



A149 Embryology, developmental biology and physiology of reproduction

### Post implantation measurements of female PIVE embryos can show risk of pregnancy loss in cows

Pedro Henrique Evangelista Guedes<sup>1,3</sup>, Hugo Rocha Sabeça Dias<sup>2,3</sup>, Célio Freitas<sup>3</sup>,  
Agostinho Jorge Dos Reis Camargo<sup>4</sup>, Aline Emerim Pinna<sup>1</sup>, Luiz Altamiro Garcia Nogueira<sup>1</sup>,  
Clara Slade Oliveira<sup>3</sup>

<sup>1</sup>UFF - Universidade Federal Fluminense, Niterói, RJ, Brasil; <sup>2</sup>UV - Universidade de Vassouras, Vassouras, RJ, Brasil; <sup>3</sup>Embrapa - Empresa Brasileira de Pesquisa Agropecuária, Juiz de Fora, MG, Brasil; <sup>4</sup>Pesagro - Empresa de Pesquisa Agropecuária do Estado do Rio De Janeiro, Niterói, RJ, Brasil.

The aim of this study was to investigate relationships between pregnancy losses and ultrasound size measurements of Girolando female bovine embryos. The study was performed at the Campo Experimental de Santa Mônica – Embrapa Gado de Leite, Valença (RJ), between January and April 2018 (CEUA/EGL – 3956180316). Girolando recipients (n=92) aged 3 to 6 years with body condition score 4 were treated with hormones for estrous synchronization and received fixed-time embryo transfer (FTET) at D7 post-ovulation. Girolando ¾ grade 1 blastocysts (according to International Embryo Technology Society - IETS standards) *in vitro* produced using sexed sorted semen were used. Positive pregnancy diagnosis was performed 24 days after ET (considered as the D31 of gestation) if the visualization of embryonic vesicle in a B-mode ultrasound examination was performed. A Mindray DP2200 with linear transducer at a 7.5 MHz frequency was used. Non-pregnant animals (n = 57) were excluded from subsequent analyzes. We compared the measurements of Embryonic Vesicle Diameter (EVD), Crown Rump Length (CRL) and Biparietal Diameter (BPD) of embryos that completed gestational development (Control group) (n=30) and of embryos whose gestation was lost up to 90 days (Pregnancy Loss group) (n=5). The 35 pregnant animals were followed up by ultrasonography every 6 days up to D90 or until the fetal heart beat ceased. Among the five gestational losses, only one occurred between D43 and D49. The other four occurred between 60 and 90 days of pregnancy. Measurements of EVD and CRL were performed at D37, D43, D49 and D55 of gestation, while those of BPD, at D43, D49 and D55. The results were analyzed by ANOVA repeated measurements. Significance level of 5% was adopted. The results showed higher EVD in the Control group (37.51 ± 3.56 mm) compared to the Pregnancy Loss group (32.92 ± 2.84 mm) at D55 and no difference between the groups was detected at D37 (14.81 ± 2.09 mm vs. 12.30 ± 1.65 mm); D43 (21.22 ± 2.32 mm vs. 21.48 ± 3.46 mm); and D49 (29.36 ± 2.35 mm vs. 27.79 ± 2.92 mm). The CRL measurements showed higher sizes in the Control group at D37 (16.17 ± 1.65 mm vs. 13.14 ± 1.73 mm) and D55 (46.13 ± 2.74 mm vs. 41.88 ± 5.47 mm). No difference was detected at D43 (23.11 ± 1.72 mm vs. 22.20 ± 2.46 mm) and at D49 (31.94 ± 1.78 mm vs. 30.97 ± 0.74 mm). The BPD measurements did not show any differences between the groups at evaluated moments. These findings indicate that decreased embryo/fetal growth during the first two months of pregnancy may suggest pregnancy loss. We suggest the measurement of fetuses and vesicles at D55 and routine assessment of pregnancies with EVD less than 34 mm and fetuses smaller than 43 mm in this period. Acknowledgements to Coordenação de Pessoal de Nível Superior – CAPES (Financial Code 001) and Fundação de Amparo à Pesquisa do Estado de Minas Gerais – FAPEMIG (CVZ APQ 00972/16).