DIAGNOSTIC VALUE OF HORMONAL TESTS IN AMENORRHEA SYNDROME

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Annotation

This thesis aims to evaluate the diagnostic significance of comprehensive hormonal profiling in patients presenting with amenorrhea syndrome. By analyzing serum levels of key reproductive and metabolic hormones, the study identifies the underlying etiologies of the condition, ranging from polycystic ovary syndrome (PCOS) to hyperprolactinemia and premature ovarian insufficiency (POI). The findings underscore that a targeted hormonal assay is the cornerstone of accurate diagnosis and effective clinical management, directly influencing therapeutic strategies and patient reproductive health outcomes.

Key words: amenorrhea syndrome, hormonal assay, follicle-stimulating hormone (FSH), prolactin, reproductive endocrinology, secondary amenorrhea, hypothalamic-pituitary-ovarian axis.

Introduction

Amenorrhea, defined as the absence of menstruation, is a complex clinical manifestation rather than a standalone disease. It is broadly categorized into primary (absence of menarche by age 15) and secondary amenorrhea (absence of menses for three to six months in previously menstruating women). The etiology of this syndrome is predominantly linked to disruptions in the hypothalamic-pituitary-ovarian (HPO) axis, thyroid dysfunction, or hyperprolactinemia. Establishing the precise underlying cause is essential not only for restoring fertility but also for preventing severe long-term complications, such as estrogen deficiency-induced osteoporosis and cardiovascular diseases. This thesis investigates the critical diagnostic role of standard hormonal panels in accurately differentiating the various causes of amenorrhea.

Material and methods

A retrospective clinical analysis was conducted on a cohort of 60 female patients of reproductive age (18–35 years) who presented with secondary amenorrhea. To

determine the diagnostic efficacy of endocrine testing, fasting morning blood samples were collected to measure the serum concentrations of Follicle-Stimulating Hormone (FSH), Luteinizing Hormone (LH), Prolactin (PRL), Thyroid-Stimulating Hormone (TSH), and Estradiol (E2) using enzyme-linked immunosorbent assay (ELISA). Clinical histories, Body Mass Index (BMI) records, and pelvic ultrasound findings were cross-referenced with the biochemical data to establish a definitive diagnosis.

Result and discussion

The hormonal evaluation successfully identified the primary etiology of amenorrhea in all subjects, proving the high diagnostic yield of the tests. Approximately 40% of the patients exhibited an elevated LH-to-FSH ratio (greater than 2:1), which, combined with clinical signs of hyperandrogenism, confirmed the diagnosis of Polycystic Ovary Syndrome (PCOS). Hyperprolactinemia, indicated by significantly elevated serum prolactin levels, accounted for 25% of the cases, successfully guiding these patients toward MRI evaluation for suspected pituitary microadenomas.

Furthermore, 15% of the women demonstrated elevated FSH levels (typically >40 IU/L) alongside severe hypoestrogenism, pointing conclusively towards Premature Ovarian Insufficiency (POI). Additionally, 10% of the cases were linked to primary hypothyroidism, evidenced by abnormally high TSH levels, while the remaining 10% were diagnosed with functional hypothalamic amenorrhea associated with extreme physical stress or low body weight (characterized by low FSH, LH, and estradiol). The discussion reveals that relying solely on clinical symptoms is insufficient for accurate diagnosis; isolated hormonal deviations dictate highly specific therapeutic pathways, such as dopamine agonists for hyperprolactinemia, thyroxine for hypothyroidism, or hormone replacement therapy (HRT) for POI.

Conclusion and recommendation

Hormonal testing is indispensable and highly reliable in the clinical evaluation of amenorrhea syndrome. It provides a precise biochemical differentiation between ovarian, pituitary, hypothalamic, and thyroid-related etiologies, preventing misdiagnosis and the administration of inappropriate treatments. It is strongly recommended that primary care physicians and gynecologists implement a standard initial screening panel—comprising FSH, TSH, Prolactin, and a pregnancy test—for all patients presenting with amenorrhea. Early and targeted hormonal evaluation significantly optimizes treatment strategies, mitigates psychological stress for the patient, and improves long-term reproductive and systemic health outcomes.

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