International Journal of Endorsing
HEALTH SCIENCE RESEARCH

IJEHSR

Short Communication

Frequency of hypothyroidism in patients with benign breast diseases.

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Doi: 10.29052/IJEHSR.v12.i2.2024.65-68
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Received 02/12/2023
Accepted 25/02/2024
First Published 16/03/2024

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Abstract

Background: Non-malignant breast pathologies are a common reason for female patients to seek medical attention in surgical outpatient departments globally. Hormonal factors, particularly hypothyroidism, have been frequently implicated in these pathologies. This study aimed to assess the frequency of hypothyroidism in patients with benign mammary disorders.

Methodology: A prospective observational study was conducted at Hamdard University Hospital's Surgical OPD from October 2022 to September 2023. Data were collected from female patients presenting with symptoms of benign breast diseases, excluding those with a history of hypothyroidism. Screening for hypothyroidism was performed through serum thyroid stimulating hormone (TSH) assessment. Clinical data, TSH levels, and patient demographics were recorded. The relationship between benign breast disease (BBD) symptoms and hypothyroidism was analyzed.

Results: The average age of the subjects was 32 ± 10 years. Mastalgia was the most commonly reported complaint among patients with BBD (56.2%, n=109), followed by breast lump (23.2%, n=45) and nipple discharge (20.6%, n=40). The overall frequency of hypothyroidism was 30.4% (n=59). Hypothyroidism was more prevalent in patients with nipple discharge (35%, n=14) compared to mastalgia (32.1%, n=35) and breast lump (22.2%, n=10) (p=0.373). It was also more common in the 18-25 age group (39%, p=0.122). Eighty-two percent of patients did not exhibit symptoms of hypothyroidism. Among symptomatic patients, 18% experienced both weight gain and constipation, with a mean serum TSH level of 5.6 ± 3.9 mIU/L in this subgroup (p=<0.001). Hypothyroid patients had higher average TSH levels in the mastalgia group (7.5 mIU/L) compared to the breast lump (6.6 mIU/L) and nipple discharge (5.5 mIU/L) groups (p≤0.001).

Conclusion: Screening for serum TSH levels should be considered in patients presenting with symptoms of BBD due to the high frequency of hypothyroidism in this population. Assessing thyroid function may aid in the management of women with benign breast symptoms.

Keywords

Benign Breast Disease, Hypothyroidism, Fibroadenoma, Thyroid Stimulating Hormone, Nipple Discharge

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Introduction

Women frequently present in surgical outpatient departments (OPDs) of hospitals with various breast-associated symptoms, ranging from simple breast pain to the presence of lumps and variable nipple discharge. In recent years, there has been a notable increase in the number of patients seeking medical attention for breast-related concerns, largely attributed to heightened awareness of breast cancer[1, 2]. While studies have explored the association between malignant breast disease and hypothyroidism, less attention has been given to its relationship with benign breast pathologies[2].

Breast development is intricately influenced by hormonal factors. The proliferation of breast cells and subsequent growth are regulated by a complex interplay of steroid hormones, predominantly estrogen and progesterone, as well as the influence of insulin and thyroid hormones. Additionally, growth factors play a significant role in mammary gland development. The actions of sodium iodide symporter (NIS) in mammary glands have been studied extensively, with data indicating that epithelial surfaces within the breast are involved in iodine dynamics at various developmental stages, potentially due to their relationship with the thyroid hormone status of individuals[3]. Benign breast conditions constitute a significant portion of breast pathologies among women of reproductive age worldwide, with reported frequencies ranging from 16% to 50%. Despite extensive research, the etiology of benign breast disorders remains elusive. Multiple endocrine and non-endocrine factors contribute to the development of non-malignant breast pathologies, with thyroid imbalances emerging as a key player[4]. Although the association between hypothyroidism and benign breast disease (BBD) is frequently encountered, it remains a topic of ongoing debate.

The objective of this study was to investigate and evaluate the prevalence of hypothyroidism among individuals diagnosed with BBD, aiming to shed light on the coexistence of these two variable yet treatable pathologies.

Methodology

A prospective observational research study was conducted at Hamdard University Hospital's surgical outpatient department over a one-year period, from October 2022 to September 2023. The study focused on 194 female patients presenting with symptoms of benign breast diseases such as mastalgia, breast lump, and nipple discharge, with no indication for surgery. Inclusion criteria comprised women aged 18 to 60 years, while post-menopausal, pregnant, and previously thyroxine-replaced patients, as well as those with malignancies, were excluded. None of the enrolled patients had their serum thyrotropin (TSH) levels assessed previously. The study protocol was approved by the departmental ethical review board, and informed consent was obtained from all participants. Data were collected using a predetermined proforma.

All patients underwent a comprehensive assessment involving a history-taking session and breast and thyroid examinations. Common symptoms of hypothyroidism, such as weight gain, cold intolerance, constipation, somnolence, and irregular menstruation, were documented for each patient. Serum TSH levels were measured for all participants, with the normal range defined as 0.3-4.0 mIU/L in our laboratory. Patients with serum TSH levels exceeding 4.0 mIU/L were classified as hypothyroid.

