

ELEVATED OXIDATIVE STRESS IN THE FOLLICULAR MICROENVIRONMENT NEGATIVELY INFLUENCES EMBRYO QUALITY IN POOR OVARIAN RESPONDER PATIENTS.

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Abstract Body

The supraphysiological level of serum E2 has been associated with increased risk of small for gestational age, preeclampsia and low birth weight of term singletons. However, its impact on oocyte, embryo and pregnancy outcome is very controversial. There is inadequate data on the effect of supraphysiological level of estradiol on granulosa cell (GC) response and embryo quality. The main hypothesis of this study was whether increased serum E2 during controlled ovarian stimulation has any effect on the follicular milieu, which further influences GCs and eventually impairs oocyte and embryo development. Hence, the objective of this study was to determine the association between follicular environment and embryological outcome in relation to the peak serum estradiol during controlled ovarian hyperstimulation. This prospective study included 30 patients which were grouped into normal (NR), poor (PR) and hyper responders (HR). The total RNA extracted from granulosa cells was subjected to analyse the relative abundance of transcripts of stress response genes (P53, caspase 3, 8-oxoguanine DNA glycosylase, OGG1 and heat shock protein 70; HSP70) and embryological outcome was noted. Follicular fluid MDA level was significantly higher in PR compared NR and HR whereas number of top-quality embryos were significantly lower in PR compared to NR. The relative expression P53, HSP70, and OGG1 in granulosa cells was significantly elevated in PR. An inverse relationship was established between serum E2 level vs follicular MDA level vs number of top-quality embryos. In conclusion, poor responders had altered follicular microenvironment which may have affected granulosa and oocyte quality resulting in poor embryo quality.