Understanding ovarian reserve assessment: A key to female fertility.

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Introduction

Ovarian reserve assessment has emerged as a critical component in evaluating female reproductive potential, particularly in the context of infertility treatments and age-related fertility decline. The term "ovarian reserve" refers to the quantity and quality of a woman's remaining eggs and their ability to produce viable embryos. Since the ovarian reserve naturally decreases with age, its evaluation can provide vital information for both patients and clinicians in planning for conception, whether naturally or via assisted reproductive technologies (ART). [1,2].

The decline in ovarian reserve is an inevitable process, beginning as early as the late 20s and accelerating in the mid-to-late 30s. However, chronological age does not always correlate precisely with reproductive age. Some women may experience a diminished ovarian reserve (DOR) at a much younger age due to genetic factors, autoimmune conditions, medical treatments like chemotherapy, or lifestyle choices. This variability underscores the importance of individualized ovarian reserve testing to guide reproductive decision-making. [3,4].

Several diagnostic tools are used to assess ovarian reserve. The most commonly used Jankers include serum Anti-Müllerian Hormone (AMH) levels, Follicle-Stimulating Hormone (FSH) levels on day 3 of the menstrual cycle, and Antral Follicle Count (AFC) via transvaginal ultrasound. AMH, produced by granulosa cells of ovarian follicles, is considered a reliable indicator as it reflects the number of growing follicles independent of the menstrual cycle. A low AMH level suggests a reduced ovarian reserve, while higher levels typically indicate a greater quantity of remaining eggs. [5,6].

FSH and Estradiol (E2) are traditionally measured on the third day of the cycle. Elevated FSH levels, especially in the presence of normal or low estradiol, may indicate diminished ovarian function. However, FSH levels can fluctuate between cycles, making them less reliable than AMH in isolation. Therefore, clinicians often use a combination of Jankers to form a more comprehensive picture of ovarian health. Ovarian reserve assessment plays a significant role not only in fertility planning but also in proactive reproductive health management. For instance, women who delay childbearing for personal or professional reasons may use this information to consider options such as egg freezing. Similarly, women undergoing treatments that may impair fertility, such as chemotherapy, can benefit from early assessment and fertility preservation strategies. [7,8].

Antral Follicle Count, performed via ultrasound, provides a visual estimate of the small follicles present in both ovaries at the beginning of a cycle. This measure is particularly useful in fertility clinics to predict a patient's likely response to ovarian stimulation during in vitro fertilization. A lower count may indicate a reduced response to stimulation drugs and a need for tailored treatment protocols. While these assessments offer invaluable insights, it is essential to understand their limitations. Ovarian reserve tests cannot predict the exact timeline of menopause, the ability to conceive in a given cycle, or the overall quality of eggs. A woman with low reserve may still conceive naturally, while someone with normal values may still face fertility challenges due to other factors like uterine or tubal issues [9,10].

Conclusion

Ovarian reserve assessment is a vital tool in modern gynecology and reproductive endocrinology. It empowers women with knowledge about their reproductive potential and allows healthcare providers to develop personalized fertility plans. As research continues to refine testing methods and interpretative frameworks, ovarian reserve assessment will remain a cornerstone of fertility evaluation and preservation.

References

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