus. Mickelsen et al. (1978) recorded that 5 out of 8 calves showed mounting behaviour when induced to oestrus using hormones without progesterone pre-treatment. The incidence of mounting on male, smelling and licking different parts of herdmates and smelling and licking different parts of male varied from 70 to 85 % in treated heifers at induced oestrus as compared to 40 to 45 % in control heifers at natural pubertal oestrus. At induced oestrus 20 to 40 % heifers showed behavioural symptoms of bellowing, frequent urination and raising base of the tail, while in the control heifers at pubertal oestrus the figures ranged from 15 to 25 %. Thus the behavioural symptoms recorded at natural pubertal oestrus of the indigenous heifers were also encountered at hormonally induced oestrus in the treated heifers. Saraswat et al. (1997) also reported that majority of cows and heifers exhibited pronounced external symptoms and genital changes that are characteristics of natural oestrus when treated with CIDR-B and PMSG for induction of oestrus. In the present study, higher incidence of different behavioural symptoms at induced oestrus in the treated heifers as compared to that at natural pubertal oestrus in the control heifers could be attributed to the pronouncement of the oestrus manifestation resulting from the combined effect of exogenous progesterone, oestradiol and gonadotropin administration. Prolonged biologic effect of PMSG could lead to persistence of the ovarian follicles developed, thus producing oestrogen for a longer period in the treated heifers. The behavioural symptoms at natural pubertal oestrus in indigenous heifers of Assam appeared to have remained unreported in the literature. It could be gathered that the behavioural symptoms of natural pubertal oestrus in indigenous heifers of Assam were at variance from those recorded at natural oestrus in heifers of different Indian breeds of cattle. While genital discharge and

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Table 1. Occurrence of behavioural symptoms of oestrus in heifers at induced and at natural pubertal oestrus

<table>
<thead>
<tr>
<th>Behavioural sign</th>
<th>Induced oestrus (n=20)</th>
<th>Natural pubertal oestrus (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genital discharge</td>
<td>20 (100%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>Acceptance of male</td>
<td>20 (100%)</td>
<td>20 (100%)</td>
</tr>
<tr>
<td>Mounting on herdmate</td>
<td>20 (100%)</td>
<td>13 (65%)</td>
</tr>
<tr>
<td>Mounting on male</td>
<td>17 (85%)</td>
<td>9 (45%)</td>
</tr>
<tr>
<td>Smelling and licking different parts of herdmate</td>
<td>15 (75%)</td>
<td>8 (40%)</td>
</tr>
<tr>
<td>Smelling and licking different parts of male</td>
<td>14 (70%)</td>
<td>9 (45%)</td>
</tr>
<tr>
<td>Bellowing</td>
<td>8 (40%)</td>
<td>5 (25%)</td>
</tr>
<tr>
<td>Frequent urination</td>
<td>7 (35%)</td>
<td>4 (20%)</td>
</tr>
<tr>
<td>Raising base of the tail</td>
<td>4 (20%)</td>
<td>3 (15%)</td>
</tr>
</tbody>
</table>

n = number of animal.
acceptance of male were found to be salient feature of spontaneous pubertal oestrus behaviour in indigenous heifers of Assam, the predominant symptom of oestrus in Holstein cows was the mounting behaviour (Esslemont and Bryant, 1976). Hurnik and King (1980) also reported that mutual mounting was the most detectable sign of oestrus in beef cows. However, Rao and Kodagali (1982) reported that mucus discharge (83.70%) and bellowing (68.80%) were the most prominent sign of oestrus in cow. Srivastava et al. (1998) recorded that the incidence of behavioural symptoms of bellowing and discharge was the highest (34.24%) followed by only bellowing (28.26%) and only mucus discharge (11.96%) in Indian non-descript cattle at natural oestrus. The deviation in prominence of behavioural symptoms of oestrus found in indigenous heifers of Assam in the present study could be attributed to difference in breed, age, climate and management practices.

From the study it can be concluded that the prominent symptoms of pubertal oestrus are genital discharge and acceptance of male. In hormonally induced oestrus the incidence of behavioural symptoms were higher than natural pubertal oestrus.

REFERENCES