

AGE AND OVARIAN RESERVE

Fertility clock- Raising an alarm

Female fertility has adapted to society's drastic changes. Women of this age, including medical professionals, do not aspire in having children young, instead pursue a good education and a career, leading a better lifestyle and financial security before they settle down. This is almost impossible to do before the age of 30 or later. Age affects the natural ability to get pregnant as well as the success rates of assisted reproductive technologies (ART). Increasing age has an effect on every aspect of infertility.

A woman's ovarian reserves are the same now as they were in the Stone Age.

Ovarian reserve, a term that has evolved in the era of ART, refers to the residual oocyte-granulosa cell repertoire that, at any given age, is available for procreation. It refers to the quality and quantity of eggs. Age and fertility of the woman go hand in hand. Women are born with predetermined number of ovarian follicles and these are subsequently reduced by apoptosis and ovulation till menopause. There is an age-related decline in fecundity, the decrease usually starting at the age of 32 with a dramatic fall after the age of 37 years where ovaries begin to respond poorly to FSH and LH. As a result, the body produces more of these hormones in an attempt to “jump start” egg development in the ovaries.

Ovarian reserve tests provide a snapshot of the pool of primordial follicles and are useful tests in predicting the response. In women with poor ovarian reserve Serum FSH done on day 2/3 are elevated due to negative feedback as inhibin values are low. According to the present data, younger women (<35 years old) with elevated basal FSH can still have a favorable IVF outcome reflected by a good ongoing pregnancy rate despite poorer IVF performances. The possible explanation might be that patients <35 years old with elevated basal FSH (≥ 10 mIU/mL) have a decreased remaining follicle pool, but the quality of their remaining follicles is not diminished. That is to say that basal FSH is a good predictor of the size of the remaining follicle pool (i.e., the quantity of ovarian reserve rather than the quality of it).

Estradiol is frequently measured at the same time as basal FSH. When elevated on cycle day 3, it appears to predict poor response to ovarian stimulation for ART, even when basal FSH levels are normal. It is suggested that elevated early follicular phase estradiol levels may indicate an inappropriately advanced stage of follicular development, consistent with ovarian aging. Transvaginal ultrasound gives us a promising approach. . The number of antral follicles in the early follicular phase has been found to decrease with advancing age and it represents ovarian aging. Recent data indicate that the number of antral follicles present on cycle day 3 provides a better single prognostic indicator for poor response during IVF. Ovarian volume, which partly reflects the number of ovarian follicles, has also been shown to decrease with age. Serum AMH levels is the earliest marker of diminishing ovarian reserve, with relatively minimal intra- and intercycle variation, and its serum levels decrease well before any increase in baseline FSH In clinical practice, serum AMH level has been shown to be one of the best predictors of the number of oocytes retrieved during an ART. Furthermore, women with elevated FSH and a low AMH level should be counseled regarding poor outcome with ART. Serum AMH levels and AFC are reliable tests for predicting the ovarian response to ovulation induction. However, none of the currently employed tests of ovarian reserve can reliably predict pregnancy after assisted conception.

Knowing the extent of ovarian reserve will help women to make informed decisions.

Counseling after ovarian reserve testing should include a discussion of the results. While they may predict a lower pregnancy rate, abnormal ovarian reserve test results do not preclude the possibility of pregnancy and should not be presented to patients as absolute. Likewise, ovarian reserve testing alone may yield falsely reassuring results, as advanced maternal age and ovarian reserve test results are independent predictors of infertility. Both should be used when counseling couples regarding their chances for conception

Treatment options for age-related infertility include controlled ovarian hyperstimulation with intrauterine insemination (COH/IUI), IVF, and oocyte donation. Cryopreservation of the oocytes is the best approach where one decides to extend the fertility. Ongoing research

continues on Oocyte Generation in Adult Mammalian Ovaries by Putative Germ Cells in Bone Marrow and Peripheral Blood.

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