PATHOPHYSIOLOGICAL MECHANISMS OF MENSTRUAL DYSREGULATION AND THE CLINICAL MANIFESTATIONS OF CLIMACTERIC SYNDROME IN PATIENTS WITH CHRONIC AUTOIMMUNE THYROIDITIS.

Komiljonova Oygul Olimjonovna
Assistant of the Department of Fundamental medicine
Asia International University, Bukhara, Uzbekistan
E-Mail: komiljonovaoygulolimjonovna@oxu.uz
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ABSTRACT

Chronic autoimmune thyroiditis (CAIT) is the most prevalent thyroid disorder, affecting 2-4% of the female population, and is the primary cause of primary hypothyroidism [29, 64].

Women with thyroid hypofunction are more susceptible to a range of reproductive health issues. It is well-established that thyroid hormone deficiency leads to a decrease in metabolic processes, resulting in detrimental effects across all organ systems [56, 63]. Furthermore, alterations in neurotransmitter secretion, prolactin levels, and sex hormone-binding globulins, which are characteristic of CAIT and hypothyroidism, may impair the normal functioning of the hypothalamic-pituitary-ovarian axis [63, 17]. Unfortunately, there remains no consensus on the true prevalence of menstrual irregularities in this endocrine condition, nor on the impact of factors such as the patient's age, the duration and degree of compensation of the underlying thyroid disorder, or the presence of coexisting gynecological conditions.

Introduction: Alongside the hormonal profile alterations commonly seen in chronic autoimmune thyroiditis (CAIT), the involvement of autoimmune factors in the dysfunction of reproductive system organs has recently been the focus of growing research. Several studies suggest that the generalized breakdown of immune tolerance to self-tissues in women with CAIT may result in concurrent damage to multiple endocrine organs, including the thyroid gland, pancreas, pituitary, adrenal glands, and ovaries [41, 87]. However, it is important to recognize that the specific mechanisms underlying reproductive system dysfunction in women with various autoimmune diseases, particularly during the reproductive, peri-, and postmenopausal stages, remain unresolved [109, 143].

In recent years, increasing attention has been paid to the characteristics of the climacteric phase and its impact on the quality of life in women with different endocrine disorders. This issue is particularly pertinent in the context of CAIT, as the high prevalence of

autoimmune thyroid disease in conjunction with estrogen deficiency points to detrimental shifts in hormonal balance, which in turn affect the course of menopause [18, 59]. It is well-established that menstrual and reproductive dysfunctions caused by hypothyroidism during the reproductive years can significantly influence the menopausal transition [1].

It is widely recognized that the progressive reduction in estrogen production during the peri- and postmenopausal periods is linked to an increased incidence of extragenital diseases, with cardiovascular diseases being particularly prominent. A significant body of research has demonstrated the negative effects of hypoestrogenism on lipid and carbohydrate metabolism, vascular reactivity, and other physiological functions, contributing to the progression of atherosclerosis and the onset of complications such as stroke and coronary artery disease [52]. Recent medical advances have identified new biomarkers of endothelial dysfunction, including C-reactive protein (CRP) and homocysteine (Hcy) [66]. However, the dynamic evaluation of these markers in the context of thyroid hypofunction during the postmenopausal period remains underexplored and presents considerable practical significance.

At the current stage of research, the status of menstrual function in patients with chronic autoimmune thyroiditis (CAIT) has been thoroughly investigated, and statistical analysis has been conducted to assess the correlation between menstrual disorders and factors such as the patient's age, disease duration, and the degree of endocrine disease compensation. An evaluation of hormonal status and ovarian reserve indicators in patients with autoimmune thyroid disease has also been carried out. For the first time, the role of autoimmune factors in the pathogenesis of menstrual dysfunctions in CAIT has been established.

Additionally, the examination of women in the peri- and postmenopausal periods has provided insights into the specific features of climacteric syndrome in CAIT patients with a progression to hypothyroidism, as well as an assessment of their quality of life.

Conclusion For the first time in gynecological practice, the predictors of cardiovascular pathology (homocysteine [Hcy] and C-reactive protein [CRP]) have been studied in a group of postmenopausal women with chronic autoimmune thyroiditis (CAIT) progressing to hypothyroidism.

Menstrual dysfunction occurs in 37.5% of women of reproductive age with decompensated hypothyroidism, predominantly presenting as oligomenorrhea (63.3%) and hypomenorrhea (22.7%).

The duration of decompensated hypothyroidism and the associated metabolic disorders, such as weight gain, play a crucial role in disrupting the cyclical activity of the hypothalamic-pituitary-ovarian axis. The likelihood of menstrual cycle disturbances progressively decreases from 56.0% in women aged 18-21 years to 15.0% in women over 25 years of age.

The pathogenesis of menstrual cycle disturbances in hypothyroidism is primarily related to normogonadotropic, predominantly (82.0%) euprolactinemic ovarian dysfunction.

Immunological factors in thyroiditis do not play an independent role in the pathogenesis of menstrual dysfunction. Ovarian reserve in women with CAIT is comparable to that of healthy individuals.

Climacteric syndrome in women with CAIT is characterized by a high prevalence

(85.0%) of psycho-emotional disorders, with the age of onset negatively correlating with the duration of the underlying disease. In women with decompensated hypothyroidism, most quantitative indicators of mental and physical health are significantly reduced.

Menopause is a factor that increases vascular risk. Hypothyroidism does not play an independent role in the development of endothelial dysfunction.

The diagnostic workup for women of reproductive age with menstrual cycle disturbances should include the measurement of TSH and free T4 levels.

Women with chronic autoimmune thyroiditis (CAIT) should undergo a comprehensive assessment of thyroid function and ultrasonographic monitoring of folliculogenesis prior to planning pregnancy.

For women under the age of 21 with decompensated hypothyroidism, it is advisable to perform a functional evaluation of the menstrual cycle, including TFD (thyroid function testing) and echographic monitoring of folliculogenesis. If abnormalities are detected, the tests should be repeated after thyroid function is corrected.

In women during the climacteric period, screening for TSH levels should be performed every two years.

Endocrine disorders play a significant role in the pathophysiology of female during climacteric period, affecting various physiological processes critical to reproductive health. However, the relationship between endocrine disorders and postmenopausal period is complex, and individualized treatment approaches are crucial. It is essential for clinicians to adopt a comprehensive diagnostic and therapeutic framework, incorporating both medical and psychological support, to optimize fertility outcomes for affected women. Further research into the pathophysiology, early detection, and innovative treatment options will enhance our understanding of the intricate interplay between endocrine health and female fertility.

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