Animal Reproduction

Abstracts - 35th Annual Meeting of the Brazilian Embryo Technology Society (SBTE)

Embriology, developmental biology and physiology of reproduction

Determination of pregnancy loss at different moments of early gestation in dairy cattle subjected to TAI

Priscila Assis Ferraz [6], Diego Angelo Schmidt Poit [6], Adomar Laurindo Neto [6], Francisco Luiz do Prado [2], Alexandre José Azrak [3], Andrea Leão Carneiro [4], Fernando José Delai Pardo [4], Ky Garret Polher [5], Pietro Sampaio Baruselli [1], Guilherme Pugliesi [6]

[1] FMVZ/ USP - University of São Paulo, Department of Animal Reproduction, School of Veterinary Medicine and Animal Science (Cidade Universitária, Butantã, São Paulo), [2] Fazenda Quaritá - Fazenda Quaritá (Acerburgo, Minas Gerais, Brasil), [3] Fazenda Santa Elizabeth - Fazenda Santa Elizabeth, (Descalvado, São Paulo, Brasil), [4] IDEXX - IDEXX Brasil Laboratórios (Itaim Bibi, São Paulo), [5] Texas A&M University - Department of Animal Science, Agriculture and Life Science Texas A&M University, Texas, United States (Texas, United States), [6] FMVZ/USP - Department of Animal Reproduction, School of Veterinary Medicine and Animal Science, University of São Paulo (Pirassununga, São Paulo, Brazil)

Resumo

The objective of this study was to evaluate the occurrence of pregnancy loss in dairy cattle using different pregnancy biomarkers. The study was conducted in two commercial dairy farms. Holstein cows (n=140) and heifers (n=32) were subjected to a hormonal synchronization protocol and TAI (D0). At D21 post-TAI, blood samples were collected for peripheral blood mononuclear cells (PBMC) isolation and for assay of plasma progesterone by radioimmunoassay kit (MP Biomedicals), and corpus luteum (CL) blood perfusion was evaluated by Doppler ultrasonography. An active CL was considered when the blood perfusion was >25% and progesterone concentrations were >1 ng/mL. Plasma samples collected on D25 were assayed for pregnancy-associated glycoproteins (PAGs) using a commercial ELISA kit (Ruminant pregnancy test kit, IDEXX® laboratories). The abundance of interferon-tau stimulated genes (ISG15 and RSAD2) in PBMC was determined by RT-qPCR and normalized to GAPDH and PPIA. Confirmatory pregnancy diagnosis was performed on D32 and D60 days post-TAI by B-mode ultrasonography. Statistical analyses were performed using Chi-Square of SPSS software. The pregnancy biomarkers were used to categorize the females that have undergone late luteolysis (LL - Non-pregnant females at D32, but with an active CL at D21, and considered non-pregnant by abundance of ISGs on D21 and PAG's test on D25); early embryonic mortality from 21 to 25d (EEM - Non-pregnant at D32, but with presence of an active CL and considered pregnant by ISG abundance on D21, and non-pregnant by PAG's test on D25); late embryonic mortality from 25 to 32d (LEM - Non-pregnant at D32, but with presence of an active CL and considered pregnant by ISG abundance on D21 and PAG's test on D25); and late pregnancy loss from 32 to 60d (LPL - Pregnant at D32 but non-pregnant on D60). Cows were also evaluated if had previous postpartum issues (metritis, repeat breeder [>3 inseminations], retained placenta, abortion or stillbirth). A lesser rate of LL was observed in heifers (P=0.02) than cows (6% [2/32] vs. 26% [36/140]); however, no difference (P>0.1) was found for EEM (6% [2/32] vs. 9% [13/140]), LEM (11% [4/32] vs. 6% [9/140] and LPL (0% [0/32] vs. 6% [9/140]). The pregnancy rate on D60 did not differ (P>0.1) in cows with postpartum issues (18% [15/84]) or not (27% [15/56]). Unhealthy cows had greater (P<0.05) rate of LEM (11% [9/84] vs. 0% [0/56]) and lesser rate of LPL (2% [2/84] vs. 12% [7/56]), but no difference was observed for LL (25% [21/84] vs. 27% [15/56]) and EEM (10% [8/84] vs. 9% [5/56]). In conclusion, lactating dairy cows had a greater occurrence of LL than heifers, indicating a possible extension of CL life-spam without involving interferon-tau stimulus. Reproductive postpartum issues affect the occurrence of pregnancy loss in dairy females, especially in the early stages of pregnancy.

Acknowledgments

FAPESP (2015/10606-9; 2019/16040-8), Quaritá and Santa Elizabeth farms and IDEXX.