

IMPACT OF SERUM LEPTIN LEVEL ON OVARIAN FUNCTION DURING CONTROLLED OVARIAN HYPERSTIMULATION FOR IN VITRO FERTILIZATION AND EMBRYO TRANSFER

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A critical body mass of adipose tissue is essential for the normal development of female reproductive system. But the mechanistic link between body mass and reproductive functions is not clearly elucidated. Leptin, an adipocyte derived hormone, encoded by 'Ob' gene has emerged as a peripheral signal indicating the adequacy of nutritional status for reproductive functions. Leptin is important in regulating energy homeostasis; thus impacts the reproductive system in diverse ways. It plays important but controversial role in ovarian folliculogenesis. However, though leptin is widely present in reproductive tissues, its relationship to reproductive hormones is still poorly understood. Objective of this investigation is to study the inter-relationship between body mass index (BMI), leptin and ovarian functions.

Women (n=18; 23-36years) enrolled for in vitro fertilization-embryo transfer (IVF-ET) were evaluated for BMI and categorized under two subgroups: non-obese (BMI \leq 25) and obese (BMI $>$ 25). Subsequently they underwent controlled ovarian hyperstimulation (COH) with standard long protocol GnRH-agonist down regulation followed by rFSH and hCG stimulation. Serum leptin levels were measured in different phases of IVF-ET. Depending on the hCG-day leptin levels, women were further categorized under three (<15, 15-30 and >30ng/ml of serum leptin) sub-groups. Numbers of retrieved oocytes were counted. Luteinized granulosa cells (LGC) were cultured in vitro and assayed for gonadal steroids. GraphPad Prism Statistical Software Package was used for data analysis. P value <0.05 was considered significant.

Serum leptin positively correlated with BMI. However, number of oocyte retrieved and luteinized granulosa cell's response to gonadotropin did not differ statistically in the obese/non-obese and also between the three sub-groups of patient population.

Present observations exhibit that serum leptin per se do not impact the gametogenic and steroidogenic potential of ovary during COH for IVF-ET. However, small sized study population limits the statistical power to judge the precise correlations between the study parameters.