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Management of postpartum reproduction in crossbred cows with Dinoprost

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ABSTRACT

The study was conducted on 32 cows belonging to different small private farms around Ranchi. 'Dinoprost' 25 mg was administered intramuscularly to each of 20 cows within 6 hrs of parturition and 12 cows were kept as control. The incidence of retention of fetal membranes in 'Dinoprost' treated cows was significantly ($P<0.05$) lower than the control. There was no significant difference with respect to reduction in diameter of cervix and uterine coruna between 'Dinoprost' treated and control groups at day 10, 20, 30 and 40 postpartum. The post partum estrus interval in treated group (80.28±3.47 days) was significantly shorter ($P < 0.01$) as compared to control (139.00±0.91 days). The post partum fertile estrus interval in treated cows (86.43±4.01 days) was shorter ($P<0.01$) than that of untreated control (144.50±5.23 days). Significantly higher ($P<0.01$) conception rate in 'Dinoprost' treated cows was observed as compaied to control.

Key words : Postpartum, crossbred cows, Dinoprost, involution of uterus, retention of fetal membranes

INTRODUCTION

Puerperal uterine soundness is essential for the establishement of postpartum estrous cyclicity. Retention of fetal membranes is one of the common malodies during puerperium in cows and buffaloes (Sane *et al.*, 1982). Its effect on the subsequent fertility is important. Delayed involution, chronic metritis and poor conception rate are its common sequelae (Roberts, 1971). In order to obtain maximum economic gain, 'Dinoprost' has been used to hasten the puerperium with early postpartum estrus. Lindall *et al.* (1980) observed that PG metabolites increased at the time of parturition and remained high for 8 to 16 days postpartum. The uterine involution was completed in 17 to 30 days of parturition. Cows with a short period of high PG metabolites required relatively longer period for complete uterine involution. PGF_2 alpha had a positive effect on the uterine muscular tone (Lindell and Kindahl, 1983) .

MATERIALS AND METHODS

The study was conducted on 32 cows selected from small farms located around Ranchi. Dinoprost tromethamine (Lutalyse) 25 mg was administered intramuscularly to 20 cows within 6 hours of parturition. 12 cows were maintained as control, wherein 5 ml of sterile normal saline was injected intramuscularly. The following observations were made.

Involution of uterus : The reproductive tract was examined by palpation per rectum, with use of vaginal speculum, and visual inspection of vaginal discharge. The grading was followed as per Studer and Morro (1978) modified by Gier and Marion (1968).

(a) Vagina	(V1)	–	Mild hyperaemia of Vaginal mucosa.
	(V2)	–	Moderate hyperaemia of Vaginal mucosa
	(V3)	–	Severe hyperaemia of Vaginal mucosa
(b) Cervix	(C1)	–	3 to 5 cm in diameter, sligthly thick feeling, with or without reddening per speculum examination.
(c) Uterus	(U1)	–	2 to 3 cm in diameter, slightly thick feeling.

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(U2) – 3 to 5 cm in diameter, definite grooves with thick feeling, longitudinal grooves and nodularity from enlarged caruncles, uterus containing fluid in some cases.

(U3) – Diameter greater than 5 cm, grooves and caruncle readily palpable, some fluid usually palpable in lumen.

Each uterine cornua was evaluated separately.

Postpartum complications : This was based on the basis of nature and colour of vaginal discharge on the above mentioned days in treated as well as control animals. Cases of retention of fetal membranes were noted.

Ovarian cyclicity : This group was judged on the basis of appearance of oestrual signs in cows of treated and control.

Fertility studies : The cows of treated and control groups were inseminated artificially. They were rectally examined for pregnancy 45 to 50 days after last insemination and the pregnancy rate was compared in the two groups.

