Efficacy of a second intrauterine cephapirin infusion in dairy cows for the treatment of purulent vaginal discharge and endometritis

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Introduction

Purulent vaginal discharge (PVD) diagnosed using a metricheck device and endometritis (ENDO) diagnosed using a leukocyte esterase test are associated with detrimental impact of subsequent reproductive performance of dairy cows. The efficacy of intrauterine cephapirin for treating PVD and ENDO was shown by multiple studies. All these studies validated the efficacy of 1 intrauterine cephapirin infusion given at the time of diagnosis to treat PVD and ENDO (in comparison with no treatment). Therefore, it remains unclear if cows would benefit from a second intrauterine cephapirin infusion 2 weeks after the initial treatment. The objective of this study was to quantify the impact of a second intrauterine infusion of cephapirin on the subsequent reproductive performance of postpartum dairy cows affected by PVD and ENDO.

Materials and Methods

Cows from 30 commercial Holstein dairy herds were systematically enrolled in a randomized clinical trial. Herd selection was based on convenience for being located within 1 hour of the veterinary college and for having a history of high PVD or ENDO prevalence. At 35 days-in-milk (DIM), cows were diagnosed for PVD (Metricheck: mucopurulent vaginal discharge or worse) and ENDO (leukocyte esterase: small amounts of leukocytes or worse). Cows diagnosed with PVD or ENDO at 35 DIM were randomly assigned to 1 of 3 treatment groups: 1) no intrauterine infusion (CONTROL group); 2) one intrauterine cephapirin infusion at 35 DIM (ONE TX group); and 3) one intrauterine cephapirin infusion at 35 DIM and another one 14 days later (TWO TX group). All cows were bred using ovulation synchronization protocols for their first service. Statistical analyses were conducted using multivariable mixed logistic regression models adjusted for confounders and herd clustering effect.

Results

A total of 4,140 cows were enrolled in the study. Within the study population, the number of cows affected by PVD and ENDO were 1,038 (25.1%) and 1,557 (37.6%), respectively. Intrauterine cephapirin treatment was associated with an increased first-service pregnancy risk in cows affected by PVD (CONTROL: 16.6%; ONE TX: 28.0%; TWO TX: 38.8%; P=0.03) or ENDO (CONTROL: 18.5%; ONE TX: 30.3%; TWO TX: 39.2%; P<0.01). Cows unaffected by PVD and ENDO had a first-service pregnancy risk of 43.2% which was statistically different (P≤0.05) from the CONTROL and ONE TX groups, but not from the TWO TX group.

Significance

Cows treated with a second intrauterine cephapirin infusion 14 days after the initial treatment had improved first-service reproductive performance compared with cows that only had 1 initial treatment.