

Comparison of Clinical Efficacy of Ceftiofur to Oxytetracycline for Treatment of Acute Puerperal Metritis in Cows

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Introduction

The objective of this randomized study was to evaluate the efficacy of ceftiofur hydrochloride (Excenel® RTU) administered subcutaneously at the daily dose of 1.0 mg ceftiofur equivalents (CE)/kg body weight (BW) (0.45 mg/lb) for five days for the treatment of acute puerperal metritis in cows in Europe. This treatment was compared to a control of oxytetracycline hydrochloride administered intramuscularly at the daily dose of 10 mg/kg body weight (4.5 mg/lb) for five days, an antibiotic registered for treatment of metritis in Europe.

Materials and Methods

Early postpartum (≤ 10 days) cows with a rectal temperature $\geq 39.5^\circ\text{C}$ (103.1°F) and a fetid vaginal discharge entered the study. Animals receiving an escape (antibiotic) therapy between enrollment and 15 (± 1) days of the study were removed from the study and considered as treatment failures.

Results

Investigators ($n=19$) located in Belgium, Denmark, France, and Germany participated in the study; 175 cows (87 for ceftiofur and 88 for control) qualified for inclusion in the analysis. The main organisms isolated before treatment were *Escherichia coli* (90.4%), *Streptococcus* spp.

(79.8%), *Arcanobacterium pyogenes* (60.6%), and *Bacteroides* spp. (47.1%). Cure rates were 58.1% for the oxytetracycline group and 64.8% for the ceftiofur group ($P = 0.26$) at Day 7 (± 1 day), and 71.2% and 70.5% ($P = 0.56$), respectively, at Day 15 (± 1 day). For Days 2-5, ceftiofur-treated cows had significantly lower body temperature than oxytetracycline-treated cows ($p < 0.01$). Analysis of the clinical scores for depression, vaginal discharge, uterine tone, and dehydration for Days 1, 7, and 15 suggested no significant treatment differences ($p > 0.05$). Relapse rate (defined as the number of cows classified as a success on Day 7 (± 1 day) and failure on Day 15 (± 1 day)) was not significantly different, although numerically the relapse rate for ceftiofur (13%) was smaller than for oxytetracycline (16%).

Conclusions

Cows with acute postpartum metritis responded positively to both ceftiofur and oxytetracycline. The efficacy of ceftiofur administration did not differ from oxytetracycline administration at 7 days after treatment initiation (ceftiofur cure rate=64.8%, oxytetracycline cure rate=58.1%) or at 15 days after treatment initiation (ceftiofur cure rate=70.5%, oxytetracycline cure rate=71.2%). Subcutaneous administration of ceftiofur hydrochloride at the dose of 1 mg CE/kg BW (0.45 mg/lb) for five consecutive days is efficacious for the treatment of acute postpartum metritis in dairy cows.

Table 1. Definition of treatment cure and failure.

Study Day	Cure (all of the following)	Failure (any of the following)
Day 7 (± 1 day)	<ul style="list-style-type: none"> • temperature $\leq 39.0^\circ\text{C}$ (103.1°F) • no escape therapy • normal attitude 	<ul style="list-style-type: none"> • temperature $> 39.0^\circ\text{C}$ (103.1°F) • escape therapy between Day 1-7 (± 1 day) • depressed
Day 15 (± 1 day)	<ul style="list-style-type: none"> • temperature $\leq 39.0^\circ\text{C}$ (103.1°F) • no fetid vaginal discharge • no escape therapy • normal attitude 	<ul style="list-style-type: none"> • temperature $> 39.0^\circ\text{C}$ (103.1°F) • fetid vaginal discharge • escape therapy between day 1-15 (± 1 day) • depressed