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DIAGNOSIS AND TREATMENT OF REPRODUCTIVE DISORDERS IN HYPOTHYROIDISM

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Abstract. Hypothyroidism is a common endocrine disorder that predominantly affects women of reproductive age and is closely associated with menstrual disturbances, ovulatory dysfunction, infertility, and adverse reproductive outcomes. Thyroid hormone deficiency disrupts the hypothalamic–pituitary–ovarian axis and is frequently accompanied by secondary hyperprolactinemia, further impairing reproductive function.

This study was conducted at the Khorezm branch of the Republican specialized scientific and practical medical center of endocrinology and aimed to comprehensively evaluate diagnostic approaches and treatment strategies for reproductive disorders in women with hypothyroidism. Patients were stratified into study groups based on thyroid status and reproductive function. The findings confirm that early diagnosis and optimized levothyroxine therapy significantly improve reproductive outcomes.

Key words: hypothyroidism, reproductive disorders, infertility, menstrual dysfunction, hyperprolactinemia, levothyroxine

Introduction. Hypothyroidism is one of the most prevalent endocrine disorders worldwide and represents a significant public health problem, particularly among women of reproductive age. According to epidemiological studies, the prevalence of overt and subclinical hypothyroidism in women ranges from 4% to 10%, with a steady increase observed over the past decades [1,2]. Thyroid hormones play a fundamental role in the regulation of metabolic processes, growth, and development, as well as in maintaining normal reproductive function. The close interaction between the thyroid gland and the reproductive system is mediated through the hypothalamic–pituitary–thyroid (HPT) and hypothalamic–pituitary–ovarian (HPO) axes. Thyroxine (T4) and triiodothyronine (T3) influence gonadotropin-releasing hormone (GnRH) pulsatility, folliculogenesis, steroidogenesis, and endometrial receptivity. Even mild thyroid hormone deficiency may lead to profound alterations in reproductive physiology [3,4]. Reproductive disorders associated with hypothyroidism include menstrual cycle irregularities, anovulation, luteal phase defects, infertility, and adverse pregnancy outcomes such as miscarriage, preeclampsia, and preterm birth [5,6]. Menstrual disturbances may manifest as oligomenorrhea, polymenorrhea, or amenorrhea, while infertility is frequently linked to chronic anovulation and impaired corpus luteum function. In addition, hypothyroidism is commonly accompanied by secondary hyperprolactinemia due to increased thyrotropin-releasing hormone secretion, which further suppresses gonadotropin release and exacerbates reproductive dysfunction [7]. Subclinical hypothyroidism, characterized by elevated thyroid-stimulating hormone (TSH) levels

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with normal free thyroxine concentrations, is increasingly recognized as a clinically significant condition in reproductive medicine. Although patients may remain asymptomatic, subclinical hypothyroidism has been associated with ovulatory dysfunction, decreased fertility, and unfavorable reproductive outcomes [8,9]. However, the indications for treatment and the impact of hormone replacement therapy on reproductive function in this group remain subjects of ongoing debate. Timely diagnosis of hypothyroidism in women presenting with reproductive disorders is often challenging due to the nonspecific nature of clinical symptoms and the overlap with gynecological pathologies. Therefore, a comprehensive diagnostic approach combining hormonal assessment, gynecological evaluation, and instrumental methods is essential for accurate identification of thyroid-related reproductive dysfunction [10]. Levothyroxine replacement therapy is the mainstay of treatment for hypothyroidism and has been shown to restore euthyroid status, normalize prolactin levels, and improve ovulatory function. Nevertheless, the effectiveness of treatment depends on early diagnosis, adequate dose titration, and long-term monitoring, particularly in women planning pregnancy or undergoing infertility treatment [11,12]. Given the high prevalence of hypothyroidism and its significant impact on female reproductive health, further studies aimed at optimizing diagnostic strategies and therapeutic approaches are of considerable clinical importance. This is especially relevant in regions with iodine deficiency and limited access to specialized endocrine care, where reproductive complications related to thyroid dysfunction remain underrecognized.

Aim of the study. The aim of this study was to analyze the diagnostic features and treatment outcomes of reproductive disorders in women with hypothyroidism, taking into account thyroid status, hormonal profile, and duration of disease.

Materials and methods. A clinical observational study was conducted between 2023 and 2024 at the Khorezm branch of the Republican specialized scientific and practical medical center of endocrinology. A total of 90 women aged 18–40 years were enrolled in the study and divided into three groups. The first research group consisted of 40 women with primary hypothyroidism and reproductive disorders. The second control group involved 25 women with subclinical hypothyroidism and reproductive complaints. The third main group 25 euthyroid women with preserved reproductive function. Inclusion criteria were confirmed hypothyroidism (overt or subclinical), reproductive age, and presence of menstrual or fertility disorders. Exclusion criteria included pregnancy, lactation, pituitary adenomas, severe systemic diseases, and previous ovarian surgery. All participants underwent clinical and gynecological examination,laboratory assessment of serum TSH, free T4, prolactin, LH, FSH, estradiol, and progesterone, pelvic ultrasound to evaluate ovarian morphology and endometrial thickness,ovulatory function was assessed using folliculometry and luteal-phase progesterone levels. Patients in the first and second received individualized levothyroxine replacement therapy with dose adjustment based on TSH levels. In cases of persistent hyperprolactinemia, additional correction with dopamine agonists was considered. Follow-up evaluation was performed after 6 and 12 months of therapy.

Results. Reproductive disorders were detected in 82.5% of women in the first and 64% in the second group. The most common clinical manifestations included oligomenorrhea, amenorrhea, and chronic anovulation. Secondary hyperprolactinemia was identified in 45% of women with overt hypothyroidism.

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After initiation of levothyroxine therapy, normalization of thyroid hormone levels was achieved in 88% of patients. Restoration of regular ovulatory menstrual cycles was observed in 66% of women in the first and 72% in the second group. Spontaneous pregnancy occurred in 28% of infertile women within one year of treatment. Significant improvement in endometrial thickness and follicular development was noted after hormonal correction ($p < 0.05$).

Parameter	The first group Overt Hypothyroidism (40 patients)	The second group Subclinical Hypothyroidism (25 patient)	The third group (25 patient)
Menstrual disorders, %	82.5	64.0	8.0
Anovulation, %	70.0	48.0	4.0
Hyperprolactinemia, %	45.0	28.0	0
TSH normalization after treatment, %	88.0	92.0	—
Restoration of ovulation, %	66.0	72.0	—
Pregnancy within 12 months, %	28.0	32.0	—

Discussion. The results of this study confirm the significant impact of hypothyroidism on female reproductive function. Overt hypothyroidism is associated with more pronounced reproductive disturbances compared to subclinical forms. Secondary hyperprolactinemia plays an important pathogenetic role, particularly in patients with long-standing disease.

Levothyroxine replacement therapy effectively restores euthyroidism and leads to recovery of ovulatory function in the majority of patients. Early diagnosis at specialized endocrine centers, such as the Khorezm branch, allows timely intervention and prevention of long-term reproductive complications.

Conclusions. Hypothyroidism is a major and potentially reversible cause of reproductive disorders in women. Comprehensive diagnostic evaluation and optimized levothyroxine therapy significantly improve menstrual regularity, ovulation, and fertility outcomes. A multidisciplinary approach involving endocrinologists and gynecologists is essential for effective management of reproductive disorders in hypothyroid patients.

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