

Original Article: Evaluation of underlying thyroid disease in patients with thyroid papillary carcinoma candidate for thyroidectomy

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ABSTRACT

Introduction: Due to the different results of different studies by researchers in different countries and the minimal research done in Iran, the need for this research was felt, and we decided to study this issue. The purpose of this study was to investigate the underlying diseases. The thyroid is a candidate for thyroidectomy in people with PTC.

Material and Methods: This descriptive cross-sectional study was performed with the participation of 99 patients undergoing thyroidectomy from 2010 to 2020 at Tabriz University of Medical Sciences. Patients' pathology results were evaluated, and comorbidities were extracted for each patient.

Results: Follicular variant includes 5 cases and classic variant. All 5 follicular variants were women. In the studied samples, 35 cases were associated with lymphatic involvement and 64 cases were without lymphatic involvement. In the studied samples, 50 cases had Hashimoto's underlying disease, and 49 cases had multinodular goiter underlying disease.

Conclusion: Due to the high prevalence of Hashimoto's underlying disease in patients with papillary thyroid carcinoma, which has been proven in this study and other studies, as well as the higher prevalence of lymphatic involvement in the cases associated with these two diseases in this study.

Introduction

The transformation of normal, benign tissue into a malignancy is a complex process influenced by various factors,

including environmental stimuli, loss of tumor suppressor genes, and chronic inflammation. Chronic inflammation triggers an immune response, followed by damage to stromal cells, abnormal cell proliferation, and eventually

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malignancy [1]. H_2O_2 is a critical substance in the production of thyroid hormones that causes a load of oxidative substances in the thyroid gland, which in the long run causes the formation of malignancy. The amount of oxidants in the serum of people with thyroid carcinoma is higher than normal people. Also, the amount of antioxidants in the serum of people with thyroid carcinoma is less than normal people [2]. PTC disease is not life-threatening, and patients usually have an excellent prognosis after surgery. Factors that worsen the prognosis in PTC include age over 45 years, extrathyroid expansion, and distant metastasis [3]. Lymph node involvement has nothing to do with survival. Recurrence of papillary carcinoma is more common in people under 20 and older than 59 years of age. However, the resulting mortality rate is more common in people over 40 years. Factors that increase the risk of recurrence include male gender, extra-thyroid enlargement, and lymph node involvement [4, 5]. Various endogenous and exogenous cases are involved in the development of papillary thyroid carcinoma. Exogenous cases include radiotherapy, an iodine-rich diet, a Western lifestyle, and nitrates [6]. Endogenous cases include Hashimoto's thyroiditis, high TSH levels, and obesity. Due to the dissimilar results of various studies by researchers in different countries, and the very minimal research conducted in Iran, the need for this research was felt, and we decided to study this issue. The purpose of this study was to investigate the underlying diseases. Thyroid is a candidate for thyroidectomy in people with PTC.

Material and Methods

This cross-sectional descriptive study was performed at Tabriz University of Medical Sciences. All samples of total thyroidectomy from 2010 to 2020 were extracted from the pathology archive of the Imam Reza Educational and Medical Center. PTC samples were included in the study. Inclusion criteria: The sample of all patients who underwent total thyroidectomy between 2010 and 2020 was diagnosed with PTC. The sampling method was census.

The data collection tool was a two-part checklist. The first part included demographic information, including age and sex. The second part included histopathological findings such as PTC variant, presence of underlying disease (Hashimoto's thyroiditis and multinodular goiter), and conflict. The lymph nodes were regional. All cases reviewed by two researchers in the present study were carefully evaluated to provide complete information.

All data were entered into SPSS statistical software after confirmed by both researchers. Descriptive statistics were used to display the data. Non-parametric statistical tests were utilized to compare the results of the obtained data.

This study was carried out with the approval of the ethics committee of Tabriz University of Medical Sciences (NO: [IR.TBZMED.REC.1399.1062](#)) and obtaining informed consent from all participants.

Results

In terms of age, the mean age of all patients was 40.25 ± 9.6 years. Regarding gender segregation, the mean age of men was 44.63 ± 11.4 , and the mean age of women was 39.21 ± 8.3 . The age range of patients was from 18 to 76 years. Regarding age, 69 patients were less than 45 years old, of which 11 were men and 58 were women. In other words, 89.57% of men and 5.72% of women were less than 45 years old. Regarding gender, 19 cases (19.19%) were men and 80 (80.81%) were women.

Follicular variant includes 5 cases (05.5%) and classic variant (94.95.94%). All 5 follicular variants were women. In the studied samples, 35 cases (35.35%) were associated with lymphatic involvement and 64 cases (65.64%) were without lymphatic involvement. In the studied samples, 50 cases (50.50%) had Hashimoto's underlying disease, and 49 cases (49.50%) had multinodular goiter underlying disease.

Discussion

Important findings in our study were the association of Hashimoto's underlying disease in 50 cases (50.50%) of people with PTC and the

association of 35.35% of regional lymphatic involvement, in which most patients (80%) were women. In the studies related to the mean age of patients with PTC in the study of Liang, Moradas, Babylon, and Kim *et al.*, 45, 46, 47, and 46 years, respectively, were reported that according to the average of 40.25 years in our study, the average age of patients was less. In this study, 80.81% of the patients were women, and 19.19% were men. The majority of patients in the Dangbin study were much higher than in our study (94%). Epidemiology is significantly higher in women compared with men worldwide, which was also the case in our study.

Studies on different types of PTC variants were less than on other variables. However, in this study, 94.95% of patients had classical variants, and the rest had follicular variants. It is consistent with patients having classic variants. In general, the study of PTC variants was very limited in various articles. Regarding the statistical studies conducted in various sources, the prevalence of classical variants is about 90%, which is consistent with our study [1, 7].

The rate of lymphatic involvement in the group of patients with PTC in Liang, Babylonian, and Kim studies were 35, 38 and 35%, respectively, compared with the rate of lymphatic involvement in 35.35% in this study are consistent with the findings of the study. Patients have been found to indicate differences between this study and our study. In epidemiological studies, the rate of lymphatic involvement in people with PTC is close to that of our study. It was also found that the study of lymph nodes in the study of dangbin has been limited due to the low luck of patients, which is also mentioned in the limitations of the study of dangbin [8, 9].

In this study, 50.50% of patients with Hashimoto's underlying disease had 78% of the population in combination with these two diseases. In Liang's study, the association between these two diseases was 26%, which was less than this study [10]. Also, in the association of two diseases, 92% of the population were women, according to the statistics of 78% in this study. There were two more diseases in Liang study. In Liang study, the

majority of the population that was not associated with Hashimoto's women was 62%, which was less than our study (83.68%). In the study of Liang *et al.* PTC that did not have Hashimoto was more common in the two diseases than 36% vs. 31% in the Liang study and also 35% vs. 64% in the Babylonian study that was higher (48% vs. 22%).

In various studies conducted in different parts of the world, the association rate between Hashimoto and PTC has been stated to be about 10% to 70%. The two diseases increase, so it can be concluded that the reason for the more significant association between Hashimoto and PTC in our study is the weaker diagnostic and therapeutic measures of Hashimoto in our country than in other countries [11, 12].

Conclusion

Due to the high prevalence of Hashimoto's underlying disease in patients with papillary thyroid carcinoma, which has been proven in this study and other studies, as well as the higher prevalence of lymphatic involvement in the cases associated with these two diseases in this study.

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