Use of Dinoprostone and Cloprostenol Therapy for Induction of Parturition in Small Ruminants

K. P. Bhutia and N. M. Markandeya

Department of Animal Reproduction, Gynaecology and Obstetrics, College of Veterinary and Animal Sciences, MAFSU, Parbhani (MS) 431402.

(Received : 11-09-2015 423/15 Accepted : 12-01-2016)

Abstract

Six pregnant ewes and does expected to deliver within ten days were selected to induce parturition using natural prostaglandin gel containing Dinoprostone (PGE₂) @ 0.25 mg endo-cervically alongwith intramuscular injection of synthetic prostaglandin analogue inj. Pragma @ 187.5 µg (0.75 ml). The treatment was found to be effective and cervical dilatation initiated within 44.67 ± 04.81 hours in ewes and 29.17 ± 03.82 hours in does, which were significantly different.

Key words: Induction of parturition, Small ruminants, Hormone

Various hormones like estrogen and ACTH have been suggested for induction of parturition in small ruminants including glucocorticoids (Harisson, 1982) and antiprogestins (Gazal et al., 1993). Since caprine pregnancy maintenance is dependent on the luteal (CL) progesterone, PGF₂α or its analogs are the drug of choice for induction of parturition in goats. Although PGF₂α causes luteolysis in the ewe, it is not consistently effective in inducing lambing, apparently due to production of progesterone in the placenta or fetal cotyledon which can maintain pregnancy in the absence of the corpus luteum after 50 days of gestation.

Materials and Methods

In the present study, apparently healthy, vaccinated sheep and goats from college Instructional unit were included. Pregnant Deccani ewes (n=6) and pregnant Osmanabadi goats (n=6) expected to deliver within ten days were assigned to two experimental groups; Group PPE (n=6) and Group PPD (n=6) and treated with natural prostaglandin gel (Bharat Serum and Vaccines Ltd.) containing Dinoprostone (PGE₂) @ 0.25 mg endo-cervically alongwith intramuscular injection of synthetic prostaglandin containing Cloprostenol sodium (inj. Pragma, Intas Pharmaceuticals Ltd.) @ 187.5 µg (0.75 ml). Treated animals were followed to record treatment response interval in terms of cervical dilatation. The data was analyzed using Completely Randomized Design test as given by Panse and Sukhatme (1986).

Results and Discussion

The treatment was found to be effective and cervical dilatation initiated within 44.67 ± 04.81
hours in ewes (PPE group) and $29.17 \pm 0.38$ hours in does (PPD group). Ewes took double the time for cervical dilatation than does. The results are depicted in Table I and on statistical analysis, the values were significantly different ($p < 0.05$). The variations in the result might be due to differences in age, breed, parity and weight of the ewes and does with individual variations to season, climate, nature and dose of drug or day of injection.

Giri et al., (2006) reported that the interval from injection of prostaglandin analogue (0.15 to 0.30 mg Tiaprost) to onset of parturition in goats varied from $35.33 \pm 1.11$ to $48.17 \pm 0.26$ hr in different groups which was much higher than the present finding. Prostaglandins have been proved relatively ineffective in initiating parturition earlier than about a week from full term and the interval between injection and parturition depends on the stage of pregnancy. PGE$_2$ exerts a direct effect on the cervix and strengthens the idea that PGE$_2$ may have a primary role in the regulation of cervical softening at term which is supported by the studies of Stys et al., (1978) in pregnant sheep with 30 mg PGE$_2$ administered in a water-soluble gel into the cervical Os. Thakur and Verma (1990) successfully attempted induction of parturition in five pregnant goats with synthetic PGF$_{2\alpha}$ @ 100 µg and reported no adverse effects with kidding within $29.0 \pm 1.41$ hrs of treatment. In another study between a corticosteroid (2mg flumethasone) and a normal luteolytic dose of PGF (15 mg) administered on day 141 of gestation, 89 per cent and 33 per cent of ewes, respectively, delivered lambs within 72 h (Gordon, 2004), showing variation to the drug used for induction.

Finally induction of parturition reduces the incidence of kid mortality due to lack of assisted deliveries and limits kidding in defined period.

References


| Table I. Efficacy of hormonal treatments for induction of parturition in ewes and does |
|---|---|---|
| Sl.No. Parameter | Observations |
| | Ewes | Does |
| 1. Number of animals treated | 06 | 06 |
| 2. Number of animals responded | 06 (100%) | 06 (100%) |
| 3. Mean time interval between treatment and parturition (hrs) | $44.67 \pm 0.48^{b}$ | $29.17 \pm 0.38^{a}$ |
| 4. Number of assisted deliveries | 02 (33.33%) | 03 (50%) |
| 5. Post-partum complications | 00 | 00 |
| 6. Induction failure | Nil | Nil |

*Different superscript indicates significant difference amongst them ($p < 0.05$).