Ovulatory response and luteal function after eCG administration at the end of a progesterone and estradiol’ based treatment in postpartum anestrous beef cattle

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Abstract

The objective of this study was to evaluate the effect of equine chorionic gonadotropin (eCG) administration associated to fixed-time AI (FTAI) on follicular dynamics, ovulation, corpus luteum (CL) development and serum progesterone concentrations. Multiparous suckled Hereford cows (n = 46) in anestrus with 60–75 days postpartum were used. Females received an intravaginal device containing 0.5 g of progesterone during 8 days and 2 mg of estradiol benzoate i.m. at device insertion. At device removal 500 µg of cloprostenol and 0.5 mg of estradiol cypionate were administered i.m., and FTAI was performed 52–56 h later. Cows were divided into two experimental groups to receive 400 IU of eCG i.m. at device removal (n = 23), while control group did not receive eCG (n = 23). Daily ovarian ultrasonography (7.5 MHz transducer) and progesterone concentrations determined by RIA were assayed from device removal until 30 or 14 days after FTAI, respectively. Treatment with eCG increased ovulation rate [65.2% (15/23) vs. 30.4% (7/23); P = 0.018], ovulatory follicle diameter (14.5 ± 0.4 vs. 13.1 ± 0.7 mm, mean ± SEM; P = 0.081), CL area from 6 to 14 days after FTAI (344.3 ± 25.1 vs. 274.2 ± 23.9 mm²; P = 0.045) and mean serum progesterone concentrations from FTAI to 14 days later (3.0 ± 0.2 vs. 1.8 ± 0.2 ng/ml; P = 0.001), in comparison with control cows. In conclusion, the addition of eCG to a progesterone and estradiol’ based treatment for FTAI improves ovulation rate and luteal function in anestrous cows. These findings have implications in order to increase pregnancy rates in FTAI treatments in Bos taurus beef cattle.

Keywords: Ovulation, Corpus luteum, Progesterone, Maternal recognition of pregnancy, Early pregnancy, Beef cattle