EFFICACY OF PGF2α, GnRH AND OVSYNCH PROTOCOL IN POSTPARTUM ANOESTRUS CROSSBRED COWS

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(Received 12/06/2011, Accepted 20/04/2012)

ABSTRACT

A study was conducted on 40 postpartum anoestrus crossbred cows to evaluate therapeutic efficacy of PGF2α, GnRH and Ovsynch protocol. The order of oestrus induction was 80, 60 and 20 per cent in treatment with PGF2α, GnRH and ovsynch protocol. PGF2α treated cows exhibited oestrus between 1- 4 days with a mean post treatment oestrus induction interval of 2.37 ± 1.33 days, GnRH treated group exhibited oestrus between 7-17 days with a mean post treatment oestrus induction interval of 10.16 ± 0.33 days, whereas cows in ovsynch treated group had fixed time artificial insemination without heat detection. It was observed that 50 per cent cows conceived in PGF2α and GnRH treated group while only 40 per cent cows were conceived in ovsynch treated group.

KEY WORDS: Crossbred cow, Postpartum, Anoestrus, PGF2α, GnRH, Ovsynch, Conception rate.

INTRODUCTION

To augment reproductive efficiency, regular cyclicity is the stepping-stone in reproductive span of any female. It is obvious that cows with normal resumption of ovarian cyclicity after calving, exhibit a high conception and better pregnancy rate when compared with those having delayed resumption of ovarian cyclicity and longer calving interval (Nakao et al., 1992). Postpartum anoestrus is one of the biggest hurdles in optimizing reproductive efficiency of high yielding dairy cows (Yamada & Nakao, 2002).

Oestrus can be induced using various hormones that act on the hypothalamo- pituitary-ovarian axis. Synthetic gonadotrophin releasing hormone (GnRH) mimics the same sequence of endocrinological events and thus forms the basis for GnRH analogue to be used in the treatment of anoestrus (Sirmour et al., 2006). $PGF_2\alpha$ or its analogue cause regression of luteinized tissue and thereby promote ovarian cyclicity (Utage, et al., 2011). Parsley et al. (1999) developed ovsynch protocol in dairy cows to synchronize ovulation. This protocol was later widely used for effective reproductive management in dairy cows. In the present study efficacy of $PGF_2\alpha$ and GnRH Ovsynch Protocol in postpartum anoestrus cross bred cows was studied.

MATERIALS AND METHODS

The experiment was conducted on 40 postpartum anoestrus (>90 days) crossbred cows. Animals that did not reveal functional gonadal structural alteration were considered anoestrus. These cows were further divided into two groups viz: Treatment group and control group.

Treatment group

This group consisted of 30 crossbred cows. These cows were divided in to three subgroups.
Subgroup A: consisted of 10 postpartum anoestrus crossbred cows with palpable corpus luteum. PGF2α analogue (Dinoprost tromethamine) 0.980 mg (5 ml) was administered to each cow intramuscularly once.

Subgroup B: consisted of 10 postpartum anoestrus crossbred cows with smooth ovary. GnRH analogue (Buserelin acetate) 0.021 mg (5 ml) was administered intramuscularly once.

Subgroup C: consisted of 10 postpartum anoestrus crossbred cows with smooth ovary. These cows were treated with ovsynch protocol (Buserelin acetate 0.021 mg intramuscularly on day '0' followed by Dinoprost tromethamine, 0.980 mg intramuscularly on 7th day and again Buserelin acetate 0.021 mg intramuscularly on 9th day). Fixed time artificial insemination was done after 24 hrs of last therapeutic regimen without heat detection.

Control Group

This group consisted of ten normal cyclical postpartum cows and no treatment was given to the animals. Therapeutic efficacy of remedial measures was judged on the basis of oestrus induction efficacy, oestrus induction interval, and conception rate after artificial insemination with frozen semen / natural service by available bull. Oestrus detection was done by behavioral changes observed by the farmer and parading a teaser bull.

