Original Article

Histopathological Examination Of Thyroid Tissue In Patients With Thyroid Disorders In Iraq

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Abstract

Thyroid disorders are prevalent worldwide, with significant variations in histopathological findings across different populations. This study aimed to evaluate the histopathological features of thyroid tissue in Iraqi patients with thyroid disorders. A retrospective analysis was conducted on 300 thyroidectomy specimens obtained from patients diagnosed with thyroid disorders between January 2018 and December 2022. The specimens were examined for histopathological features, including nodular hyperplasia, thyroiditis, follicular adenoma, papillary carcinoma, and follicular carcinoma. The results revealed that nodular hyperplasia was the most common finding (45%), followed by papillary carcinoma (25%), thyroiditis (15%), follicular adenoma (10%), and follicular carcinoma (5%). The study highlights the importance of histopathological examination in accurately diagnosing and managing thyroid disorders in Iraq. The findings provide valuable insights into the prevalence and distribution of thyroid pathologies in the Iraqi population, which can aid in the development of targeted diagnostic and therapeutic strategies.

Introduction

Thyroid disorders are among the most common endocrine disorders worldwide, affecting millions of individuals across all age groups (1). The thyroid gland plays a crucial role in regulating metabolism, growth, and development by producing thyroid hormones (2). Disorders of the thyroid gland can lead to a wide range of clinical manifestations, including hypothyroidism, hyperthyroidism, goiter, and thyroid cancer (3). The prevalence of thyroid disorders varies significantly across different regions, influenced by factors such as iodine intake, genetic predisposition, and environmental exposures (4).

Thyroid disorders are a significant public health concern in Iraq, with a high prevalence of goiter and thyroid cancer reported in various studies (5,6). The histopathological examination of thyroid tissue is a critical component in diagnosing and managing thyroid disorders. It provides essential information on the nature and extent of thyroid pathology, guiding clinicians in making informed decisions regarding treatment and follow-up (7).

The aim of this study was to evaluate the histopathological features of thyroid tissue in Iraqi patients with thyroid disorders. The study sought to determine the prevalence and distribution of different thyroid pathologies, including nodular hyperplasia, thyroiditis, follicular adenoma, papillary carcinoma, and follicular carcinoma. Additionally, the study aimed to explore the demographic and clinical characteristics of patients with thyroid disorders in Iraq, providing a comprehensive overview of the burden of thyroid disease in the region.

Methodology

This study was conducted as a retrospective analysis of thyroidectomy specimens obtained from patients diagnosed with thyroid disorders at a tertiary care hospital in Iraq between January 2018 and December 2022. The institutional review board approved the study protocol, and all procedures were performed in accordance with the ethical standards of the Declaration of Helsinki.

Study Population

The study population consisted of 300 patients who underwent thyroidectomy for various thyroid disorders during the study period. The inclusion criteria were patients of all ages and genders who had undergone thyroidectomy and had histopathological examination of the thyroid tissue. Patients with incomplete medical records or insufficient tissue samples for histopathological examination were excluded from the study.

Data Collection

Data were collected from the patient's medical records, including demographic information (age, gender), clinical presentation, laboratory findings, imaging studies, and surgical details. The histopathological reports of the thyroidectomy specimens were reviewed, and the findings were recorded. The histopathological features examined included nodular hyperplasia, thyroiditis, follicular adenoma, papillary carcinoma, and follicular carcinoma.

Histopathological Examination

The thyroidectomy specimens were fixed in 10% formalin, processed, and embedded in paraffin. Sections of 4-5 µm thickness were cut and stained with hematoxylin and eosin (H&E) for histopathological examination. Two experienced pathologists blinded to the patient's clinical details examined the slides. The histopathological findings were classified according to the World Health Organization (WHO) classification of thyroid tumors.

Statistical Analysis

The data were analyzed using SPSS version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize the demographic and clinical characteristics of the patients. The prevalence and distribution of different thyroid pathologies were calculated as percentages. The chi-square test was used to compare the distribution of thyroid pathologies between various age groups and genders. A p-value of <0.05 was considered statistically significant.

