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Ovarian stimulation with luteinizing hormone supplementation: the impact of timing on ovarian response and ICSI outcomes

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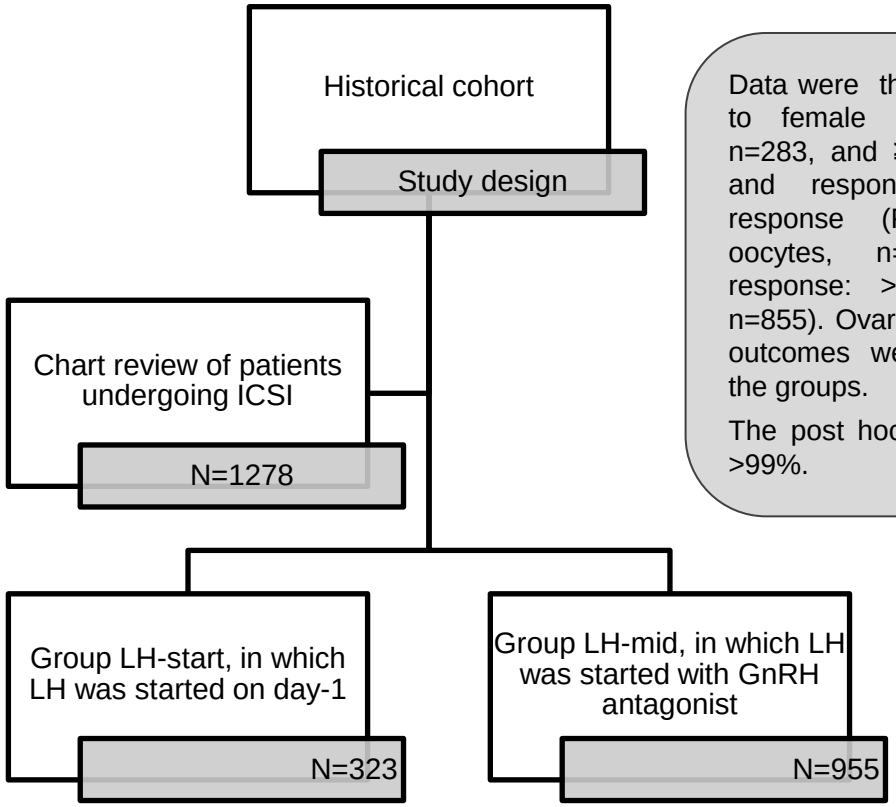
WHAT IS KNOWN ALREADY

Meta-analyses demonstrated that the use of rLH combined with rFSH for controlled ovarian stimulation (COS) may lead to more ongoing pregnancies than rFSH alone. However, there is limited evidence that the timing of rLH addition to rFSH may impact the ovarian response or the outcomes of ICSI, based on a limited sample size, which demonstrated improved ovarian response, embryo quality and pregnancy rate with LH supplementation from GnRH antagonist administration day, in estimated poor ovarian response patients. The objective of the present study was to further investigate this hypothesis in a larger population, and in subpopulations of patients stratified by age and response to COS.

MATERIALS AND METHODS



Data were then stratified according to female age (<35 years-old, n=283, and ≥35 years-old, n=995) and response to COS (poor response (POR): ≤4 retrieved oocytes, n=423, and normal response: >5 retrieved oocytes, n=855). Ovarian response and ICSI outcomes were compared among the groups.

The post hoc achieved power was >99%.

RESULTS

In POR patients, significantly higher fertilization rate (68.3% ± 2.5 vs. 78.6% ± 3.7, p=0.023), blastocyst development rate (22.5% ± 7.2 vs. 44.7% ± 6.2, p=0.022) and implantation rate (17.6% ± 59.1 vs. 20.2% ± 43.2, p<0.001) were observed in Group LH-mid, even though the amount of LH used in these patients was not significant different from that used in Group LH-mid from patients with normal response to COS (1062.35 IU ± 54.33 vs. 925.81 IU ± 414.41, p: 0.431, respectively).

For the general group and in patients aged ≥ 35 years, higher blastocyst development rates were observed in Group LH-mid compared to Group LH-start (33.0% ± 31.9 vs. 40.8% ± 32.6, p=0.012, and 28.8% ± 30.4 vs 38.5% ± 32.3, p=0.006, respectively).

CONCLUSION

rLH supplementation, starting with 150 IU daily doses, in patients with POR may improve laboratorial and clinical outcomes when started in the mid-follicular phase, in GnRH antagonist ICSI cycles. This strategy may rescue the ongoing cycle by compensating an initial slow response, and balancing the deprivation of endogenous LH in GnRH antagonist cycles, with no need of expending more gonadotropin compared to patients with normal response to COS.