Animal Reproduction

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Follicular dynamics, uterine evaluation, and pregnancy rate in Nelore cows treated with prostaglandin and injectable progesterone in early puerperium

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Our objective was to evaluate Nelore (*Bos indicus*) cows during the postpartum (PP) period in two experiments, involving the follicular dynamics, uterine diameter, uterine cytology, and the pregnancy rate in TAI. For the first study (n = 40), the animals were randomly distributed as follows: Control group (GC, n = 10): 2 ml IM injection of 0.9% NaCl; Prostaglandin group ($GPGF_{2\alpha}$, n = 10): 0.5 mg IM injection of cloprostenol (Sincrocio® Ourofino, Brazil); Progesterone group (GIP4, n = 10): 150 mg IM of injectable P4 (Sincrogest® Ourofino); Combined progesterone and prostaglandin group ($GIP4+PGF_{2\alpha}$, n = 10): 0.5 mg IM of cloprostenol + 150mg IM of injectable P4. Body condition score (2.64 ± 0.04, P = 0.75) and weight (401.5 ± 7.25, P = 0.32) were equally distributed among treatments. All treatments were performed 10 days after calving along with the uterine cytobrush evaluation. Thirty days after the treatments, all cows were subjected to another uterine cytobrush and a TAI protocol. Ovarian follicular dynamics and uterine evaluation were assessed daily by ultrasonography (SonoScape™ Model S8, Domed, Valinhos, Brazil) from D0 to D10 and every 12 hours from D10 until ovulation. In Experiment 2, primiparous precocious (n = 455), primiparous conventional (n = 775) and multiparous cows (n = 830) from the same farm were evaluated on day 22 ± 2 (M ± SD) PP, and equally distributed, treated and inseminated as in Experiment 1 (CG, n = 520; $GPGF_{2\alpha}$, n = 513; GIP4, n = 521; and $GIP4+PGF_{2\alpha}$, n = 506). The cows were timed AI on days 30.4 ± 3.2 PP and inseminated by two technicians. Semen from six bulls (two batch/bull) was distributed equally among the treatments. Continuous variables were analyzed by ANOVA and Tukey's test, and dichotomous variables by Fisher's Exact Test ($P < 0.05$). Logistic regression was used to analyze the effects of these factors on P/AI. The ovulation rate was lower ($P = 0.02$) in the control group (60%) in comparison to the treated groups (GP4: 100%, $GPGF_{2\alpha}$: 100%, and $GIP4+PGF_{2\alpha}$: 90%; no difference among treated groups $P > 0.05$). The uterine diameter was smaller at the FTAI protocol when compared to 10 days postpartum ($P < 0.05$), with no difference among all groups. The percentage of polymorphonuclear cells in the uterus did not differ ($P = 0.68$) among groups, however, was higher ($P = 0.03$) on D10 PP compared with D30 PP. No effects ($P > 0.05$) of inseminator, batch or category on P/AI were observed. However, there were effects of treatment ($P = 0.05$) and bull ($P = 0.05$) on P/AI. The GIP4+ $PGF_{2\alpha}$ group presented a greater P/AI (70%, 354/506) than the CG (62.5%, 325/520), $GPGF_{2\alpha}$ (64.9%, 332/513), GIP4 (63.5%, 330/521) groups ($P = 0.05$). We concluded that treatments with $PGF_{2\alpha}$, IP4, and the combination of both improved the response ovulation at TAI protocol and the association between IP4 plus $PGF_{2\alpha}$ increases pregnancy in the first TAI of Nelore cows during the postpartum period.