MANAGEMENT OF REPEAT BREEDING UNDER FIELD CONDITIONS USING HORMONAL AND NON-HORMONAL DRUGS IN COWS *

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ABSTRACT

A study was carried out on 47 repeat breeding crossbred cows to evaluate the therapeutic efficacy of various hormonal and non-hormonal drugs in improving their reproductive efficiency. 19, 11 and 9 cows were treated with 0.02 mg GnRH (Receptal 5 ml i/m), just after AI, 500 mg of hydroxy-progesterone caproate (Duraprogen 2 ml i/m) on day 4 post-AI, and antibiotics ceftriaxone (Inj. Vetacef 2 gm) or cephalexin (Lixen 4 gm) i/ut 12-24 hrs post-AI, respectively. The overall conception rate was 73.68, 81.82 and 77.77 %, respectively, ($P<0.05$). The conception rate in the treatment cycle itself for the three groups was 52.63, 27.27 and 22.22 %, respectively. Maximum cows conceived in the treatment cycle itself indicating beneficial effect of GnRH in inducing fertile estrus and CL growth. Progesterone and antibiotics treatment also significantly improved conception rate and reduced fertile estrus interval. Hence, all three regimes and hormones in particular are recommended for their judicious use in the field to solve the problem of repeat breeding in crossbred cows.

Key words: Repeat breeding cows, Hormonal/Non-hormonal therapy.

INTRODUCTION

The breeding efficiency of dairy animals is directly related to the prosperity of dairy industry. Numerous studies have shown that repeat breeding is still one of the most prevalent reproductive disorders in dairy cows. Information on comparative efficacy of hormonal and non-hormonal therapy of repeat breeding crossbred cows using identical management protocol under field conditions is scarce. Hence, this study was planned to evaluate the relative efficacy of GnRH, progesterone and antibiotics in repeat breeding crossbred cows under field conditions.

MATERIALS AND METHODS

In all 47 repeat breeding cows of two villages of Anand that had taken more than 3 infertile services with good quality frozen-thawed semen. All these infertile animals were first dewormed using Albendazole 3000 mg (Helmiguard 3000, Vetcare India Ltd.) and were vaccinated against HS and FMD. They were also treated for ectoparasites, if any, by using Flumethin (Flupor, Vetnex-RFCL Ltd.). Owners of the ear-marked animals were supplied with mineral mixtures (Amul brand) for supplementing to their animals.

Animals in estrus were inseminated by the lay inseminators of the concerned village co-operative societies and subjected to the following therapeutic regime. Group I (n=19) were treated with 0.02 mg GnRH (Receptal 5 ml i\m) at the time of Ai, Group II (n=11) were treated with 500 mg of hydroxy progesterone (Duroprogen, 2ml i/m) on day 4 post AI and Group III (n=9) with antibiotics ceftriazone 2gm or cephalexin 4 gm i/ut 12-24 hrs post AI Group IV (n=8) were untreated

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control. Pregnancy was confirmed per rectum in non-return cases 60 days post-AI. Animals of all five groups were followed for 3 cycles post-treatment and overall as well as cycle-wise conception rates were compared by chi-square test and completely randomized design.

RESULTS AND DISCUSSION

Effect of GnRH

In Group I the conception rate achieved in the treatment cycle was 52.63 % and the overall conception rate of 3 cycles was 73.68 %. The corresponding figures for untreated control group were 12.50 %, 37.50 %. These findings of GnRH group compared well with the report of Dadarwal *et al.* (2007) The improved conception rate in the treatment group may be attributed to the beneficial effect of GnRH in regulating the time of ovulation and improved fertilization rates in cows together with CL development, progesterone secretion and embryo survival (Dekruif, 1978). Stevenson *et al.* (1990) found overall conception rate of 32.1 vs 41.6 % ($P<0.01$) following AI alone and AI + 100 µg GnRH i/m among hundreds of repeat breeding cows. Gonzalez *et al.* (1997) opined that GnRH-agonist did not increase fertility at first service or stimulate progesterone release, but in repeat breeding cows it had a luteotropic effect that delayed regression of corpora lutea and maintained high progesterone concentrations.

EFFECT OF PROGESTERONE SUPPLEMENTATION

In Group II (n=11) repeat breeding cows treated with 500 mg of hydroxy-progesterone caproate on day 4 or 5 post-AI, the conception rates in the treatment cycle and post-treatment cycles were identical (27.27 % each), with a pooled value of 81.82 %. These conception rates were significantly higher than those of untreated control group and were in accordance with the reports of Awasthi *et al.* (2002) and Das *et al.* (2002), who also observed similar results (70 vs 20 % and 50 vs 10 %, resp). The exogenous progesterone could help maintain pregnancies in cows with sub-clinical endometrium disturbances (Lukaszewski *et al.*, 1993). Patel *et al.* (2005) and Singh *et al.* (2008), however, found lower conception rates of 50.0 vs 33.3 % and 30 vs 20 % for 4th day post-AI progesterone treated vs untreated repeat breeding cows, respectively. According to Das *et al.* (2002), failure of late blastocyst to implant might be due to the progestational changes in the endometrium at the appropriate time. The results suggest that post-insemination progesterone supplementation can improve pregnancy rate in repeat breeding bovines, particularly when administered on day 4 or 5 post-insemination.

EFFECT OF ANTIBIOTICS

In Group III (n=9) post-AI intrauterine antibiotics (ceftriaxone or cephalexin) showed, 22.22 % conception in the treatment cycle and another 33.33 and 22.22 % in post-treatment cycle, respectively, with an overall conception rate of 77.77 %. These results were superior to the control group, and corroborated with the previous reports of several researchers (Awasthi and Nema, 1995; Purohit and Sharma, 2007). Significantly higher overall conception rates within 3 cycles among 10 repeat breeding buffaloes each treated with cephalaxin 4 gm (80 %) and ceftriaxone 2 gm (70 %) i/ut 24 hrs post-AI as compared to untreated control group (40 %) have been documented by Sharma and Dhami (2008). Mahto *et al.* (2006) reported significantly ($P<0.01$) higher conception rates in repeat breeding cows treated with pre- and post-AI ceftrixone sodium intrauterine (53.84 and 57.14 %) as compared to control (33.33 %).

Thus, it can be inferred on the basis of increase in the fertility rates of GnRH and progesterone treated repeat breeding crossbred cows, that of the presumably multiple causes of fertilization failure and embryonic mortality in repeat breeding cows, some are caused due to ovulatory failure and/or progesterone deficiency/ luteal insufficiency, and that exogenous supplementation of these hormones are beneficial in favoring endocrine balance and reducing EED in repeat breeding cows.

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