The association between hypothyroidism and benign breast disease was investigated among the identified patients. Data analysis was performed using SPSS software version 23. Descriptive statistics were computed for all variables, with continuous variables presented as mean ± standard deviation and categorical variables as frequency and percentages. The Chi-square test was employed for categorical variables, while the independent sample T test was used for continuous variables.

Patients were stratified into three age groups: 18 to 25 years, 26 to 40 years, and 41 to 60 years. The association between TSH levels and age categories was examined using the independent sample t test.

A statistically significant result was defined as a p-value<0.05.

Results

The mean age of the women enrolled in this study was 32 ± 10 years. Among patients with benign breast disease (BBD), mastalgia was the most prevalent symptom, affecting 56.2% (n=109) of participants, followed by breast lump in 23.2% (n=45) and nipple discharge in 20.6% (n=40). The majority of patients (44.8%) exhibiting symptoms of BBD fell within the 26-40 years age bracket (p=0.005). Hypothyroidism was more prevalent (39%) among individuals aged 18-25 years (p=0.122), with a mean serum thyroid-stimulating hormone (TSH) level of 4.2 mIU/L (p=0.092).

The overall incidence of hypothyroidism was 30.4% (n=59). Notably, hypothyroidism was more frequently observed in patients presenting with nipple discharge (35%, n=14) compared to mastalgia (32.1%, n=35) and breast lump (22.2%, n=10), although this difference was not statistically significant (p=0.373).

Eighty-two percent of patients did not manifest any symptoms of hypothyroidism. Among the symptomatic subgroup, 18% reported both weight gain and constipation, with a mean serum TSH level of 5.6 ± 3.9 mIU/L in this cohort (p≤0.001). The average serum TSH level among hypothyroid patients was higher in the mastalgia group (7.5 mIU/L) compared to the breast lump (6.6 mIU/L) and nipple discharge (5.5 mIU/L) groups (p≤0.001).

Table 1: Categories of benign breast diseases and frequency of hypothyroidism.

Parameter		N(%)
Clinical categories of BBD	Mastalgia	109(56.2)
	Breast Lump	45(23.2)
	Nipple Discharge	40(20.6)
Frequency of Hypothyroidism	Mastalgia	35(32.1)
	Breast Lump	10(22.2)
	Nipple Discharge	14(35)

BBD-benign breast diseases

Discussion

Our study underscores a significant aspect of benign breast disease presentation, highlighting the impact of hormonal imbalances, particularly thyroid hormones, on breast pathology. While estrogen has traditionally been the focus of hormonal studies in breast diseases, our research elucidates the clinical implications of thyroid hormones in benign breast problems, extending even to breast carcinoma. This finding is consistent with previous observations by Humphry et al., who reported a tenfold increase in thyroid disease prevalence among patients with malignant breast disease[5]. However, our study specifically examines the relationship between thyroid hormonal imbalances and benign breast diseases.

We observed a considerable frequency of hypothyroidism (30.4%) among our cohort of 194 patients, aligning with findings from similar studies. For instance, a case-control study conducted at the Pondicherry Institute of Medical Sciences found thyroid dysfunction in 62.5% of subjects with breast lesions, with hypothyroidism being the predominant thyroid disorder[6]. Similarly, Faruq's prospective observational study revealed a 14.9% prevalence of thyroid dysfunction among 208 women with benign breast pathologies[2].

Alipour et al.'s case-control study in Tehran also corroborates our findings, demonstrating an association between hypothyroidism and benign breast diseases, although the prevalence was slightly lower in the control group (5.3%) compared to the case group (5.8%)[1]. It is noteworthy that

autoimmune disorders, including Hashimoto's thyroiditis, were more common in the control group, emphasizing their stronger association with malignant breast diseases[7,8].

Furthermore, studies by Giustarini et al. and Dobrinjaet al. have highlighted the significant relationship between breast cancer and thyroid autoimmunity, further supporting the interplay between thyroid function and breast pathology[9,10].

Our study also echoes findings from Bhargav et al., where 23.2% of women with benign breast diseases exhibited increased TSH levels, with nipple discharge being the most common presenting symptom12. This aligns with our observation that nipple discharge was a frequent symptom in our study cohort compared to other breast symptoms.

Notably, a prospective study assessing the spectrum of benign breast diseases among women found a 30% prevalence of hypothyroidism among 340 females with breast symptoms, with a higher prevalence observed in older age groups, particularly those presenting with nipple discharge. Importantly, this study also noted symptom improvement following thyroxine replacement therapy, a finding consistent with our observations[3, 11].

Conclusion

In conclusion, our findings suggest that all female patients presenting with benign breast symptoms should be evaluated for increased TSH levels, as this may significantly impact symptom resolution in the majority of affected individuals.

Conflicts of Interest

The authors declare no conflicts of interest.

Acknowledgement

The authors gratefully acknowledge the support and encouragement of the head of the Department of Surgery at our institute in facilitating this research.

Funding

This research received no external funding.

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