The correlation between serum estradiol (E2) levels on day of hCG administration and oocyte utilization rate, fertilization rate, blastulation rate and blastocyst utilization rate in cycles

Kai Boon Yong, Mee Fong Chew, Jia Jia Koh

TMC Fertility Centre, Thomson Hospital Kota Damansara, Petaling Jaya, Selangor, Malaysia

ABSTRACT

Introduction: Serum estradiol (E2) acts as an indicator for ovarian response to the ovarian stimulation in ART cycle. Serum E2 level on day of hCG administration allow the prediction of the number of mature oocyte yield from the oocyte retrieval procedure. This study aimed to determine the correlation between serum E2 levels on day of hCG administration and oocyte utilization rate, fertilization rate, blastulation rate and blastocyst utilization rate from year 2021 to 2023 in TMC Fertility Centre, Thomson Hospital. **Materials and Methods:** This retrospective study involves 270 couples who received IVF treatment in our centre. All patients were administered with antagonist stimulation regime and hCG trigger shot given when there are at least three dominant follicles seen on transvaginal scan. Serum E2 levels on the day of hCG administration were measured. Patients were separated into two age groups (≤35 and 36-42 years old) and were categorised according to their serum E2 levels. The cycle outcomes were analysed using Fisher's Exact test. **Results:** The high serum E2 level was correlated with increase in oocyte utilization rate, 83.6% (929/1111) in group ≤35 years old with serum E2 level >3,000 pg/mL, $p<0.05$. Meanwhile, fertilization rate was comparable in all categories. In addition, the blastulation and blastocyst utilization rate were also increase significantly in group 36-42 years old with serum E2 >3,000 pg/mL, 69.3% (262/378) and 45.0% (170/378) respectively. **Conclusions:** In conclusion, serum E2 level able to serve as an indicator for the blastocyst formation and utilization rate in difference age range especially when patient above 35 years old.