

Results

The median IgG concentration at 48 hours after birth was 2061.06, 2306.54, and 669.06 mg/dL, for Group 1, 2 and 3, respectively. Failure of passive transfer ([IgG] < 1000 mg/dL at 48hrs) occurred in 80% of calves in Group 3 while all calves in Group 1 and 2 achieved adequate transfer of passive immunity. Half-Life of IgG was as follows: Group 1 (colostrum)= 28.5 days; Group 2 (colostrum replacer)= 19.1 days; and Group 3 (plasma)= 27.3 days.

Significance

Our hypothesis was confirmed in that colostrum derived IgG has a longer half-life than colostrum replacer or plasma derived IgG. It is interesting to note that the half-life of plasma derived IgG was 8 days longer than colostrum replacer. We assumed that plasma derived IgG would have the shortest half-life considering that it is an exogenous protein. In the future, a study using sick calves administered plasma IgG and calculation of resulting half-lives would provide information relevant to clinical settings.

Effect of different intrauterine oxytetracycline treatment on reproductive performance of dairy cows with clinical endometritis and determination of oxytetracycline residues in milk

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Introduction

Following intrauterine administration of oxytetracycline, therapeutic concentration and drug action will be restricted to the uterine lumen and endometrium. The main objective of this study was to see whether intrauterine infusion of oxytetracycline (OTC) is an appropriate method for the treatment of postpartum endometritis in dairy cows.

Materials and Methods

Two-hundred eighty lactating Holstein cows with clinical signs of endometritis were randomly assigned to 1 of 3 treatment groups, and 186 cows were sampled for cytology experiment. In Group 1 (n=73) cows were treated with intrauterine infusion of a 10% OTC solution to provide 5 g of OTC. In Group 2 (n=44), posterior epidural anesthesia with lidocaine was used before intrauterine OTC treatment to eliminate straining. In Group 3 (n=49) 100 ml of normal saline was infused after intrauterine infusion of 10% OTC (containing 5 g of OTC) to reduce the concentration of OTC. Untreated cows in Group 4 (n=20) served as the control group. OTC residues in milk were measured by HPLC method; milk samples from 6 treated cows from each group were collected randomly at 12, 24, 48, 72, and 96 hours after treatment.

Results

Clinical cure rates were 79.4%, 68.1%, 65.3%, and 50% in OTC, OTC+epidural, OTC+saline, and control groups,

respectively (P>0.05). The average antibiotic residues in the OTC+lidocaine group was 189.86±38.42 ppb (ng/ml) and was higher than the average in the other 2 groups (P<0.05). Maximum amounts of OTC residues were found 72 hours after treatment in the OTC group (276.67±84.89 ng/g), OTC+lidocaine group (452.4±157.14 ng/g), and the OTC+saline group (286.67±78.77 ng/g). To evaluate the reproductive performance, the researchers compared the 280 treated cows with 1088 cows that were clinically healthy without any signs of clinical endometritis. Conception rates to all services were 45.01% in treated groups and 42.98% in cows the clinical healthy group. This difference was not statistically significant (P<0.05). The first service interval following calving was significantly lower (P<0.05) in cows without clinical endometritis (68.01±19.35 days) than in treated groups (86.89±31.88 days).

Significance

The longer first-calving interval, coupled with the presence of antibiotic residues in milk samples at different times after treatment, make the use of intrauterine OTC for the treatment of clinical endometritis less acceptable. Development of effective alternative therapies instead of antibiotics for the treatment of postpartum endometritis is essential and is suggested for further studies.