47. RECOMBINANT HUMAN FSH INDUCED OVARIAN STIMULATION IMPAIRS IN VITRO EMBRYO DEVELOPMENT IN THE MOUSE

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Gonadotrophins are routinely used in animals and humans to induce multiple ovulations and thus increase the number of oocytes available for techniques such as in vitro fertilisation (IVF). Studies in the mouse, using equine chorionic gonadotrophin (eCG) and human chorionic gonadotrophin (hCG), have reported a reduction in embryo quality compared to naturally conceived embryos. The impact of recombinant human follicle stimulating hormone (rhFSH), which is routinely used during human infertility treatment, on subsequent embryo development and quality is largely unknown due to its limited use in animal models. The aim of this study therefore was to develop a novel model of rhFSH induced ovarian stimulation in the mouse and investigate the impact of rhFSH on embryo development. One-cell embryos were collected from adult female C57Bl/6 × CBA F1 mice treated with rhFSH (0, 2.5, 5.0, 10.0 or 20.0 IU) or 5 IU eCG. All groups received 5 IU hCG 48 h after the start of gonadotrophin treatment. One-cell embryos were also recovered from non-treated control mice. Embryos were cultured in vitro for 88 h under 5% O_2, 6% CO_2, 89% N_2 and the stage of development was morphologically assessed. Differences between groups were determined by one-way ANOVA and Bonferroni's test for multiple comparisons. We found an increased proportion ($P<0.05$) of abnormal one-cell embryos recovered from mice treated with 10 IU (13.1 ± 3.6%) and 20 IU (11.5 ± 3.6%) rhFSH and eCG (19.7 ± 2.0%) compared to control embryos (0.7 ± 0.5%). Furthermore, blastocyst development was reduced in the 10 IU (72.3 ± 5.1%) and 20 IU (77.3 ± 5.6%) rhFSH groups compared to the control group (96.7 ± 1.0%). In conclusion, ovarian stimulation with rhFSH and eCG impairs the in vitro development of preimplantation mouse embryos. These results have potential implications for clinical ovarian stimulation during infertility treatment and subsequent embryo quality. L Edwards is supported by an NHMRC Peter Doherty Fellowship.