RESULTS AND DISCUSSION

Oestrus induction efficacy

Oestrus Induction was observed in 80, 60 and 20 per cent cows of group A, B and C. Variation in the response to treatment was highly significant ($p<0.01$).The present findings are in close agreement with Sattar (2002) who reported 58.8 and 57.1 per cent oestrus induction in Holsein Friesian and Jersey cows respectively using $PGF_2\alpha$ analogue and the findings of GnRH treated group are very similar to Mishra et al. (2011), they reported 61.53 per cent oesrtus induction efficacy in cross bred cows.

Table: Response to remedial measures in different treatment groups of crossbred cows

S. N.	Character	Group A PGF2α	Group B GnRH	Group C Ovsynch	Control group
1.	Estrus induction efficacy (%)	80.00	60.00	20.00	100.00
2.	Estrus induction interval (days)	2.37 ± 1.33	10.16 ± 1.45	Timed AI	12.98 ± 2.34
3.	Conception rate (%)	50.0	50.00	40.00	100

Oestrus induction response in present study for group B cows (Busereline acetate) is in agreement with Dhoble and Gupta (1987). Dhami et al. (2008) and Kumar et al. (2008) treated true anoestrus crossbred cows with GnRH (Receptal 5 ml) I/M once and found 85.71 per cent oestrus induction response with 66.66 per cent conception rate and 84.62 per cent estrus induction response with an interval of 28.27 ± 6.46 days respectively. Gupta et al. (2010) reported lower estrus induction efficacy (60%) in jersey graded heifers.

Estrus induction interval

Cows of group A exhibited estrus between 1- 4 days with a mean post treatment oestrus induction interval of 2.37 ± 1.33 days. Cows of group B exhibited oestrus between 7-17 days with a mean post treatment oestrus induction interval of 10.16 ± 0.33 days. While in cows of group C fixed time artificial insemination was done without heat detection. The oestrus induction time in group C and

group A were statically less ($p<0.01$) as compared to group B.

Santos et al. (2000) administered 0.5 mg of cloprostenol intramuscularly to crossbred beef cows with palpable corpus luteum and found that 87.5 per cent cows exhibited oestrus within 48-72 hrs with 67.5 per cent conception rate.

Dugwekar et al., (2003) reported an oestrus induction interval of 57.71 ± 4.42 hrs in cows and Amjad et al. (2006) found a mean oestrus induction interval of 96 ± 15.08 hrs in Sahiwal cows. Further, they also observed pronounced symptoms of oestrus in the cow treated with the $PGF_2\alpha$ analogue intramuscularly which contribute the present findings.

The oestrus induction interval observed in cows of group B (Busereline acetate) in present study is in close agreement with Sirmour (1999) who reported, that parenteral administration of 200 µg Busereline acetate could induce oestrus with a mean post treatment oestrus induction interval of 12.6 ± 3.00 days in 83.33 per cent crossbred heifers with 40 per cent conception rate.

Conception rate

Hundred per cent conception rate was observed in normal cyclic control group, whereas only 50 per cent cows conceived in treatment group A and B; while 40 per cent cows conceived in group C. The conception rate in treatment group (irrespective of any treatment protocol) was found to be significantly lower ($p<0.05$) as compared to normal cyclic control group. Though slightly higher conception rate was observed in the cows belonging to treatment group A and B, but the difference among different treatment groups was not significant.

50 per cent conception rate in treatment group A ($PGF_2\alpha$ analogue) in present study are similar with findings of Corbet et al. (2009) who reported 45 per cent conception rate in Brahman beef heifers treated with the $PGF_2\alpha$ analogue intramuscularly. Sattar (2002) also found conception rate of 29.4 and 7.1 per cent only in Holstein-Friesian and Jersey cows using $PGF_2\alpha$ analogue respectively.

Observations regarding conception rate made in present study for group B animals are almost similar to that made by Thakur et al. (1993) who reported 50 per cent conception rate in buffaloes, when treated with 5 ml. of Receptal injection, intramuscularly and Sirmour (1999) who also reported 40 per cent conception rate with parenteral administration of 200 µg Busereline acetate in crossbred heifers.

Findings revealed 40 per cent conception rate in group C. The present findings are in agreement with Pathak (1999) who found 37 per cent conception rate in the cows following GnRH- $PGF_2\alpha$-GnRH protocol. Similar findings have also been reportrd by Raut et al., (2008).

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