

Progesterone levels higher than 1,7 ng/ml on the day of hCG are associated with lower clinical pregnancy rates in hcg-triggered gnrh antagonist cycles

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Context

Numerous investigators have been suggested a negative impact of elevated progesterone concentrations on the day of hCG administration on endometrial receptivity. However, cut-off values used (ranging between 0,8 and 2 ng/ml) and reported incidence of progesterone elevation (range 8,4%-38% of IVF cycles) vary between studies, due in part to methodological differences. Differences in endometrial gene expression were detected with progesterone levels above and below 1,5 ng/ml.

Objective

Do Progesterone (P4) levels on the day of hCG administration affect implantation and pregnancy rates in GnRH antagonist cycles triggered with hCG?

Method

Retrospective observational study of 983 ART cycles resulting in embryo transfer, performed between 03/2007 a 12/2016 in a private IVF Center. Inclusion criteria were: progesterone level on the day of hCG measured and recorded in our database; age $\geq$ 40 years old; trigger with hCG. Progesterone cut-off levels between 0,9 and 1,8 ng/ml, and their relationship with implantation and pregnancy rates were analyzed.

Patients

Patients underwent ovarian stimulation with antagonist protocol, hCG was administered 35½ hours before ultrasound-guided egg retrieval. Ultrasound-guided embryo transfer was performed on day 3 or 5 of embryo development. The Enzyme-Linked Fluorescent progesterone assay was used. Progesterone cut-off levels between 0,9 and 1,8 ng/ml were analyzed.

Main outcome and results

Overall implantation and clinical pregnancy rates were 28 % and 43% respectively. A statistically significant negative correlation was found between clinical pregnancy rates and progesterone levels on the day of hCG administration. Analysis of the different cut-off levels revealed that differences are greatest when the cut-off is set at 1,7ng/ml. Of the 983 ART cycles evaluated, 867 (88,2%) had P4 <1,7 ng/mL and 116 (11,8 %) had P4 $\geq$ 1,7 ng/ml. Clinical pregnancy rates per transfer were significantly higher when progesterone levels were <1,7 ng/ml compared to $\geq$ 1,7 ng/ml (45% versus 34%; P<0,05). Implantation rates were higher when P4 was <1,7, but this difference did not reach statistical significance (28% vs 21%; P=0,07). Mean age did not differ between groups (36,16 vs 36,33; P>0,05). No significant difference was found in the mean number of embryos transferred in the two groups (2,01 vs 2,08).

Conclusions

High progesterone levels on the day of hCG in antagonist cycles negatively affect implantation and clinical pregnancy rates.

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