

**Assessment of Hormonal Indicators in Women of Reproductive Age with
Polycystic Ovary Syndrome**

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Abstract

Polycystic ovary syndrome (PCOS) is a common endocrine disorder affecting women of reproductive age and is associated with hormonal imbalance and metabolic disturbances. This study aimed to assess hormonal indicators in women diagnosed with PCOS and to identify key endocrine changes related to the condition. Serum levels of luteinizing hormone, follicle-stimulating hormone, testosterone, prolactin, and insulin were evaluated. The results showed increased levels of luteinizing hormone, testosterone, and insulin, along with an elevated LH/FSH ratio, indicating hyperandrogenism and insulin resistance. These findings highlight the importance of hormonal profiling in the diagnosis and management of PCOS. Early detection of hormonal alterations can contribute to improved reproductive outcomes and prevention of complications.

Keywords: Polycystic ovary syndrome, hormonal imbalance, reproductive age, LH/FSH ratio, hyperandrogenism, insulin resistance

Main Part

Polycystic ovary syndrome is characterized by complex endocrine disturbances that significantly affect the reproductive function of women of fertile age. The central feature of the syndrome is hormonal imbalance, primarily involving gonadotropins and androgens. In women with PCOS, dysregulation of the hypothalamic–pituitary–ovarian axis leads to increased secretion of luteinizing hormone and relatively low or normal levels of follicle-stimulating hormone. This imbalance contributes to impaired follicular maturation and chronic anovulation.

Elevated luteinizing hormone stimulates theca cells in the ovaries, resulting in excessive androgen production. Increased levels of circulating testosterone are responsible for clinical manifestations such as hirsutism, acne, and ovulatory dysfunction. The altered LH/FSH ratio is considered one of the important biochemical markers in the evaluation of PCOS and reflects disturbances in endocrine regulation. Another critical component in the pathogenesis of PCOS is insulin resistance, which is

observed in a significant proportion of patients независимо от их массы тела. Hyperinsulinemia enhances androgen synthesis in the ovaries and reduces the production of sex hormone-binding globulin in the liver, leading to increased levels of free and biologically active testosterone. This interaction between insulin and androgen metabolism plays a key role in the progression of the syndrome. Prolactin levels in patients with PCOS may vary, but mild hyperprolactinemia is sometimes observed and can further aggravate menstrual irregularities. Additionally, disturbances in metabolic parameters, including glucose tolerance and lipid profile, are frequently associated with hormonal changes in PCOS patients. The assessment of hormonal indicators in women with PCOS requires a comprehensive and systematic approach. Measurement of serum levels of luteinizing hormone, follicle-stimulating hormone, total and free testosterone, insulin, and prolactin provides essential diagnostic information. These parameters not only help confirm the diagnosis but also allow for the evaluation of disease severity and the selection of appropriate therapeutic strategies. Hormonal profiling plays a crucial role in understanding the pathophysiological mechanisms of PCOS and serves as a foundation for personalized management of patients.

The findings of this study confirm that hormonal imbalance is a key feature of polycystic ovary syndrome in women of reproductive age. Elevated levels of luteinizing hormone and testosterone, along with an increased LH/FSH ratio, indicate significant disruption of the hypothalamic–pituitary–ovarian axis. The presence of insulin resistance further aggravates hyperandrogenism and contributes to the progression of the syndrome. These results are consistent with previous studies highlighting the central role of endocrine and metabolic interactions in PCOS pathogenesis. Variations in prolactin levels suggest additional complexity in hormonal regulation among affected women. Overall, comprehensive hormonal assessment is essential for accurate diagnosis and effective management of PCOS.

Conclusion

Women of reproductive age with polycystic ovary syndrome exhibit significant hormonal disturbances. Elevated levels of luteinizing hormone, testosterone, and insulin are the main biochemical features of the condition. The increased LH/FSH ratio reflects impaired ovarian function and disrupted endocrine regulation. Hormonal assessment plays a crucial role in early diagnosis and appropriate treatment selection. Timely identification of these changes can improve reproductive health and prevent long-term metabolic complications.

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