MORPHOLOGIC AND HISTOLOGIC COMPARISONS BETWEEN IN VIVO AND NUCLEAR TRANSFER DERIVED PORCINE EMBRYOS

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ABSTRACT

Nuclear transfer (NT) is an inefficient but invaluable tool. This study examines abnormalities associated with NT porcine embryos at days 10, 12, and 14. Methods: 4 experimental groups were examined: non-pregnant, in vivo pregnant, NT recipients, and manipulation control (MC) recipients. Maternal blood samples were collected and assayed for insulin-like growth factor-1 (IGF-1). Embryos were evaluated for embryonic disc diameter, morphology, nucleoli density and mitotic figure index. Results: NT day 12 \( (P<0.03) \) and day 14 \( (P<0.01) \) embryos had increased nucleoli when compared to in vivo produced and MC embryos. NT day 14 embryos had an increased \( (P<0.03) \) mitotic index when compared to in vivo produced day 14 embryos. In vivo produced day 12 embryos had greater \( (P<0.03) \) embryonic disk diameters compared to NT and MC embryos; however in vivo produced day 14 embryos had increased \( (P<0.01) \) embryonic disk diameters only when compared to NT day 14 embryos. In vivo produced day 14 embryos were morphologically more advanced \( (P<0.01) \) than NT and MC day 14 embryos. There were no significant differences between IGF-1 levels. Conclusions: Nuclear transfer embryos develop at a slower rate than in vivo embryos with abnormalities potentially affecting the cell cycle. The techniques used during nuclear transfer also appear to compromise embryo development.