could be explained by chance or unmeasured confounding factors. It is better framed as a hypothesis for further exploration.

Helping physician mothers thrive in their careers is important in all specialties, and even more so for obstetrician-gynecologists who support reproductive health and autonomy as professional values. Resolving inequities in domestic tasks will helpfully move the needle in the right direction, along with other strategies for promoting wellness at work and home (Ann Surg 2012;255(4):625–33).—LAL

Dual Trigger With Gonadotropin Releasing Hormone Agonist and Human Chorionic Gonadotropin Significantly Improves Live Birth Rate for Women With Diminished Ovarian Reserve

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ABSTRACT

As the prevalence of fertility treatment increases, research into managing “diminished ovarian reserve” (DOR) remains a challenge. A “dual trigger” consisting of a gonadotropin hormone–releasing hormone agonist (GnRH-a) in combination with a reduced dose of human chorionic gonadotropin (hCG) showed robust evidence of increased pregnancy and live birth rate without ovarian hyperstimulation in in vitro fertilization (IVF) cycles for high responders. Similar studies found an increase in number of oocytes retrieved, number of mature (MII) oocytes, pregnancy rate, and live birth rate when a dual trigger was used rather than hCG trigger alone in normal responders to IVF. These findings in the high- and normal-IVF responders suggest the GnRH-a might play an important role in oocyte maturation and embryo implantation and this may translate to improve IVF cycle outcomes in patients with DOR.

This retrospective analysis aimed to determine the live birth rate per oocyte retrieval cycle following administration of a dual trigger, compared to recombinant hCG alone, in women diagnosed with DOR. Diagnosis with DOR was defined as serum anti-Müllerian hormone levels of 1.1 ng/mL or less and antral follicle count of 5 or less. Following controlled ovarian stimulation, induction of final oocyte maturation was initiated through administration of 6500 IU recombinant hCG or by combination of 6500 IU recombinant hCG and 0.2 mg triptorelin. Oocyte retrieval was done at 35 to 36 hours postinduction, standard insemination protocols were used, and all embryo transfers were performed 3 days following oocyte retrieval. Secondary outcomes recorded included embryo transfer cancellation rate, clinical pregnancy rate, implantation rate, chemical pregnancy rate, and abortion rate per oocyte retrieval cycle. The between-group differences were analyzed using either χ² test or Fisher exact test.

The final study cohort included 427 IVF cycles with fresh embryo transfer, with 130 in the hCG/control group and 297 in the dual-trigger group. Compared with the hCG/control group, the dual-trigger group demonstrated a significantly higher rate of fertilization (73.1% vs 58.6%; P = 0.015), clinical pregnancy rate (33.0% vs 20.7%; P = 0.035), and live birth rate (26.9% vs 14.5%; P = 0.014). The abortion rate (17.4% vs 37.0%; P = 0.037) and cycle cancellation rate (6.1% vs 15.4%; P = 0.003) were significantly lower in the dual-trigger group. There was no significant difference in mean number of retrieved oocytes or total number of MII oocytes in the hCG/control group compared with the dual-trigger group.
The study results show that a dual trigger of recombinant hCG in addition to GnRH-a significantly increased IVF outcomes including live birth rate in patients with DOR undergoing GnRH antagonist down-regulated IVF-ICSI cycles. These outcomes are in accord with prior publications examining dual-trigger protocols.

**EDITORIAL COMMENT**

(Diminished ovarian reserve remains one of the most vexing challenges facing reproductive medicine specialists. Some argue that “less is better” because small studies demonstrate no advantage of robust versus minimal stimulation in patients with DOR. Still, the majority opinion is that retrieval of additional oocytes should increase the chances of identifying a developmentally competent oocyte. The “dual-trigger” consists of a GnRH-a combined with hCG. This approach produces increased oocytes and mature (MII) oocytes, as well as improved pregnancy rates, compared with hCG trigger alone in normal and high responders undergoing ART. This study extends the dual trigger approach to patients with DOR. The study found that the dual-trigger group had higher fertilization, clinical pregnancy, and live birth rates. The spontaneous abortion and cycle cancellation rates were lower in the dual-trigger group. Mean number of retrieved oocytes or number of MII oocytes did not differ between the groups. Based on this and other studies, our center has switched to the dual-trigger method of promoting oocyte matura-
during ART.—DK)

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**DHEA Use to Improve Likelihood of IVF/ICSI Success in Patients With Diminished Ovarian Reserve: A Systematic Review and Meta-analysis**

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**ABSTRACT**

Despite advances in in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI), poor ovarian response (POR) remains a challenging issue. The frequency of POR is estimated to occur in 5% to 18% of IVF/ICSI cycles and has a corresponding pregnancy rate of 2% to 4%. Dehydroepiandrosterone (DHEA) is an essential prohormone in ovarian follicle steroidogenesis. Administration of oral DHEA has shown beneficial effects in ovarian stimulation for patients with POR, despite the fact that the mechanism of action remains unclear.

This systematic review and meta-analysis aimed to evaluate the efficacy of DHEA administration in improving the success rate of IVF/ICSI. The databases MEDLINE and EMBASE were searched for studies that occurred between 2007 and 2017 comparing the pregnancy rate with and without DHEA in patients undergoing IVF/ICSI. Studies were included if they defined POR as 2 of 3 of the following variables: patients older than 40 years; antral follicle count lower than 5 or decreased anti-Müllerian hormone; and deficient prior ovarian response. Quantitative data extracted from the studies included DHEA doses, number of subjects, number of clinical pregnancies, number of abortions, and mean oocyte retrieval. A fixed-effects model was used for qualitative variables, and Peto method used to calculate odds ratios (OR) with 95% confidence intervals (CIs). Cohen method was used to calculate standardized mean differences between qualitative variables. The primary outcome recorded was clinical pregnancy rate per initiated cycle, and secondary outcomes included mean oocyte retrieval and abortion rate.