EFFICACY OF DIFFERENT HORMONAL PROTOCOLS FOR OESTROUS INDUCTION IN POSTPARTUM ANOESTROUS AND SUBOESTROUS COWS

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ABSTRACT

A study was conducted on 95 Red Sindhi x Jersey crossbred postpartum anoestrous/Subestrous animals. Sixty animals were divided into three categories depending on presence/absence and category of follicle/CL on the ovary. The animals with smooth ovaries (n=12) were treated with double dose of GnRH at 2 weeks interval. The animals (n=13) having ovaries with small follicle (5 mm) were treated with single dose of GnRH. The animals with medium/large sized follicle (10 mm or more) were either treated with co-synch (GPG, n=12) or modified ov-synch (GPH, n=13) protocol, while the animals having ovaries with CL/ RCL (n=10) were treated with double dose of PG at 11 days interval. Thirty five PPA animals irrespective of different ovarian status were either treated with homoeopathic drugs (n=7) or served as untreated control (n=28). Out of the six treatment groups, the groups treated with GPG or GPH protocol resulted in highest response (100%, 100%) in oestrus induction as well as conception rate (58.33% and 76.92) as compared to other groups including control.

KEY WORDS : PPA, Oestrus induction, GPG, GPH, GnRH, PG, Cosynch, modified Ovsynch.

INTRODUCTION

Anoestrum is a broad term that indicates the lack of expression of oestrus or absence of oestrus signs despite efficient detection (Lucy, 2007). Failure of cows to express oestrus and poor oestrus detection efficiency after calving can increase the incidence of anoestrus in a herd (Peter et al.,2009).

Ovulatory oestrus can be successfully induced in anoestrus cows by using GnRH analogues or chorionic gonadotropins in presence of a developing or dominant follicle, in absence of which the treatment is not effective (Rhodes et al., 2003). Though there are several aetiological factors, hormonal factor is the most intrinsic and underlying cause of it. Treatment with hormones gives most predictable and reliable results, due to the improvement in the percentage of cows displaying oestrus, luteal phases of normal length following treatment and associated with increase in conception rates (Murphy et al., 1990). Numerous studies have shown varied degree of ovarian response to GnRH, hCG or PG treatment (Rhodes et al, 2003; Muneer et al., 2009; Sathiamoorthy and Kathirchelvan, 2010). The present study was undertaken to evaluate the efficacy of different hormonal protocols for inducing oestrus and improving conception rate in postpartum anoestrus crossbred cows having varied ovarian status.

MATERIALS AND METHODS

The study was conducted in the DBT RBC project area of Konark, in the coastal district of Puri (Odisha) during August 2009 to March 2010. Ninety five Red Sindhi x Jersey crossbred reported to be postpartum anoestrous (beyond 120 days) cows of 1st to 5th parity were selected and sixty of them were examined for ovarian status by per rectal examination and ultrsonographic imaging. Depending upon ovarian status recorded and treatment protocols adopted, they were divided into five groups. Group I (n=12, with smooth ovaries) received Receptal* (GnRH analogue) 2.5 ml

I/M twice at two weeks interval; Group II (n=13, having small (5 mm) follicle with single dose of Receptal 2.5 ml I/M; Group III (n=12), with medium/large sized follicle (10 mm or more) received GPG schedule as in co-synch protocol (Receptal 2.5 ml I/M - on day 0 followed by 2 ml. of Cyclix**(Cloprostenol) I/M on day 7 and repeat dose of Receptal 2.5 ml on day 10 along with AI); Group IV(n=13), with medium/large sized follicle (10 mm or more) received GPH schedule as in modified ovsynch protocol (with 2nd dose of GnRH replaced by 1500 IU of hCG (Chorulon***) and AI 16 hrs. later;

Group V (n=10), with presence of growing / fully grown / regressing corpus luteum, received double dose of Cyclix- 2ml twice at an interval of 10 days with fixed time AI.