RESULTS AND DISCUSSION

Involution of uterus : The involution of uterus in both treated control groups has been presented under Table 1. No significant difference was observed with respect to reduction in diameter of cervix and uterine cornua between the two groups on day 10, 20, 30 and 40 postpartum. The finding was in agreement with those of Guilbault *et al.* (1988). Ko *et al.* (1980) noted that PGF_2 alpha or its analogue with or without estradiolcypionate priming did not increase the myometrial activity in postpartum cows. However, Lindell and Kindahl (1983) observed a positive effect of PGF_2 alpha on the uterine muscular tone. Albaquerque (1986) reported that the time taken for the complete involution in different treatment group was lower in comparison to control group and corroborated with findings of this study. Uterine involution is dependent upon the concentration of PG

Table 1. Involution of uterus subsequent to postparturient 'Dinoprost' treatment

Traits / Group	Treatment	Control	't'-value
Diameter of cervix (cm)			
10	7.50±0.11	7.63±0.16	0.2172
20	6.05±0.15	6.17±0.22	0.1464
30	4.85±0.16	5.04±0.14	0.2575
40	2.28±0.14	4.54±0.10	0.1194
Diameter of horns (cm)			
10	6.28±0.18	6.67±0.14	0.4875
20	4.78±0.14	4.92±0.12	0.2195
30	2.70±0.10	3.08±0.18	0.4843
40	2.28±0.14	2.54±0.11	0.4118

Table 2. Retention of foetal membranes in 'Dinoprost' treated postpartum cows

Group of animals	No. of cows	RFM cases	Per cent
Treated group	20	3	15.00[a]
Control	12	6	50.00[b]

Values bearing different superscripts in a column differ significantly (P<0.05).

Table 3. Occurrence of postpartum fertile estrus subsequent to 'Dinoprost' treatment

Traits	Group		't' value
	Treatment	Control	
Length of postpartum Estrus (days)	80.20±3.47	139.00±0.91	7.4146**
Length of postpartum Fertile estrus (days)	86.43±4.01	144.50±5.24	7.1956**

**(P<0.01).

metabolites at parturition (Lindell *et al.*, 1980), status of microflora present (Deka *et al.*, 1985) and is generally delayed with increased parity (Peter *et al.*, 1987) and during colder season (Etherington *et al.*, 1985).

Retention of foetal membranes (RFM) : This incidence of RFM in 'Dinoprost' treated animals was 15.00 per cent, while in untreated group it was 50.00 per cent (Table 2). A significant difference was noted between the two groups of animals. The incidence was significantly higher (P<0.05) in control group than the treatment group and is in close agreement with observations of Tainturier and Zaied (1989). The spasmogenic effect of PGF_2 alpha on the uterine musculature has been established (Eiler *et al.*, 1981 and Rodrigues-Martinez *et al.*, 1987) and it appears that the reduction in the incidence of RFM observed in the present study may be on account of this.

Postpartum estrus and fertile estrus : The 't'-test revealed that the interval of postpartum estrus in treated group (80.29±3.47 days) was significantly (P<0.01) shorter than that of untreated (139.00±0.91 days) group (Table 3). Further the interval of postpartum fertile estrus in the cows treated with 'Dinoprost' (86.43±0.01 days) was also shorter (P<0.01) than that of untreated animals (144.50±5.24 days). First postpartum and fertile estrus have been reported to vary with gestation length (Nezhdanov, 1983), status of microflora in the uterus (Decka *et al.*, 1985), parity (Peter *et al.*, 1987) and season (Entherington *et al.*, 1985). In the present study, the first postpartum estrus in untreated group appeared late (144.50±5.24 days). Kumar and Purbey (1987) observed than in rural bovines in first estrus appeared at 9.7±0.98 months after calving. McClary *et al.* (1989) and Espana Espana *et al.* (1992) also suggested that there was a decline in time interval for first postpartum estrus afer administration of PGF_2 alfa or its analogue. However, Albaquerque (1986), Pinheiro *et al.* (1990) did not find any change in these parameters.

Post-partum conception rate : The conception rate was 70.00 per cent (14 out of 20 cows) in the Dinoprost' treated cows and was significantly higher (P<0.05) to that of untreated cows (4 out of 12 cows, 33.33 per cent). The conception rate in treated cows in this study was higher than that reported by McClary *et al.* (1989) but was almost in agreement with those of Pincheiro *et al.* (1990). In contrast to the present finding, Espana Espana *et al.* (1992) found no significant difference between treated and untreated cows. It may be concluded that the luteolytic and spasmogenic action of 'Dinoprost' helped in effective cleaning of the postpartum uterus through earlier ovarian rebound.

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