

P177 ULTRASONOGRAPHIC EVALUATION OF ENDOMETRIAL GROWTH IN WOMEN UNDERGOING ASSISTED REPRODUCTION DURING THE LUTEAL PHASE IN FRESH AND FROZEN EMBRYO TRANSFER CYCLES

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Objectives: To compare the sonographic endometrial growth pattern in conception and non-conception cycles during the luteal phase of ovarian stimulation cycles for in-vitro fertilization (IVF) and spontaneous cycles of frozen embryo transfer (FET).

Methods One hundred and sixty cycles of women undergoing assisted reproduction treatment were evaluated in the luteal phase. Endometrial data were related to the day of luteinizing hormone surge (LH) or the hCG administration day (day 0). Ultrasonographic evaluation of endometrial thickness was performed using 5MHz transvaginal probe on day 0, day 4 and day 10. Serum oestradiol (E₂) and progesterone (P) levels were measured on the corresponding days.

Results: In IVF (n=100), 23 conception cycles were compared with 87 non-conception cycle. There was no difference in the endometrial thickness, serum E₂ and P levels between conception and non conception cycles at all time points in the luteal phase. In FET cycles (n=60), a similar trend was observed on day 0 and day 4, between conception (n=13) and non-conception cycles (n=57). However, by the mid luteal phase the endometrium of conception cycles (12±2.3mm; mean ± SD) demonstrated a significantly (P<0.05) greater thickness than the non-conception cycles (10 ±2.9mm). Similarly, on day 10 serum E₂ (784±422 pmol/L) and P levels (83±30 nmol/L) in conception cycles were significantly higher than those in non-conception cycles (E₂ 524±434 pmol/L., P 54±52 nmol/L). This pattern was not observed in IVF cycles. The sonographic thickness was similar at all time points in the luteal phase between conception and non-conception IVF cycles.

Conclusions: The pattern of endometrial development in IVF cycles was different from that in FET cycles. These differences in the late luteal phase can be related to the endometrial growth pattern, serum E₂ and P levels between conception and conception cycles.

P178 SATURATED FREE FATTY ACIDS INDUCE APOPTOSIS IN HUMAN GRANULOSA CELLS BY THEIR METABOLITES ACYL-COA

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Objective: Obesity is associated with insulin resistance and some reproductive abnormalities. Circulating free fatty acids (FFAs) are often elevated in obese subjects and are also closely linked to insulin resistance. In this study, we aimed to investigate the apoptotic effect of FFAs on human granulosa cells. **Methods:** (1) The granulosa cells were treated with various concentrations of saturated FFAs including palmitic acid (PA) and stearic acid (SA), and unsaturated FFAs including arachidonic acid (AA), oleic acid (OA) and linoleic acid (LA) for one to three days and then the cell viability was determined by trypan blue exclusion using a hemocytometer; (2) DNA fragmentation was examined by DNA ladder formation and Annexin V-GFP/PI staining of the cells; (3) To determine if the apoptotic effect of PA and SA was mediated by their acyl-CoA metabolites and related to the increase of ceramide generation or NO production; (4) To measure the expression levels of apoptosis relative genes, Bcl-2 and Bax, by Western blot. **Results:** (1) PA and SA markedly suppressed the granulosa cell survival in a time- and dose-dependent manner. Unsaturated FFAs had little or no effect on the cell survival; (2) The suppressive effect of saturated FFAs on cell survival was caused by apoptosis, as evidenced by DNA ladder formation and Annexin V-GFP/PI staining of the cells; (3) The apoptotic effects of PA and SA were completely blocked by Triacsin C, an inhibitor of acyl-CoA synthetase and were unrelated to ceramide or NO production. In addition, acyl-CoA, pamitoyl CoA and stearyl CoA markedly suppressed cell survival while arachidonic CoA had no such effect; (4) A Western blot analysis showed the apoptosis of the cells induced by PA to be accompanied by the down-regulation of Bcl-2 and the up-regulation of Bax. **Conclusion:** Saturated FFAs induce apoptosis in human granulosa cells due to the metabolite of the respective acyl-CoA form and these apoptotic effects may be a possible mechanism for reproductive abnormalities in obese women.