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IMPACT OF PROGESTERONE SUPPLEMENTATION ON MORPHOFUNCTIONAL ASPECTS OF THE CORPUS LUTEUM, PREGNANCY AND GESTATIONAL LOSS IN NELORE COWS

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Resumo

The aim of the present study was to evaluate the impact of different strategies to increase plasma progesterone (P4) on luteal morphology and function in bovine females. Additionally, the effect of increasing P4 on pregnancy rate and gestational loss in Nelore cows submitted to Timed Artificial Insemination (TAI) was evaluated. A total of 939 cows were divided into three groups: P4LA (n=305) - 150mg of injectable long-acting progestin, seven days after the TAI; GnRH (n=306) - 10µg of buserelin acetate, seven days after TAI; Control Group (n=328) no hormone application. The treatments (CONTR, GnRH and P4LA), cyclicity, body condition score, farm, inseminator, bull and interactions were included in the model. For the final model, the variables were removed, based on the criterion of Wald's statistics when P > 0.20. The variables included in the final model for the analysis of pregnancy rate were treatments. Doppler ultrasound assessments and progesterone measurements were performed on the seventh and sixteenth day after TAI. Pregnancy rate and pregnancy loss as a function of treatments were evaluated with the aid of transrectal ultrasound at 30 and 60 days after insemination, respectively, and compared using the SAS GLIMMIX procedure. The number of pixels and intensity of each corpus luteum (CL) were evaluated using the Image J® program (version 1.45s, National Institutes of Health, Bethesda, MD, USA). CL vascular perfusion and volume and plasma P4 concentrations were analyzed using the SAS PROC MIXED procedure. No significant difference was observed between treatments in the variables volume, number of pixels and CL intensity, as well as in plasma progesterone concentration, 7 days after ovulation. The CL blood flow, 16 days after ovulation, was lower in the P4LA and GnRH groups (P < 0.01). Plasma concentrations of P4, 16 days after ovulation, were higher in the P4LA and GnRH groups compared to the control group (P = 0.04). There was a significant difference in pregnancy rate (CONTR 47,8%, GnRH 55,5%, and P4LA 57,4%; P = 0.003) and a trend in gestational loss (P = 0.07) as a function of the treatments. Under the conditions of the present study, P4 supplementation using injectable, long-acting P4 or GnRH on the seventh day after TAI affected CL perfusion and increased the plasma concentration of progesterone sixteen days after ovulation, increasing the pregnancy rate compared to the control group.