Out of the remaining 28 PPA animals irrespective of different ovarian status, Group VI (n=7) were administered orally a combination of Homoeopathic medicine, Ledum paul and Oophorinum of 200

Table 1: Oestrus Response and Conception Rate with Different Hormonal Intervention

Group	Treatment	Ovarian Status	No. Responded	No. Conceived (1^{st} AI)	No. Conceived (1^{st} ,2^{nd}, 3^{rd} AI)
I (n=12)	Double GnRH	Smooth	4(33.33)	1(25.00)	2(50.00)
II (n=13)	Single GnRH	Small follicle	8(61.53)	3(37.5)	4(50.00)
III (n=12)	GPG (cosynch)	Medium/Large Follicle	12(100.00)	7(58.33)	12(100.00)
IV (n=13)	GPH (Modified ovsynch)	Medium/Large Follicle	13(100.00)	10(76.92)	13(100.00)
V (n=10)	Double PG	With CL/RCL	8(80.00)	6(75.00)	7(87.5)
VI (n=7)	Homoeopathic medicine	Irrespective of Ovarian status	1(14.28)	1(100.00)	1(100.00)
VII (n=28)	Untreated control	Irrespective of Ovarian status	7(25.00)	2(7.14)	4(14.28)
Overall Hor. Treatments (n=60)	-	-	45(75.00)	27(60.00)	38(84.44)

Figures in parenthesis indicate percentage

*, **, *** - Hormonal products of M/S Hoechst Intervet India Pvt. Ltd.

potency for 15 days and Group VII animals (n=28) given no treatment were taken as untreated control. Oestrus Induction interval (hrs) was recorded as the time gap between last injection and observation of oestrus signs. Animals not showing oestrus within 25 days were regarded as non-respondents to treatment. All the animals were inseminated on observed oestrus or at prefixed time (in ovsynch and double PG protocols) and conception rate (CR) was calculated after per rectal pregnancy diagnosis done on 60 days post insemination.

RESULTS AND DISCUSSION

The conception rate and oestrus response in various groups (Table 1) revealed that Group III and IV animals treated with cosynch/ modified ovsynch protocol, resulted in highest oestrus response (100 per cent) followed by Group V (80 per cent). The 1st service CR was better, ranging between 58 to 76 per cent in group III, IV and V animals. The overall conception rate, taking into account the 1st, 2nd and 3rd inseminations is also cent percent in Group III and IV animals. A significantly lower ($P<0.01$) oestrous induction interval (hrs) was observed in Group III (124.33±9.61), IV (129.84±7.73) and V (89.62±1.59). The paired figure of oestrus response (per cent) and CR (per cent) consequent to hormonal therapy in treatment groups III, IV and V were 100.00, 58.33; 100.00, 76.92 and 80.00, 75.00 respectively, indicating efficacy of induction protocol. The effect of 2nd dose GnRH/ hCG at the time of AI or before 16 hrs of AI, in formation of accessory CL for more progesterone secretion and role of timely LH peak after PG treatment might have been the contributing cause for lesser oestrus induction interval, better oestrus response and higher conception rate. However, many other complex factors like genotype of the animal, individual idiosyncrasies to GnRH therapy, ovarian status, nutrition and other unrecorded deciding factors like LH pulse frequency, which could obliterate or augment the fertility.

Group III and IV animals resulted in cent per cent overall conception rate justifying higher progesterone secretion from CL/accessory CL. Development of accessory CL among Group III (3) and IV (4) animals, was confirmed on ovarian exploration, as an after effect of hCG/2nd GnRH injection. Various workers observed a higher oestrus response and better conception rate in buffaloes and cows using these protocols. An overall CR of 90 per cent has been reported by Muneer et al. (2009). However, variable results (35.3 - 50 per cent) have been reported by Fernandes et al. (2001), Tenhagen et al. (2004), Keith et al. (2005) and Naidu et al.(2009). Busrelin/hCG supplementation at the onset of oestrus might have hastened the endogenous release/ level of LH ending up with ovulation, there by increasing the fertility rate (Mee et al., 1990). This confirms the earlier reports of Macmillan et al. (1986). The CR of 75 per cent with double PG is much higher than reports of Naidu et al.(2009). Out of 7 animals treated with hohoeopathic medicine only one responded.

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