

ABERRANT PREGNANCIES PHENOTYPES IN COWS: A ULTRASSONOGRAPHIC STUDY OF THE EARLY GESTATION OF SCNT CLONED EMBRYOS

L. Silva¹, F. Pinaffi¹, I. Jardim¹, J. Sangali², R. Sampaio², F. Meirelles²

¹Laboratory of Theriogenology Dr. O. J. Ginther, Department of Veterinary Medicine - FZEA - University of Sao Paulo, Brazil

²Laboratory of Molecular Mophophysiology and Development, Department of Veterinary Medicine - FZEA - University of Sao Paulo, Brazil

Production of cloned animals by somatic cells nuclear transfer (SCNT) was a remarkable science achievement. However, bovine SCNT cloning is extremely inefficient. High incidence of pregnancy losses and several conceptuses and placental membranes abnormalities are common findings. These occurrences are primarily caused by epigenetic changes acquired during manipulation and culture of oocytes and embryos. This study aimed to provide a comprehensive description of conceptus, uterus, and corpus luteum morphological and vascular changes detected by ultrasonography (color-Doppler and B-mode) during the early pregnancy (from days 13 to 60) of SCNT bovine embryos. Two hundred fifteen SCNT cloned embryos were transferred to recipient cows. On day 25 of gestation, 30 cows were pregnant (13.95%) presenting a fluid-filled conceptus with an embryo proper and heart beats. However, 13 recipient cows (6.05%) presented a fluid-filled conceptus without the embryo proper. Also, 16 cows (7.44%) did not present any signal of the the conceptus but their corpus luteum (CL) were active. CL activity in these two aberrant groups lasted to around 108 and 59 days, respectively, and then these cows returned to cyclicity. The three detected pregnancy phenotypes after ET of cloned embryos were called as clone normal gestation (CNG), clone anembryonic gestation (CAG), and clone recipient with persistent CL (CPCL). Gestational losses were recorded from the CNG group and organized by pregnancy periods. The higher rate of loss was observed from days 30 to 39, reaching 26.7% (8/30). 20.0% (6/30) of losses were observed from days 40 to 59. Placentomas were detected only in 13/30 (43.3%) pregnancies by 56 ± 2 days of gestation. Cows without placentomas (poor placentation) kept their CL active during 29 to 67 days. Only two pregnancies reached the term. For endometrial vascular changes evaluations, artificially inseminated cows were used as control. Endometrial vascularity from the ipsilateral horn to the CL started to increase on day 20 of pregnancy in CNG, CAG and control groups. After day 30, endometrial vascularity of CAG group presented smaller when compared with CNG and control groups. CPCL did not present any increase in endometrial vascularity. When values of endometrial vascularity from the ipsilateral and contralateral horns were compared by group, it was observed a precocious vascularity increase in the ipsilateral horn in the CNG, CAG and control groups. No differential or even vascularity increases were detected in both horns of CPCL group. Regarding to CL activity, a continuous and similar increase in vascularity area was detected from days 13 to 60 of pregnancy in CNG and control groups. In addition, the CAG and CPCL groups presented a lesser increase in CL vascularity area from days 13 to 36 when it started to decrease. This study is the first in the literature describing aberrant pregnancies in cows, the anembryonic pregnancies and the recipient cows without a conceptus maintaining their CL active during many days after ET. These findings set the stage for future experiments to understand more completely the role of the conceptus in regulating the uterine environment and CL activity favoring its own development.