Efficacy of Oxytocin Versus Fenprostalene for the Prevention of Retained Placenta in the Dairy Cow

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Introduction

In previous studies, efficacy for reducing the incidence of retained placenta has been shown for both prostaglandin[1,2] and oxytocin[3] when administered immediately postpartum. Since neither drug is 100% effective, this study was undertaken to compare the efficacy of fenprostalene and oxytocin. Since the cost of oxytocin is considerably less per treatment compared to fenprostalene, oxytocin may, in fact, be more cost effective.

Materials and Methods

Purebred Holstein cows from a large dairy herd were used for this study. As cows approached parturition, they were put into disinfected and bedded box stalls where they were more closely observed. A record card was placed on each maternity pen to record cow identification, calf identification, sex of calf, time of birth and approximate time of expulsion of the placenta. Immediately after calving, cows were treated alternately with oxytocin or fenprostalene. Oxytocin was injected IM using a 2cc dose, whereas fenprostalene was administered S.C. at the recommended 2cc dose. If cows had not expelled their placentas by 24 hours postpartum, it was considered retained. Following the initial treatment with either of the drugs, the treatment for retained placenta was similar. Cows with retained placentas were treated with 18 million units of procaine penicillin S.C. daily until the placenta was expelled.

At 21 days postpartum, all cows, whether they had retained placentas or not, were given prostaglandin (Lutalyse®) prophylactically to prevent endometritis. Uterine infusions were not made at that time.

Results

As shown in Table 1, the proportion of retained placentas with either treatment was not significantly different ($p>0.05$). Also, the time from parturition until the placenta was shed was not different between the two groups. Oxytocin treated cows averaged 6.8 days (range = 1–13 days) to shed their placentas compared to an average of 6.3 days for fenprostalene treated cows (range = 1–15 days).

The time to first breeding was similar (73 and 74 days for oxytocin treated and fenprostalene treated cows, respectively). Days to conception were four days less for fenprostalene treatment than for oxytocin treatment. Services per conception were also similar (2.2 services for oxytocin treated cows compared to 2.0 services per conception for fenprostalene treated cows).

Table 2 shows days to first service, days to conception and services per conception for cows that did not have retained placentas. There was no statistical difference between the two treatments for the parameters measured ($p>0.05$).

Discussion

This study shows that fenprostalene is not superior to oxytocin as a treatment for retained placentas. Previous studies[1,2] indicated that both treatments might have beneficial effects in hastening expulsion of the placenta and subsequent fertility. The etology of retained placentas is not well understood and it is unclear how these drugs influence the reproductive tract in the early postpartum period. Oxytocin causes temporary myometrial contraction in the estrogen sensitized uterus.[3] Yet it has been our experience that if cows do not expel the placenta within 24 hours, it is retained for several days in spite of repeated oxytocin treatments.

Fenprostalene may exert its effect on the reproductive tract other than by induction of myometrial contractions. Prostaglandins produce their effect on the reproductive tract by inducing luteolysis, and initiating estrus.[4] However, this effect is not manifested immediately postpartum since cows have no functional corpus luteum

TABLE 1. Reproductive indices in cows with retained placentas.

Treatment	No. of Cows	No. Retained & (%)	Days to Placenta Shedding	Days to First Breeding	Days to Conception	Services/ Conception
Oxytocin	145	20 (14)	6.8	73 (18)*	117 (10)*	2.2
Fenprostalene	149	22 (15)	6.3	74 (20)*	113 (17)*	2.0

*Number of cows in parenthesis as not all cows had completed data. Cows flushed for ET, sold for dairy or beef prior to first breeding or conception were not included.

TABLE 2. Reproductive indices in cows without retained placentas.

Treatment	No. of Cows	Days to First Breeding	Days to Conception	Services/ Conception
Oxytocin	125	71 (100)*	114 (82)*	2.24
Fenprostalene	127	71 (112)*	107 (101)*	2.15

*Number of cows in parenthesis as not all cows had complete data. Cows flushed for ET, sold for dairy or beef prior to first breeding or conception were not included.

and progesterone is very low at parturition.[1] If prostaglandins accelerate placental expulsion, the means of action remains to be elucidated.

Furthermore, in this study reproduction was not compromised in cows with retained placentas treated according to our protocol; that is, procaine penicillin administered daily until the placenta is expelled, followed by injection PFG 21 days postpartum.

References

1. Studer, E. and Holtan, A. Treatment of retained placentas in dairy cattle with prostaglandin. Bovine Practitioner. 1986; 21:159–160. 2. Herschler, R.C. and Lawrence, J.R. . A prostaglandin analogue for therapy of retained placenta. Vet Med. 1984; 79(6):822–826. 3. Roberts, S.J. Veterinary Obstetrics and Genital Diseases, 2nd edition. Published by author, Ithaca, New York, 1971.