EFFECT OF METHYLERGOMETRINE MALEATE ON UTERINE INVOLUTION IN POSTPARTUM COWS

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Abstract: Eighteen Postpartum Holstein Friesian (HF) crossbreed cows aged between 2nd and 5th lactations were selected and randomly divided into 2 experimental groups viz., group I and II (control). On day 2 Postpartum group I and II cows were treated with an intramuscular injection of 5 mg methyl ergometrine maleate and 5 ml normal saline, respectively. The cervical involution progressed rapidly and on day 30 postpartum, the cervix reached the pelvic cavity in group I. The cervical involution in control cows was slower than treatment group. In both the groups after day 20 postpartum, ridges on the uterus were not palpable, uterine contour was palpable and uterus was retractable rectally. Ultrasonography of cervix revealed that the cervical diameter was higher on day 30 postpartum in control group when compared to treatment group. On day 2 postpartum, the diameter of the uterine body measured by ultrasonography did not vary among treatment and control groups. In group I (methyl ergometrine maleate), there was a rapid uterine involution from day 2 to 30 postpartum compared with the control group.

Key words: Methyl ergometrine maleate, Uterine involutionm, Cow

INTRODUCTION

The primary reproductive objective of dairy industry suggests a 12 months calving interval. Alteration or extension of postpartum period with failure or delay in conception results in progressive economic loss to the poor farming community. The puerperal period is a critical phase in the reproductive cycle of dairy cows [1]. Hastening of uterine involution may shorten the postpartum interval of subsequent conception. Ergometrine is known to cause contraction of uterine muscles and it produced a dose-dependent contraction of non-pregnant uterine muscle [2]. Roberts [3] opined that postpartum administration of 1–3 mg of ergonovine or other ergot products produced more prolonged rate of uterine contractions in cows. Methyl ergometrine maleate pronounced a direct effect on stimulation of the rate and force of rhythmical uterine contractions and ability to cause smooth muscle tissue of blood vessel walls to narrow, thereby reducing blood flow in rats and human beings [4]. Hence, an investigation was conducted to assess, the efficacy of methyl ergometrine maleate on uterine involution in postpartum cows and rate of uterine involution was rate was assessed by rectal palpation and ultrasonographic observations.

MATERIALS AND METHODS

The study was conducted at Teaching Veterinary Clinical Complex, Veterinary Collage and Research

5817
Institute, Namakkal in 18 Holstein Friesian cows aged between 2nd and 5th lactations. The selected cows were randomly and equally divided into 2 groups viz., group I (experiment) and II (control) consisting of 9 cows in each group. On day 2 postpartum, cows of group I were administered with an intramuscular injection of 5 mg methyl ergometrine maleate (5 ml, Utrasafe®, Vet Mankind, New Delhi, India) and group II were injected with 5 ml normal saline. Gross and ultrasonographic evaluation of cervical and uterine involution in the experimental and control cows were carried out on day 2, 10, 20 and 30 postpartum. By rectal examination the involution of cervix and uterus (at the level of bifurcation and uterine body) was assessed with the help of palm and fingers. The approximate dimensions ascertained by palpation were expressed in millimeter. By ultrasonographic examination the changes in the diameter of the cervix and body of the uterus at the level of bifurcation and uterine body were measured and recorded in millimeter. The collected data was analyzed statistically as per Snedecor and Cochran method [5].

**RESULTS AND DISCUSSION**

The locations of the cervix and uterus in cows after treatment with prostaglandin are presented in Table 1 (Ultrasonographic examination) and Table 2 (Rectal examination) respectively. In the current study, on day 10 postpartum, in 100 per cent of the cows, the cervix involuted from abdominal cavity to pelvic brim or pelvic cavity in all the treatment groups. The cervical involution progressed rapidly from day 2 to 30 postpartum, in treated group cows and the cervix reached the pelvic cavity. The
cervical involution in control cows was slower than treatment groups. It indicated that methyl ergometrine maleate was effective to promote cervical involution in cows with the maximum effect. In other studies, the involution of cervix was completed by 24-39 days as per rectal palpation [6-8]. In this experiment in all the groups after day 20 postpartum, ridges on the uterus were not palpable; uterine contour was palpable and uterus was retractable. These findings were in accordance with the reports of Lech et al. [9] in cows. Between day 2 and 10 postpartum, the involution process of uterus was more rapid in treatment groups than control group. It indicated that the uterotonics drugs played a role in reducing the size of the uterus. Hussain and Daniel [10] stated that uterine involution could be observed when the size of the uterus shrank to its normal non-gravid state. The duration of complete uterine involution ranged from 26-52 days after calving but the changes after 20-25 days postpartum were generally quite common [11].

There was a significant reduction in diameter of cervix from day 2 to 10 postpartum in all the treatment and control groups. Similar to this finding, Atanasov [12] found 45 per cent reduction in the diameter of the cervix between day 1 and 7 postpartum in cows. Sheldon [13] reported the cervical diameter as <5 cm by 40 days postpartum in cows. The mean diameter of the cervix on day 2, 10, 20 and 30 in all the treated and control groups revealed that the cervical involution was more rapid in treated group than in control group. This might be due to the differences in the uterotonic efficacy of methyl ergometrine maleate. In this experiment, on day 2 postpartum the diameter of the uterine body measured by ultrasonography did not vary between treatment and control groups. It is known that contraction induced by ergometrine agonists was mainly due to calcium influx through the voltage-gated calcium channels opened directly or indirectly by agonist receptor [14,15]. In methyl ergometrine maleate treated group, there was a rapid uterine involution from day 2 to 30 in postpartum cows. Thus the drug produced prolonged rate of uterine contraction in cows.

**SUMMARY**

From this study it is concluded that the administration of methyl ergometrine maleate during immediate postpartum period effectively hastened the uterine involution rate in Holstein Friesian (HF) crossbred cows.

**REFERENCES**