

**THERAPEUTIC EFFICACY OF HCG AND MANUAL PRESSURE IN
THE MANAGEMENT OF ANOVULATION IN CATTLE**

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ABSTRACT

A study was conducted on 30 repeat breeder crossbred cows of private farms located around the college campus. The cows were equally divided into five treatment groups comprising six cows in each group. In group A, C and D the ovulation was induced by 3000 IU of hCG (Chorulon), while in group B and E the ovulation was induced by rupturing the Graafian follicle manually on 1-2 days of oestrus. The group A and B cows were examined on day 0, 2, 8, 14 and 18 of oestrus to record the changes of the genital organs after induction of ovulation. The study revealed that the occurrence of vulvar congestion, patency of cervix and uterine tone was similar in cows treated with hCG and manual pressure for induction of ovulation. The Graafian follicle was detectable in all cows on day 0 of oestrus in hCG treated group and up to 2 days in manual pressure group. The corpus haemorrhagicum was detected in 83.33 per cent cows on day 2 of oestrus in hCG treated group against 16.66 per cent in cows in manual pressure group. The mature corpus luteum was detected in all the cows on day 8 and day 14 of oestrus. The conception rates by using treatment protocol A (3000 IU hCG and AI in subsequent oestrus), protocol B (manual induction of ovulation and AI in subsequent oestrus) and protocol C (3000 IU hCG immediately after AI) were found to be 100% in cows of repeat breeding due to anovulation. Progesterone therapy (750 mg) on day 3, 10 and 17 following AI with hCG and manual induction of ovulation improved conception rate (100 vs 83.33%) in repeat breeder cows affected with anovulation.

KEY WORDS: Repeat breeder, anovulation, hCG, manual pressure.

INTRODUCTION

Failure of ovulation is one of the important causes of repeat breeding in cattle. The basic cause of anovulation is insufficient release of luteinizing hormone from the anterior pituitary gland. Intravenous administration of 1000 to 5000 IU of human chorionic gonadotrophin (hCG) following AI was found to be an effective treatment of repeat breeding due to anovulation in cattle. However, its high cost and nonavailability in remote areas appear to be the limiting factor for use of hCG in the field. Therefore, there is urgent need of an alternative cost effective method of treatment of anovulatory oestrus in cattle.

Manual rupture of graafian follicle during oestrus followed by AI in the subsequent oestrus period was considered as one of the successful method to deal with anovulatory oestrus in repeat breeder cattle with success rates varying from 54.54 to 75 % (Das, 2002). Inadequate endocrine support to the uterus may results in early embryonic death caused by inadequacy of the suitable uterine environment. However no much works have been conducted on this technique of manual induction of ovulation along with post AI progesterone therapy. Hence, an investigation was carried out to study the therapeutic efficacy of manual rupture and hCG treatment along with post AI progesterone therapy on conception rates in anovulatory repeat breeder cows.

MATERIALS AND METHODS

The present investigation was conducted on 30 repeat breeder apparently healthy crossbred cows with the history of repeating to at least 3 inseminations at 19-23 days interval and were examined per rectum. The repeat breeder cows with ovaries containing tensed follicles and not ovulating till 24 hours of oestrus and also did not reveal formation of corpus luteum even on day 8 of oestrus were diagnosed to be affected with anovulation. The cows were equally divided into five treatment groups comprising six cows in each group. In group A, C and D the ovulation was induced by 3000 IU of hCG intravenously (Chorulon, marketed by Intervet India Pvt. Ltd., 33, Pune- Nagar Road, Viman Nagar, Pune- 411014, India), while in group B and E the ovulation was induced by rupturing the Graafian follicle on 1-2 day of oestrus after confirming anovulation. The group A and group B cows were examined on day 0, 2, 8, 14 and 18 days of oestrus to record the changes of the genital organs after induction of ovulation with hCG and manual pressure and it was also planned to study the conception rates in repeat breeder crossbred cows after induction of ovulation with hCG and manual pressure with the following protocols - protocol A (3000 IU hCG and AI in subsequent oestrus), protocol B (manual induction of ovulation and AI in subsequent oestrus), protocol C (3000 IU hCG immediately after AI), while in protocol D and E ovulation was induced by hCG and manual pressure immediately after AI respectively and each cow was injected with 750 mg of progesterone intramuscularly on 3rd, 10th and 17th day of AI. All animals were examined per rectum after 2-3 months of AI for pregnancy diagnosis. The conception rate for each protocol group was worked out.

