

Abstract

Maternal Thyroid Function in Women Undergoing Controlled Ovarian Hyperstimulation during IVF and Its Relation to Reproductive Outcome

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Introduction:

Women undergoing assisted reproductive technology (ART) are exposed to a supraphysiologic hormone environment. Controlled ovarian hyperstimulation (COH) leads to rapid rise of serum estradiol (E2). The latter poses a strain on the hypothalamic-pituitary-thyroid axis and therefore can impair thyroid hormonal levels. Thyroid and ovarian axes seem to interact in many ways. Thyroid function has been suggested to have an impact on ART outcome, and conversely, ART has been suggested to induce changes in thyroid function. This study is performed to determine exact nature and timing of alterations in thyroid function throughout COH and its association with ART outcome.

Methods:

A prospective observational study undertaken in 2013 at Medically Assisted Conception unit of UKM Medical Centre. The study was carried out among women scheduled for COH in preparation in vitro fertilization (IVF)/intracytoplasmic sperm injection (ICSI). A total of 88 were included for final analysis. Serum thyroid levels were measured at 4 points; before stimulation (T1), day 10 –13 of cycle (T2), during oocyte retrieval (T3) and at one week following embryo transfer (T4). Results were analyzed according to reproductive outcome.

Results:

Nine women had ongoing singleton pregnancy, seven suffered from miscarriage, while the rest had implantation failure. Serum TSH and fT4 increased throughout stimulation, peaking at 32–36 hours of hCG administration compared to baseline (1.250 vs 1.740 mIU/L and 13.94 vs 15.25 pmol/L). It remains elevated till one week following embryo transfer. The increment of serum TSH exceeded the upper limit, acceptable for first trimester (< 1.60 mIU/L). However the evolution of serum TSH and fT4 did not significantly differ with pregnancy outcome.

Conclusion:

In euthyroid women, thyroid function changed significantly during COH, but these changes were not different between the three reproductive outcomes. Thus we do not suggest universal screening of thyroid function during COH.