

P-50 Risk Factors Associated with Preclinical Pregnancy Loss (PPL) Following ART

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Background & Objectives: Relatively high incidence of preclinical pregnancy loss (PPL) is one of the important causes of low fecundity in human. Various factors affecting early implantation may cause PPL, however, the potential risk factors of PPL are poorly understood. The aim of this study is to investigate the clinical and embryologic factors affecting PPL in pregnant women following ART.

Method: During 1999-2001, a total of 1390 pregnant cycles from 4358 embryo transfers were included in this study. Serum hCG measurement was done on day 12, 14, 21, 28 after retrieval of oocytes by RIA. Pregnancy was defined as serum hCG ≥ 5 mIU/ml. PPL was defined as final fall of hCG after initial confirmation of pregnancy with no identifiable gestational sac. Clinical abortion was defined as pregnancy loss from time of identifiable gestational sac till 20 gestational weeks. To determine whether the factors such as female age, basal FSH, basal E₂, peak E₂ on hCG day, endometrial thickness, etiology of infertility, fertilization method, No. of embryos transferred, No. of good embryos transferred, No. of poor embryos transferred affect the occurrence of PPL following ART, Univariate and multivariate analysis were done by chi-square test, Fisher's exact test, and multinomial logistic regression.

Results: Among 1390 pregnant cycles, 252 cycles (18.1%) ended in PPL, 130 cycles (9.4%) ended in clinical abortion, 1008 pregnant cycles (72.5%) were ongoing beyond 20 weeks gestation. In univariate analysis, pregnant cycles with female age ≥ 40 years old had a significant increased risk of PPL compared with female age < 30 years (27.9% vs. 15.7%, $p < 0.05$). Pregnant cycles with $25 \text{ pg/ml} \leq \text{basal E}_2 < 50 \text{ pg/ml}$ had a significant increased risk of PPL compared with $\text{basal E}_2 < 25 \text{ pg/ml}$ (27.8% vs. 16.5%, $p < 0.01$). Pregnant cycles with endometrial thickness $< 8 \text{ mm}$ had a significant high risk of PPL compared with endometrial thickness ≥ 8 (25.6% vs. 16.9%, $p < 0.05$). No. of good embryos transferred ≤ 2 had a significant increased risk of PPL compared with the rest (25.3% vs. 14.1%, $p < 0.05$). Adjusting confounding age factor, pregnant cycles with basal FSH $\geq 15 \text{ mIU/ml}$ had a significant increased risk of PPL ($p < 0.05$). Cause of infertility, peak E₂ on hCG day, No. of embryos transferred, and fertilization method were not associated with the risk of PPL. After adjusting for possible confounding factors with multivariate logistic regression, female age ($p = 0.04$), basal E₂ ($p = 0.001$), endometrial thickness ($p = 0.02$) remained significant risk factors for PPL, but female age ($p = 0.001$) was the only significant risk factor for clinical abortion following ART.

Conclusions: This study demonstrated that female age, elevated basal estradiol, thin endometrium are associated with an increased risk of preclinical pregnancy loss following ART.