COMPARATIVE EVALUATION OF DIFFERENT ECBOLIC THERAPIES ON PUERPERIUM IN DYSTOCIA AFFECTED DANGI COWS

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ABSTRACT

The study was conducted to evaluate the effect of different ecbolic therapies on puerperium in eighteen dystocia affected Dangi cows divided into three groups consisting of six cows in each. Group-I (T1) and II (T2) cows were injected methylergometrine (5 mg) and dinoprost tromethamine (25 mg) i/m, respectively, immediately after parturition. The cows in Group-III (T3) received herbal ecbolic, 2-4 boluses, bid for first10 days postpartum. The time required for placental expulsion and uterine involution in T1 (3.41±0.30 hrs; 28.00±0.57 days) were non-significantly (P>0.05) higher than T2 (2.00±0.44 hrs; 24.66±0.76 days) and the values for both T1 and T2 were significantly (P<0.05) higher in T3 (5.75±0.80 hrs; 33.00±1.77 days) group. The number of services per conception did not differ significantly (P>0.05) between T1 (1.66±0.33), T2 (2.00±0.25) and T3 (2.50±0.22). The conception rate was found 50 % in T1 and 100 % in T2 and T3 with an overall conception rate of 83.33 % for all three treatment groups of Dangi cows.

Key words: Dangi cow, Dystocia, Ecbolics, Puerperial events, Postpartum fertility

INTRODUCTION

Dangi cow (Bos indicus) is an important dual purpose cattle breed of India reared mostly by tribes in forest area with undulated hilly track and heavy rainfall in Dangs district and adjoining areas of Navsari and Tapi districts in Gujarat and Nashik, Ahmednagar and Dhule districts in Maharashtra. The animals are reared entirely on grazing and provide a steady and substantial regular income through sale of milk, male animals and manure. Therefore, the productive potential of Dangi cow needs to be exploited in view to amplify the economic returns to poor class of people and to meet the requirements of researchers. The dystocia is also a major problem of cattle causing stillbirth, retention of placenta, subsequent postpartum infertility and many more. The puerperal period is a critical phase in dairy cows which includes reduction of uterine size, regeneration of the endometrium, elimination of bacterial contamination and resumption of ovarian cyclicity (Sheldon et al., 2008). Therefore, it is desirable that ovarian activity is resumed as early as possible after parturition (Derar et al., 2011). Early postpartum activity and improved reproductive efficiency in cows can be achieved using exogenous PGF2a and methyl ergometrine during early postpartum period (Patel et al., 2014). The oral administration of herbal preparations with proven ecbolic and restorative actions also appears to be safe and effective option, both therapeutically and prophylactically (Ravi and Bhagwat, 2007).

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Hence, the present study was aimed to evaluate the comparative effect of PGF2a, methylergometrine and herbal ecbolic therapies on puerperium in dystocia affected Dangi cows.

MATERIALS AND METHODS

The present study was carried out under field conditions on eighteen dystocia affected Dangi cows with successful parturition by obstetrical interventions without any complications, from parturition to puerperal period and thereafter up to eighteen months postpartum. The animals were maintained by farmers in different villages of Dangs district, Gujarat, India. The cows were randomly divided into three groups comprising six cows in each. The cows in Group-I (T1) and II (T2) were treated with 5 mg of Methylergometrine maleate i.m. (Inj. Nexbolic, Intas Pharmaceuticals Ltd.) and 25 mg of Dinoprost tromethamine, a natural PGF2a (Inj. Lutalyse, Pfizer Animal Health Ltd.), respectively, immediately after parturition. The cows in Group-III (T3) were treated with herbal ecbolic (Bol. Exapar, Ayurvet Ltd.), 2-4 boluses twice a day after calving for a period of 10 days. The Dangi cows were strictly observed for postpartum reproductive performances placental expulsion time, uterine involution, number of services per conception and conception rate. The data were analyzed following standard statistical methods using CRD and DMRT as per Steel and Torrie (1981).

