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Effects of exogenous luteinizing hormone on patients with relative LH deficiency after pituitary down-regulation during controlled ovarian hyperstimulation

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Background: The effect of exogenous LH supplementation on ovarian stimulation parameters, as well as treatment outcome was evaluated in patients with relative LH deficiency (serum FSH/LH ration≥3 on stimulation day 1 after pituitary down-regulation with a GnRH agonist) and ovarian stimulation with recombinant FSH (rFSH) during IVF/ICSI cycles.

Methods: The patients with serum FSH/LH ration≥3 on stimulation day 1 after pituitary down-regulation with a GnRH agonist were randomly divided into two groups: group 1, using f-FSH alone and no hMG addition through the stimulation procedures (n=143) and group 2, receiving human menopause gonadotropin (hMG) supplementation from the 7th day of stimulation (n=142). Treatment outcomes and relative hormone levels in both groups were compared.

Results: There ware no statistic difference on serum FSH, LH, E2 and progesterone level between two groups on baseline, stimulation day 1 and day 7. Patients in group 2, despite with fewer days of stimulation (9.6±0.8 vs. 9.9±1.1 P =0.009) and administering fewer amounts of total gonadotropin than group1 (30.6 ± 4.5 vs. 33 ± 4.1, P <0.001), have higher serum E2 concentration on HCG day compared to group 1(2615±1196 versus 2248±1028pg/ml, P =0.006). The two groups gained almost the similar number of oocytes but group 2 gained higher number of viable embryos (4.3±1.4 versus 3.8±1.5, P=0.004). Further, compared to group1, group 2 had higher proportion of patients with serum E2 reaching 3000-4000pg/ml (30.8% versus 18.5%, P<0.05) and higher number of follicle with average diameter in range of 10-14 mm on hCG day (7.5±1.8 versus 6.3±2.0, P<0.05). No significant differences ware found for other variables such as number of embryo transferred and pregnancy outcomes.
Conclusions: In stimulation protocol with pituitary down-regulation by a GnRH agnist, exogenous LH addition by hMG from stimulation day 7 could increase ovarian response and improve embryo quality for patients with FSH/LH ≥3 on the first day of ovarian stimulation.