PATTERN OF OESTRUS, OESTROUS CYCLE LENGTH AND FERTILITY RATE FOLLOWING SYNCHROMATE-B TREATMENT IN REPEAT BREEDER COWS

M. SELVARAJU[1], C. VEERAPANDIAN[2], D. KATHIRESAN[3], K. KULASEKAR[4] and C. CHANDRAHASAN[5]

Department of Animal Reproduction, Gynaecology and Obstetrics, Madras Veterinary College, Chennai- 600 007.

ABSTRACT

An experiment was conducted to study the effect of norgestomet ear implants on oestrus pattern and fertility rate in repeat breeder cows. A total of 32 healthy, parous, repeat breeder cows were equally divided into 2 groups as treatment and control groups. All the cows in the treatment group were treated with 6mg norgestomet ear implants on day 10 following natural estrus. At the time of insertion of ear implant, 2ml of SMB injection was administered intramuscularly to all the cows. The implant was removed after 9 days. AI was done at 48 and 72 hours after implant removal. In control cows, without any treatment, AI was done twice at 24 hours interval. In treated cows, the mean time to onset of oestrus, duration of oestrus, mean oestrous cycle length before and after implant treatment and first service conception rate were 29.25± 0.70 h, 26.75± 0.68h, 19.89±0.54 and 20.00±0.30days and 43.75 per cent, respectively. The percentage of very good, good, fair and poor oestrus intensity was 81.25, 18.75, 0.00 and 0.00 in treatment group and 25.00, 75.00, 0.00 and 0.00 in control respectively. In control cows, the duration of oestrus and first service conception rate observed were 29.38±0.77 hours and 18.75 per cent. It is concluded that SMB treatment has improved the conception rate in repeat breeder cows when compared to control.

Key words: Oestrus, Oestrous cycle, Fertility rate, Synchromate –B, Repeat breeder cows

INTRODUCTION

There are apparently several reasons for the repeat breeder syndrome and no single treatment is likely to alleviate the condition in every herd or animal. Control of oestrus using progestagens such as Progesterone Releasing Intravaginal Devices (PRID), Controlled Internal Drug Release Device (CIDR) or Norgestomet ear implants (Cavalieri *et al.*, 1997) has been found to be effective in achieving good fertility in normally cycling dairy cattle. Duchens *et al.* (1995) suggested that one of the causes of repeat breeding might be an incomplete natural luteolysis thereby creating suprabasal progesterone concentrations and leading to asynchrony between onset of oestrus and ovulation which might result in fertilization failure or alteration in embryonic development. Norgestomet ear implant treatments have been found to be highly effective in regulating oestrous cycle by inducing complete luteolysis in dairy cows (Odde, 1990). However, the effect of norgestomet treatment on fertility rate in repeat breeder cow is lacking. Further, oestrous cycle and its pattern before and after treatment with norgestomet in repeat breeder cows have not been studied in detail. Hence the present experiment was formulated to study the pattern of induced oestrus and fertility rate in norgestomet treated repeat breeder cows.

Part of Ph.D., thesis of first authour submitted to Tamil Nadu Veterinary and Animal Sciences University, Chennai-600 051.

1.Associate Professor and Head, Dept. of ARGO, VC&RI 2.Professor and Head 3. Director of Extension Education, TANUVAS, Chennai-51 4. Professor and 5. Dean, Veterinary College and Research Institute, Namakkal

MATERIALS AND METHODS

A total of 32 apparently healthy, parous crossbred cows which failed to conceive after three or more AIs at the Gynacology unit of Veterinary college and Research Institute, Namakkal were selected for the study. Gynaecolgical examination revealed no gross palpable abnormalities and obvious infections of the genital tract. They exhibited the oestrus at 18-24 days interval with clear genital mucus discharge. These cows were equally divided into 2 groups as treatment and control groups, each comprised of 16 cows.

Norgestomet ear implants (Syncromate-B, SMB system, Sanofi, Animal Health Inc., U.S.A) containing 6 mg of synthetic progesterone (norgestomet) were inserted aseptically and subcutaneously in the middle third of the outer surface of the pinna of the ear in the all cows of treatment group using an applicator on day 10 following natural oestrus. At the time of ear implant insertion, 2ml of SMB injection (Sanofi, Animal Health Inc., U.S.A) containing 5mg oestradiol valerate and 3mg norgestomet was administered intramuscularly to all the cows. The implant was removed after 9 days.

