

Research Summaries

DAIRY

Effect of Estradiol Cypionate in Postparturient Dairy Cattle at Increased Risk for Metritis

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Introduction

Metritis is a postparturient uterine disease that adversely affects fertility, milk production, and health of dairy cattle. Although few cows in most herds develop life-threatening septic metritis, many may develop anorexia secondary to metritis-related pyrexia. In an attempt to prevent or reduce the effects of metritis, many dairymen have adopted some form of a standardized fresh cow program that often includes administration of 4 mg Estradiol Cypionate (ECP) to postparturient cows with retained fetal membranes. Estradiol has been shown to stimulate uterine contractions, increase phagocytosis of bacteria, increase uterine blood flow, and enhance uterine immune function. However, data is not available to support the use of ECP for prevention of metritis. Recent work by Wagner, *et al* showed no benefit to the routine use of ECP in randomly assigned postparturient dairy cattle. However, this study contained relatively few cows with known risk factors for metritis. A study was conducted to determine whether the administration of 4 mg of ECP to cows at higher risk for metritis is efficacious in preventing or decreasing severity of metritis in the first 10 days postpartum.

Materials and Methods

A triple-blinded clinical trial utilizing 123 primiparous and 138 multiparous Holsteins experiencing postparturient hypocalcemia, retained fetal membranes (RFM), dystocia, stillbirth or twins was conducted on one free stall dairy in Tulare County, California. Within 24-36 hours of calving animals were assigned, using number-adaptive random allocation, into treatment (4 mg ECP) or control (2 ml vegetable oil) groups. Abortifacient cows were ineligible for enrollment in the study. Monitoring was performed for the next 10 days follow-

ing calving, and consisted of rectal temperatures taken once daily before 8 am and visual and olfactory evaluation for metritis. Metritis was defined as the presence of a colored, malodorous uterine discharge confirmed by rectal palpation and classified as Severity 1 (required no antibiotic treatment) or Severity 2 (fever $\geq 103.5^{\circ}\text{F}$ or 39.7°C requiring antibiotic treatment). Severity 2 cows were treated with 30cc Excenel[®] once daily for a minimum of three days. Prepartum and postparturient body condition scores were recorded to assess for possible confounding. Statistical analysis was performed using contingency tables and calculating relative risk and 90% confidence intervals. Primary outcome for analysis was incidence of puerperal metritis during the first 10 days postpartum, conditional on treatment group. Confounding was assessed using the Mantel-Haenszel method.

Results and Conclusions

Stratifying by lactation, RFM was positively and antibiotic therapy was negatively associated with metritis. These associations were less pronounced in first lactation, compared to later-lactation animals. In the 2+ lactation animals with RFM, there was an interaction between antibiotic therapy and treatment group. Cows in the control group not receiving antibiotics were approximately 1.6 times more likely to be diagnosed with Severity 2 metritis, compared to ECP-treated cows. There was no ECP effect in cows with RFM and receiving antibiotics. In this particular herd, selective treatment of mature cows with RFM with 4 mg of ECP within 36 hours of calving was beneficial in decreasing the incidence of Severity 2 metritis. However, early antibiotic therapy of mature cows with RFM and fever $\geq 39.7^{\circ}\text{C}$ (103.5°F) was more effective at preventing Severity 2 metritis.