

CHANGES IN THE MAMMARY GLANDS IN WOMEN WITH THYROID DISORDERS

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Abstract. Thyroid disorders are highly prevalent endocrine conditions among women and exert a systemic influence on multiple organs, including the mammary glands. The close physiological relationship between thyroid hormones, prolactin, and sex steroids plays a crucial role in breast tissue development and function. Dysregulation of thyroid function may lead to proliferative, structural, and functional alterations in the mammary glands, increasing the incidence of benign breast diseases. This study aimed to comprehensively evaluate changes in the mammary glands in women with thyroid disorders based on clinical, hormonal, and ultrasonographic findings obtained at the Khorezm branch of the Republican specialized scientific and practical medical center of endocrinology. The results demonstrate a high prevalence of breast tissue changes in patients with thyroid dysfunction, emphasizing the need for early diagnosis and multidisciplinary management.

Key words: thyroid disorders, mammary gland changes, women, hypothyroidism, hyperthyroidism, hormonal imbalance

Introduction. Thyroid gland diseases constitute one of the most common groups of endocrine disorders worldwide, particularly affecting women of reproductive age [1]. Epidemiological data indicate that women are 5–10 times more likely to develop thyroid dysfunction than men, which highlights the gender-specific nature of this pathology [2]. Thyroid hormones—thyroxine (T4) and triiodothyronine (T3) — are essential regulators of cellular metabolism, growth, differentiation, and reproductive health.

The mammary glands are hormonally sensitive organs whose development and functional activity are regulated by a complex interaction of estrogen, progesterone, prolactin, and thyroid hormones [3]. Thyroid hormones influence mammary gland

physiology both directly, through thyroid hormone receptors expressed in breast tissue, and indirectly, by modulating prolactin secretion and estrogen metabolism [4]. Hypothyroidism is frequently associated with hyperprolactinemia due to increased thyrotropin-releasing hormone (TRH) secretion, which stimulates prolactin release from the pituitary gland [5]. Elevated prolactin levels may induce ductal proliferation and fibrocystic changes in the mammary glands. Hyperthyroidism, on the other hand, enhances peripheral estrogen sensitivity and accelerates metabolic processes, potentially contributing to diffuse breast tissue alterations [6]. Despite numerous studies investigating thyroid pathology, regional data on mammary gland changes in women with thyroid disorders, particularly in Central Asia, remain limited. Therefore, studying this issue in the Khorezm region is of significant scientific and clinical importance.

Aim of the study. The aim of this study was to evaluate structural and functional changes in the mammary glands in women with thyroid disorders and to analyze their association with the type and duration of thyroid pathology.

Materials and methods. A cross-sectional observational study was conducted at the Khorezm branch of the Republican specialized scientific and practical medical center of endocrinology between 2024 and 2025. The study included 90 women aged 18–50 years, who were divided into three groups. The first group included 30 women with clinically and laboratory-confirmed hypothyroidism. The second group consisted of 30 women with clinically and laboratory-confirmed hyperthyroidism and the third control group involved 30 practically healthy women without thyroid or breast pathology. Exclusion criteria included pregnancy, lactation, known malignant breast tumors, severe systemic diseases, and previous breast surgery. All participants underwent detailed clinical evaluation, including medical history and assessment of breast-related complaints, laboratory testing of serum thyroid-stimulating hormone (TSH), free thyroxine (FT4), prolactin, and estrogen levels and ultrasonographic examination of the thyroid gland and mammary glands using standardized diagnostic protocols. Statistical processing was performed using conventional analytical methods. Quantitative data were expressed as mean \pm standard deviation. Correlation analysis was conducted to assess the relationship between thyroid disease duration and mammary gland changes. Differences were considered statistically significant at $p < 0.05$.

Results. Mammary gland changes were identified in 63.3% of women with thyroid disorders, which was significantly higher than in the control group (23.3%). In the first group (hypothyroidism), fibrocystic breast changes were detected in 46.7% of patients.

These changes were frequently accompanied by mastalgia, breast tension, and occasional nipple discharge. Elevated prolactin levels were observed in 40% of women in this group, suggesting a pathogenetic link between hypothyroidism and proliferative breast changes. In the second group (hyperthyroidism), diffuse structural changes of the mammary glands and increased tissue vascularization were predominant findings. Patients often reported breast discomfort without distinct nodular formations. A moderate positive correlation was found between the duration of thyroid disease and the severity of mammary gland changes, indicating that prolonged thyroid dysfunction increases the risk of breast pathology.

Changes in the mammary glands in women with thyroid disorders

Group	Number of Patients	Breast Changes (%)
Hypothyroidism	30	63.3
Hyperthyroidism	30	60.0
Control	30	23.3

Discussion. The findings of this study confirm the significant influence of thyroid disorders on mammary gland morphology and function. The high prevalence of fibrocystic changes in hypothyroid patients may be explained by chronic hyperprolactinemia and estrogen dominance. In hyperthyroidism, increased metabolic activity and enhanced estrogen sensitivity appear to play a key role in diffuse breast tissue alterations. These results are consistent with previously published data [3–6] and emphasize the importance of routine breast evaluation in women with thyroid diseases. Early detection of breast changes may prevent progression to more severe pathological conditions.

Conclusions. Thyroid disorders significantly affect the structural and functional state of the mammary glands in women. Hypothyroidism is predominantly associated with fibrocystic breast changes, whereas hyperthyroidism leads to diffuse morphological alterations. Comprehensive examination and timely treatment of thyroid dysfunction at specialized endocrine centers, such as the Khorezm branch of the Republican Specialized Scientific and Practical Medical Center of Endocrinology, are essential for reducing the risk of breast pathology. A multidisciplinary approach involving endocrinologists and gynecologists is strongly recommended.

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