

The Relationships between Antimüllerian Hormone, Androgens and Ovarian Reserve in Non-Obese East Indian Women with and without Polycystic Ovary Syndrome

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Abstract : Background: Polycystic ovary syndrome (PCOS) is a common endocrine disease in reproductive women with a complex hormonal disturbance that affects the menstrual cycle and leads to metabolic consequences in later life. Hyperandrogenaemia is noticeable features of PCOS and influence the process of folliculogenesis in women. The levels of Antimüllerian Hormone (AMH) reflect the number of pre-antral follicles and thus are a marker of oocyte pool - germinal reserve of the ovary for reproduction. Besides its utilization in IVF (In-vitro fertilization), determination of AMH may serve as an additional marker in the diagnostics of PCOS, where increased AMH levels reflect the severity of the disease. The positive correlation of serum AMH with the number of antral follicles was found also in patients with PCOS. Objective: The objective of this study was to investigate the relationship between AMH androgens and whether AMH contributes to altered folliculogenesis in non-obese women with PCOS. Methods: We designed a prospective study which included a total of 65 IVF individuals. It enrolled 26 cases of PCOS based on 2003 Rotterdam criteria and 39 ovulatory normal- non PCOS, healthy, age-matched controls. AMH levels and ovarian morphology were assessed. The relationships between AMH and androgenaemia in patients with and without PCOS were studied. Results: Mean age of PCOS patients were slightly higher than controls (32 ± 4 and 28 ± 3 years, respectively). AMH generally increased with antral follicle count (AFC) [$P=0.001$], testosterone, and luteinising hormone, and decreased with age, and serum sex hormone binding globulin (SHBG). No significant relationships were found between circulating AMH levels and BMI between PCOS and non-PCOS patients. The calculation of AMH production per antral follicle (AMH/AF) showed that there was a significant difference in median AMH/AF between PCOS and non-PCOS ($P=0.001$). Both PCOS and non-PCOS groups showed a very similar increase in AMH with increases in AFC, but the PCOS patients had consistently higher AMH across all AFC levels. Conclusions: These observations indicate that there is a connection between AMH and androgens levels between PCOS and non-PCOS East Indian women. Excessive granulosa cell activity may be implicated in the abnormal follicular dynamic of the syndrome. They are higher in women with PCOS and, on the other hand, very low in women with an ovarian failure.

Keywords : anti-Müllerian hormone, polycystic ovary syndrome, antral follicle count, androgens

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