RESULTS AND DISCUSSION

The mean time required for expulsion of placenta for T1 (3.41±0.30 hrs) was non-significantly (P>0.01) higher than T2, but values for both T1 and T2 were significantly

(P<0.01) lower than T3. The overall mean placental expulsion time (3.72±0.48 hrs) was within six hours as observed in all the three groups (Table 1) and was in agreement with El-Malky et al. (2010), however, Kumar et al. (2001) found more than six hours for placental expulsion. The placental expulsion time was shorter in methylergometrine treated group (Group-I) as compared to herbal ecbolic treated group (Group-III) and the present finding was in close agreement with the observations of Patel (2014) who had used methylergometrine and Utrovet in HF crossbred cows. Moreover, the time required for placental expulsion in PGF2a treated (T2) group was much shorter as compared to 4.49±0.43 hrs as reported by Akar et al. (2012) who administered cloprostenol in dystocia affected cows. On the other hand, Thakur et al. (2013) reported a lower (4.00±0.21 hrs) placental expulsion time in Exapar treated Deoni cows and Marathwari buffaloes. While Sahatpure et al. (2012) reported longer expulsion time in Exapar N treated Nagpuri cattle.

The mean time required for completion of uterine involution (days) in T1 and T2 did not differ significantly (P>0.01) but both were significantly (P<0.01) lower than in T3. These findings were in agreement with the observations of Patel (2014), who reported significantly longer time required for uterine involution (P<0.01) in Utrovet treated as compared to methylergometrine (25.67±0.88 days) and PGF2a (23.17±1.72 days) treated HF crossbred cows. The findings of methylergometrine treated (T1) group was in agreement with the observations of Patel (2014), while a shorter time of 14.90±0.48 days was reported by Nosier et al. (2012) in HF cows. The PGF2a played a major role and accelerated the uterine involution in T2, which was in agreement with the observation of Patel (2014) in HF crossbred cows. While, slightly longer duration of 28.71±0.92 days was reported by Patel et al. (2013) in HF cows.

The number of services per conception and conception rate in T1, T2 and T3 did not differ significantly (P?0.01) between the treatment groups with overall services per conception and conception rate as 2.13±0.16 and 83.33 per cent, respectively. These findings were in agreement with the number of services per conception as reported by Rafique et al. (2000) in Holstein X Sahiwal cows and Patel (2014) in HF crossbred cows, while, Habib et al. (2010) reported lower services per conception (1.54 ± 0.09) in Red Chittagong cattle. The overall conception rate of 83.33 % obtained in the present study was higher than 79.12±2.82 % reported by Habib et al. (2010). Moreover, higher conception rate was observed in the methylergometrine treated group as reported by Patel et al. (2016) and Nosier et al. (2012). Whereas, a lower conception rate of 70.00% was reported by Sinha et al. (2002) for Dinoprost treatment in crossbred cows and conception rates were 83.33 and 66.67 % with PGF2a and Utrovet in HF crossbred cows, respectively as reported by Patel et al. (2016).

A total of fifteen out of eighteen Dangi cows (84.33%) conceived in the present experiment (Table 1). The first service conception rate was observed to be 11.11 per cent. While, exclusively higher conception rate was observed in second service (50 %) and in third services (22.22 %) while the percentage of non-conceived cows was 16.66 during the study period of eighteen months.

Table 1: Effect of different ecbolic treatments on puerperium in Dangi cows (Mean±SEM)

Treatment/ Group (n=6)	Expulsion time of Placenta (hours)	Involution of uterus (days)	Number of Services/ conception	Conception Rate (%)	No. of animals responded to treatment	No. of pregnant animals (n=6)
Group-I (T1)	3.41±0.30^a	28.00±0.57^a	1.66±0.33^a	50	3 (50%)	3
Group-II (T2)	2.00±0.44^a	24.66±0.76^a	2.00±0.25^a	100	6 (100%)	6
Group-III (T3)	5.75±0.80^b	33.00±1.77^b	2.50±0.22^a	100	6 (100%)	6
Overall	3.72±0.48	28.55±1.04	2.13±0.16	83.33	15(83.33%)	15/18
F-value	11.491**	13.049**	2.256	--	--	--
P-value	0.001	0.001	0.147	--	--	--

Means bearing different superscripts within a column differ significantly (**P□0.01).
T1 Methylergometrine; T2 $PGF_2\alpha$ and T3 Herbal ecbolic-Exapar.

CONCLUSION

The process of placental separation and uterine involution was found earlier in $PGF_2\alpha$ and methylergometrine treated groups as compared to herbal ecbolic treated group of Dangi cows.

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