



A REVIEW ARTICLE ON FERTILITY & AGE

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Abstract : Infertility clinics are seeing an increase in the number of older women seeking their assistance as a result of the changing social environment, economic growth, and greater work prospects. This has greatly reduced gender inequality. The relationship between fertility and ageing has always been strong, and the age of the female spouse is still the single biggest indicator of treatment effectiveness. Ovarian reserve tests are a valuable educational tool and aid in deciding on the best course of action, but they are not very reliable in predicting the final result.

KEYWORDS - Ovarian reserve, FSH, and female age

INTRODUCTION

The couple and their families are both distressed by the issue of infertility. The World Health Organization has identified it as a global health issue in recognition of its significance.^[1] Age affects the capacity to procreate, particularly so in the female spouse. By roughly 20 weeks, the female fetus's germ cell development stops, and as a result, women are born with a fixed number of primordial follicles. In contrast, men continue to actively produce sperm throughout adulthood, with age mostly leading to a reduction in function. The female kid has approximately 5 million primordial follicles at birth; by menarche, this number drops to approximately 500,000. Follicular atresia/apoptosis persists with each succeeding menstrual cycle, with counts reaching about 25,000 at age 37 and 1000 towards menopause.^[2]

Fecundity naturally declines with age, typically starting at the age of 32 and falling precipitously beyond the age of 37. As spelled, the natural monthly fecundity rate, which is roughly 25% between the ages of 20 and 30, drops to under 10% beyond the age of 35.^[3] In India, more and more older women are seeking treatment at fertility clinics. The deliberate postponement of childbearing, made possible by the accessibility of reliable contraception, can be attributed to a number of things. Growing educational and employment options for people of both sexes encourage ambitious career pursuits, which frequently lead to late marriages.



Figure 1:

Even though the "double income, no kids" idea promotes financial security and satisfies materialistic desires, eventually the need for children emerges from within. Even among the educated, the importance of a woman's age in terms of fertility is still little understood.

Growing female age is also linked to gynaecological and obstetric issues. Preeclampsia, preterm labour, and intrauterine growth retardation are typical obstetric problems along with the increased frequency of spontaneous abortions, which are most frequently caused by aneuploidy.^[4]

The process of spermatogenesis is ongoing, therefore little attention has been paid to the consequences of paternal age. In older women with partners over the age of 40, the likelihood of conception, whether spontaneous or otherwise, is decreased, and pregnancies are linked to a higher incidence of difficulties such as miscarriages, congenital deformities, and genetic illnesses.^[5,6] The increased paternal age has also been connected to Down's syndrome.^[6] Damage to the sperm DNA is to blame for these unfavourable results.

A reduced ovarian reserve can be physiological (age-related) or result from a reserve that has already started to drop. The doctor needs to be aware of how a woman's age affects her fertility outcomes and give the patient the right advice, including prompt referral to an infertility specialist when necessary. Although the concept of infertility is an inability to conceive after a year of unprotected sexual activity, this criteria must be changed for older women. When a woman is 35 years old or older, investigation and treatment should start early. The evaluation of ovarian reserve aids in counselling and selecting the best therapy. Also, there is a distinct difference between physiologically impaired ovarian reserves and prematurely diminished ovarian reserves, with the latter having a better outlook for clinical pregnancies.

The patient would want to know the likelihood that the procedure would be successful, so determining a woman's ovarian reserve is crucial. There have been suggested testing. We will list the most popular ones in brief and make comments on the more recent techniques.

AGE

Age, which indicates both the quantity and quality of oocytes, is likely the single most crucial aspect in evaluating an ovarian reserve, as was previously indicated. It should come as no surprise that older women tend to develop fewer oocytes and have reduced implantation potential in IVF cycles.^[3] Women who become pregnant have greater rates of miscarriage and a higher prevalence of congenital abnormalities, which is more evidence of the poor oocyte quality.^[3,7]

SERUM FSH

Low inhibin B levels (associated with a lower granulosa cell mass) cause higher blood FSH levels in the early follicular phase in women with a diminished ovarian reserve through the feedback mechanism.^[8] Moreover, during the luteal-follicular phase transition, an increase in FSH is caused by a decrease in luteal phase inhibin A. FSH levels exceeding 20 mIU/ml are associated with negative results.^[9] The intercycle fluctuation of FSH levels in regularly menstruation women is frequent. A single high value should be taken into account, though.^[10] Elevated baseline FSH levels are a poor indicator of IVF success even though they predict a low egg yield. Hence, serum FSH levels are helpful for pre-IVF counselling for couples but shouldn't be used to reject IVF treatment.^[11]

BASAL ESTRADIOL LEVELS: E2 LEVELS

Poor outcomes are associated with elevated estradiol levels on day 2/3 of the menstrual cycle, which is related to quick premature follicle recruitment and subsequent loss of pituitary inhibition in women with a low ovarian reserve.^[10] Low predictive values for a poor response and pregnancy can be found in basal estradiol levels.^[12,13]

ANTRAL FOLLICLE COUNT

On day 2/3 of the cycle, transvaginal ultrasonography can be used to assess the number of antral follicles (10 mm size) present in the ovaries. Greater cancellation and lower pregnancy rates were linked to antral follicle counts (AFC) of 4 or fewer.^[14] While AFC cannot be used as a diagnostic test to disqualify patients from IVF treatment, it can be used as a screening test for potential poor responders.^[13] It's important to keep in mind how oral contraceptives suppress the AFC.

ANTI-MULLERIAN HORMONE

The antral and preantral follicles' granulosa cells produce anti-Mullerian hormone (AMH). The number of primordial follicles in the ovary is reflected in serum AMH levels. AMH levels are steady throughout adulthood and start to decline as menopause approaches. AMH has a low enough intra- and intercycle variability to permit monitoring at any stage of the cycle. Most importantly, neither GnRH agonists nor birth control tablets have an impact on AMH levels.^[15]

AMH is becoming more and more popular as a test for ovarian reserve in daily clinical practise as a result of these intrinsic advantages. Although its function is unknown, AMH and AFC are thought to be the more accurate indicators of ovarian reserve.

In spite of the fact that additional tests such as the inhibin B, clomiphene challenge, and GnRH agonist stimulation tests have been published, they are not frequently employed in clinical practise. The real reaction to gonadotrophins is one of the assays that may be the most illuminating. When an inadequate response to a sufficient amount of gonadotrophins has been found, normal ovarian reserve tests are of little practical relevance. This emphasises how none of these tests can be used to make diagnoses. They mostly assist with patient counselling regarding the likelihood of a response.

IVF is typically used to treat ovarian reserve suspicions. In essence, this is done to avoid a delay in treatment beginning and to collect oocytes while they are still retrievable. Under these circumstances, the low stimulation/natural cycle IVF procedure has also been promoted.^[16]

CONCLUSION

Age is a very critical aspect with regard to conception, and even with all the developments in assisted reproduction, it still remains an impenetrable obstacle. The general public should be informed of this reality since the couple and the clinician are left with few therapeutic alternatives due to the age-related fall in fertility. Delaying childbirth should be discouraged from the standpoint of pure fertility. Ovarian reserve tests are helpful prognostic tools, although they are poor indicators of the success of IVF.

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