Oestrus was detected by visual observation of all the cows before and after treatment. Further, rectal examination was carried out to confirm the visual observation. AI was done at 48 and 72 hours of implant withdrawal. Rectal examination was carried out in all the treated and control cows at 60 days after the AI to confirm pregnancy. Oestrus response was calculated in percentage as number cows exhibited oestrus out of number of cows treated. Onset of oestrus was calculated in hours from the time of implant removal to the time of first appearance of oestrus signs. Duration of oestrus was estimated in hours in the experimental and control groups from the time of first appearance of oestrus sign to the detection of last oestrus sign. Intensity of natural and induced oestrus in control and treatment group was scored according to the method described by Rao and Rao (1981) with slight modifications. Based on the score card the intensity of oestrus was classified as Very good (above 15 points), Good (11 to 15 points), Fair (6 to 10 points) and Poor (below 5 points).

Before treatment, mean oestrous cycle length was calculated in days in treatment and control groups. Similarly, mean oestrous cycle length in each group was calculated in days in cows which did not conceive after AI. First service conception rate was calculated in treatment group as number of animals conceived at induced oestrus divided by number of animals treated and was expressed in percentage. Similarly, in control group first service conception rate was calculated following AI at natural oestrus.

RESULTS AND DISCUSSION

In the present investigation, 100 per cent oestrus response was obtained following implant removal in treatment group. This was in agreement with the findings of Lokhande *et al.* (1983) and Odde (1990) in norgestomet and oestradiol valerate treated cows. The effectiveness of norgestomet in this study might be attributed to the combined effects of progestagen priming on the brain and the direct effect on the hypothalamus by both exogenously administered oestrogen and the high concentration of oestrogen that occurred in association with use of norgestomet-oestradiol (Cavalieri and Fitzpatrick, 1995).

The single best practical parameter for basing the time of insemination in oestrus synchronization programme is the onset standing oestrus (Rajamahendran and Taylor, 1991). In this study, the onset of oestrus ranged from 26 to 32 (29.25± 0.70 hours) hours. Longer interval (72 hours) between implant removal to onset of oestrus in heifers was reported by Rentfrow *et al.* (1987) and in cows (47.10 ± 1.90 hours) by Cavalieri and Fitzpatrick (1995). The earlier onset of oestrus this study might be due to the early accelerated production of oestradiol after implant removal (Odde, 1990) and proper observation of the cows for detection of oestrus after implant removal. The mean duration of induced oestrus was 26.75± 0.68 hours and in control the duration of oestrus was 29.25± 0.70 hours. Similar observation was made by Barness *et al.* (1981) in cows.

In this study, the percentage of very good and good oestrus intensity was 81.25 and 18.75 in treated cows. Similar observation was made in cows treated with norgestomet implants by Voss and Holtz, (1985). However, Barnes *et al.* (1981) reported weak signs of oestrus in cows administrated with norgestomet ear implants. In control group, the occurrences of very good and good oestrus intensities were 25.00 and 75.00 per cent, respectively. In this investigation, none of the cow showed fair or poor oestrus intensity. However, poor oestrus intensity was reported in norgestomet treatment in cows by Barnes *et al.*, (1981). In the present investigation, mean length of oestrus cycle did not vary before (19.89±0.54 days) and after oestrus induction (20.00±0.30days) in non-pregnant animals. This was in accordance with the earlier findings in norgestomet (Garverick *et al.*, 1988). It showed that norgestomet treatment did not affect the subsequent oestrus cycle length in non-pregnant cows following norgestomet withdrawal.

The conception rate obtained in the treatment group was 43.75 per cent. More or less similar conception rate was obtained in earlier study with norgestomet (Hixon *et al.*, 1981) treatment. Other investigators recorded 33 to 68 per cent first service conception rate in norgestomet treated cows (Odde, 1990 and Cavalieri and Fitzpatrick, 1995). The conception rate was found to be higher in treatment group (43.75 per cent compared to control group (18.75 per cent). This increased conception rate might be due to the fixed time breeding of norgestomet treated cows (Cavalieri *et al.*,1997) and altered secretion of oestrogen and progesterone (Gupta *et al.*,1998). However, failure of conception in other cows in treatment group might be related to altered secretion of LH and hypoluteal function following norgestomet treatment as described by Rentfrow *et al.*(1987) and Odde (1990), abnormal time of ovulation in relation to oestrus (Anderson and Day, 1994) and other possible causes of repeat breeding syndrome in these cows. It is concluded that the induction of oestrus and breeding at fixed time might have helped in eliminating errors in oestrus detection and possibly in bringing more favourable hormonal and uterine milieu and might resulted in increased conception rate in treatment group than control group in this study.

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