RESULTS AND DISCUSSION

It was observed that the vulva became congested in all the repeat breeder cows affected with anovulation on day 0 of oestrus in both (hCG and manual pressure) treatment groups. Vaginal discharge was found free flowing in most of the cows of all the groups on day 0 of oestrus. The cervix remained open in all the cows upto day 2 of oestrus in all the groups. The frequency of occurrence of good uterine tone was 83.33 per cent on day 0 and 33.33 per cent on day 2 of oestrus in hCG treated group while in manual pressure group the frequency was 83.33 per cent and 50.00 per cent on day 0 and day 2 of oestrus respectively. The Graafian follicle was detectable in all the cows upto 24 hours of oestrus in hCG treated group and upto 2 days in manual pressure group. The corpus haemorrhagicum was detected in 83.33 per cent cows on day 2 of oestrus in hCG treated group and only 16.66 per cent cows in manual pressure group. The mature corpus luteum was detected in all the cows of both the groups on day 8 and day 14 of oestrus. These findings clearly indicated that hCG induced ovulation within 24 hours of treatment while manual induction of ovulation generally occurred between 24 and 48 hrs of oestrus.

All six repeat breeder cows with anovulation under protocol A ovulated following treatment with 3000 IU of hCG intravenously and conceived when inseminated at the next oestrus. Das (2002) also found a better conception rates (60.00 and 83.33 per cent, respectively) following the same treatment regimen. The result obtained in the present study indicated that induction of ovulation by hCG 3000 IU and AI in subsequent oestrus was an effective method of treatment for anovulation in cows with 100 per cent success rate.

All six cows (protocol B) ovulated manually also conceived following AI in the subsequent oestrus period. This clearly indicated that in the subsequent oestrous cycle all the anovulatory cows ovulated normally. The success of obtaining normal ovulation in the subsequent cycle might be attributed to the measurable amount of progesterone secreted from the regressing corpus luteum of the previous cycle which might have helped in final growth and maturation of the follicles and caused their successful ovulation in the next cycle (Gomes and Erb, 1965). Hansel and Trimberger (1952) also reported that a small amount of progesterone injected during early oestrus could hasten ovulation. The conception rate obtained in repeat breeder cows with treatment protocol B (100%)

was higher than that obtained by Das (2002) who reported 54.54 and 75 per cent respectively following same treatment regimen. The present finding indicated that manual pressure of the Graafian follicle on 1 to 2 day of oestrus followed by AI in the subsequent oestrus was a successful and practically applicable protocol for treatment of anovulation in repeat breeder crossbred cows without any adverse effect on the cow.

Treatment protocol C comprised use of 3000 IU hCG intravenously immediately after AI at mid to late oestrus. The conception rate obtained in repeat breeder anovulatory cows following this protocol was 100.00 per cent, which was higher (66.67 per cent) reported by Das (2002). Higher conception rate obtained in the present study might be due to higher dose of hCG (3000 IU) against 1500 IU used by the above mentioned worker. The result obtained in the present study indicated that induction of ovulation by hCG 3000 IU intravenously and AI in same oestrus was also an effective method of treatment of anovulation in cows.

In the present study the treatment protocol D comprised use of 3000 IU hCG intravenously immediately after AI and 750 mg of progesterone on day 3, 10 and 17 after AI and the conception rate obtained in the anovulatory cows was 100.00 per cent which was similar to that obtained with treatment protocol C. This clearly indicated that use of post AI progesterone was not at all necessary when 3000 IU hCG intravenously following AI was used for treatment of anovulation.

However, progesterone treatment after manual induction of ovulation and insemination in the same cycle (protocol E) was also found to improve conception rate in anovulatory repeat breeder cows. The conception rate obtained following protocol E in the present study was 83.33 per cent. Reports on the use of progesterone for treatment of anovulation were not available in the literature for effective comparison. However, some reports were available on the use of progesterone in the treatment of non specific repeat breeding in cows. Deka (1994) treated the repeat breeding cows with 250 mg of progesterone at oestrus and proestrus and found 33.33 and 22.22 per cent conception rate respectively. Das et al. (2002) treated the repeat breeding cows with two intramuscular injection of 500 mg progesterone, one immediately after AI and the other 4 days after AI and obtained 60% conception rate. Chaudhary et al. (2009) treated the repeat breeder cows with 500 mg of hydroxy progesterone caproate intramuscularly on day 4th or 5th post AI and found 83.33 % conception rate.

From the present study it can be concluded that protocol B (manual rupture + AI in subsequent oestrus) give equal conception rate as in protocol A,C, and D. Therefore, protocol B may be advocated as low cost therapy for treatment of anovulatory repeat breeder cows without using high cost hormones for treatment. The subsequent AI though lengthen the calving to conception interval but the changes of conception rate is higher as found in the present study without any adverse effect on the cow.

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