

Effect of prostaglandin administration during the first hours after calving on blood calcium concentration in multiparous dairy cows

E.G Salgado-Hernández, M en C¹; J.Bouda, Dr.¹; A. Aparicio-Cecilio, M en C¹; J Rendon Villamil, MVZ²; F.H. Velasquez-Forero, Dr.³; A. Castillo-Mata, QFB¹

¹Laboratorio de Patología Clínica, Facultad de Medicina Veterinaria y Zootecnia, Universidad Nacional Autónoma de México, Mexico DF, 06020

²Practica Privada, Torreon, Coahuila, México

³Laboratorio de Metabolismo Mineral y Oseo, Hospital Infantil de México

Introduction

Subclinical hypocalcemia is a common metabolic disorder of dairy cows after parturition. The administration of prostaglandin (PGF₂α) results in improvement of uterine health in some experiments, which may be explained by the effect of PGF₂α on calcium and vitamin D metabolism.

Materials and Methods

Multiparous Holstein cows (n = 84) were randomized into two treatment groups at calving. Cows in group 1 received sodium cloprostenol (500 µg, IM) at 1 and 48 hours after calving. Cows in group 2 were controls and did not receive any treatment. From 10 cows in each group, blood samples were collected at 1 (immediately before treatment), 3, 10, 24, and 48 (immediately before second treatment) hours and 7 days after calving. Serum calcium concentration was determined using a colorimetric method and cows with retained fetal membranes, endometritis, and metritis were recorded. Serum calcium concentration was compared between treatment

groups using analysis of variance for repeated measures. The proportions of cows with retained fetal membranes, endometritis, and metritis in each treatment group were compared with chi-square analyses.

Results

Serum calcium concentration increased for cows in group 1 seven days after calving, which resulted in a significant ($P < 0.05$) interaction between treatment and time. The proportion of cows with retained fetal membranes (7.13 vs 11.3), endometritis (4.7 vs 4.5), and metritis (11.9 vs 15.9) did not differ significantly between groups 1 and 2, respectively.

Significance

Results indicated that IM administration of PGF₂ to multiparous cows at 1 and 48 hours after calving increased serum calcium concentrations in those cows and can be considered for the prevention of postpartum hypocalcemia in dairy cows.