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Acceleration of coasting enhances pregnancy rate in ICSI cycles at risk for ovarian hyperstimulation syndrome

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Objective *To assess the efficacy of adding Gn-releasing hormone antagonist (GnRH-A) on the day of hCG triggering in a long luteal protocol without withholding the agonist in women who are at a risk to develop ovarian hyperstimulation syndrome (OHSS).*

Methods *This was a retrospective cohort study conducted upon 50 women who have elevated serum estradiol (E_2) level >4 500 ng/L at the day of ovum triggering with hCG on a long agonist luteal protocol of controlled ovarian stimulation (COS). When an exaggerated ovarian response was observed around day 10 of stimulation, immediately the next morning at 6 a.m. gonadotropin administration was stopped or reduced, and a single dose of ganirelix acetate (antagonist) was given sc continuation of the agonist dose hCG. Another serum E_2 measurement was done at 6 p.m. (after 12 h of antagonist) then hCG, sc 250 mg and choriogonadotropin α were administered 14 h later after antagonist and documented the reduction of E_2 level. Oocyte retrieval was conducted after 34−36 h of hCG administration. The measured outcomes were the level of E_2 on the day of hCG injection, number of oocytes and their quality, pregnancy rate and the occurrence of OHSS and its grade in case it happened .*

Results *The total dose for recombinant FSH was 25.3 ± 6.4 ampoules (75 IU/ampoule) while it was 11.0 ± 3.0 ampoules for the urinary hMG. A higher oocyte maturation rate (82.8%) and a high fertilization rate (87.8%) were observed. The mean endometrial thickness was 10.1 ± 1.0 mm on the day of hCG triggering. The higher fertilization rate with the good endometrial thickness observed resulting in a higher pregnancy rate (78.0%, 39/50) with statistically significant ($P<0.05$). A significant reduction of E_2 level was documented by a percentage around 40% before hCG*

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injection. There were no reported cases of severe or moderate OHSS, however 13 cases (26%) were reported to have mild OHSS constituting.

Conclusion *Acceleration of coasting in cases of OHSS through treatment with GnRH-A after pituitary suppression with GnRH agonist (GnRH-a) offered a novel approach to decrease E_2 level, avoided cycle cancellation, and maintain excellent oocyte maturation rate, and finally result in high pregnancy rate with prevention of OHSS.*

Key words: ovarian hyperstimulation syndrome (OHSS); coasting; oocyte maturation; pregnancy rate

Ovarian hyperstimulation syndrome (OHSS) is one of the major concerns of *in vitro* fertilization (IVF) cycles using controlled ovarian stimulation (COS). It is primarily a systemic disease results from vasoactive products released by the hyperstimulated ovaries that is characterized by the development of a large number of follicles, high estradiol (E_2) levels, and enlarged ovaries[1].

The incidence of OHSS varies from 1% to 10% of IVF cycles[2,3]. Although the severe OHSS occurs in 0.5% to 2% of ovarian stimulation cycles, it still may be life-threatening[3]. High-risk patients include those with polycystic ovary syndrome (PCOS), multi-follicular ovarian morphology on ultrasound, or those who have actually developed OHSS in previous stimulated cycles[4]. Since the standard human chorionic gonadotrophin (hCG) trigger produces a prolonged luteotrophic effect that may promote OHSS, withholding hCG is the best option to avoid OHSS but results in cycle cancellation associated with significantly social, emotional and economic factors[5].

Many strategies had been developed for prevention of this potentially serious complication. However, the technique of coasting is appealing to both physicians and patients because it allows transplantation of fresh embryos, without additional treatment cycle. Coasting is defined as a process of discontinuation of gonadotrophin (Gn) administration while continuing administration of Gn-releasing hormone agonist (GnRH-a)[6] , that delaying hCG administration by a variable number of days prior to oocyte retrieval, until safe E_2 levels are attained[7]. Coasting should not be initiated too early or too late. When coasting is initiated prior to 30% of follicles having attained a mean diameter of 15 mm, an abrupt arrest in follicular development and a rapid decline in plasma E_2 concentration usually followed[8].

Often, it is necessary to coast for 3−4 d to decrease the patient's E_2 level. With the immediate and predictable drop in E_2 level utilizing this protocol, increased duration of Gn-free intervals resulted in both diminished embryo quality and pregnancy rates[9,10]. Our