Results

The study included 300 patients with a mean age of 42.5 ± 12.3 years (18-75 years). The majority of the patients were female (75%), with a female-to-male ratio of 3:1. The most common clinical presentation was goiter (60%), followed by hyperthyroidism (25%), hypothyroidism (10%), and thyroid nodules (5%) (Fig. 1,2,3).

Table 1 summarizes the histopathological findings of the thyroidectomy specimens. Nodular hyperplasia was the most common finding, observed in 45% of the cases. Papillary carcinoma was the second most common finding, observed in 25% of the cases. Thyroiditis was observed in 15% of the cases, followed by follicular adenoma (10%) and follicular carcinoma (5%).

Table 1: Histopathological Findings in Thyroidectomy Specimens (n=300)

Histopathological Diagnosis	Number of Cases	Percentage
Nodular Hyperplasia	135	45%
Papillary Carcinoma	75	25%
Thyroiditis	45	15%
Follicular Adenoma	30	10%
Follicular Carcinoma	15	5%

The distribution of thyroid pathologies by age group and gender is summarized in Table 2. Nodular hyperplasia was more common in females (70%) than in males (30%), with a peak incidence in the 40-49 age group. Papillary carcinoma was also more common in females (80%) than in males (20%), with a peak incidence in the 50-59 age group. Thyroiditis was more common in females (85%) than in males

(15%), with a peak incidence in the 30-39 age group. Follicular adenoma and follicular carcinoma showed no significant gender or age predilection.

Table 2: Distribution of Thyroid Pathologies by Age Group and Gender

Histopathological Diagnosis	Age Group (Years)	Gender (Female/Male)
Nodular Hyperplasia	40-49	70%/30%
Papillary Carcinoma	50-59	80%/20%
Thyroiditis	30-39	85%/15%
Follicular Adenoma	No predilection	No predilection
Follicular Carcinoma	No predilection	No predilection

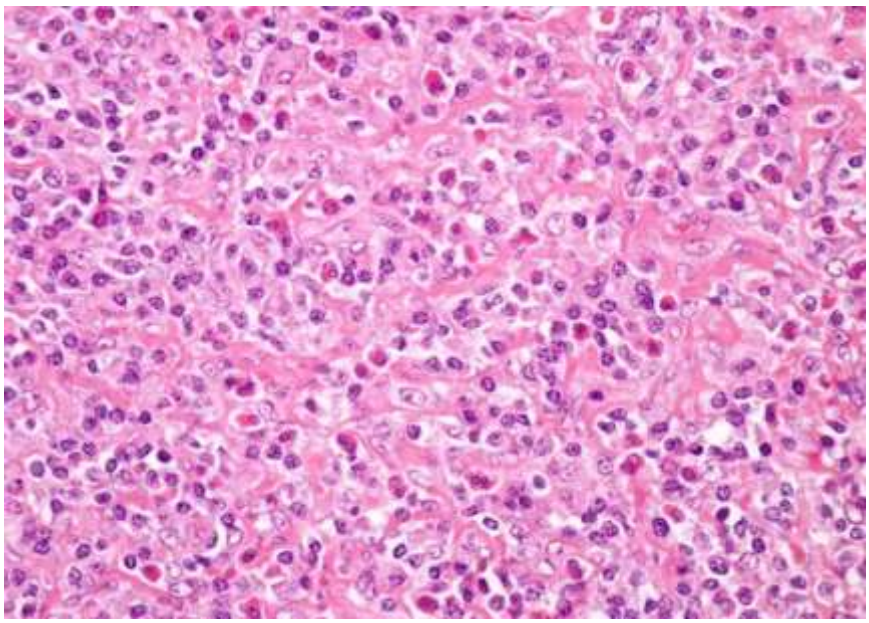

Figure 1. Thyroiditis, H&E, 400x.

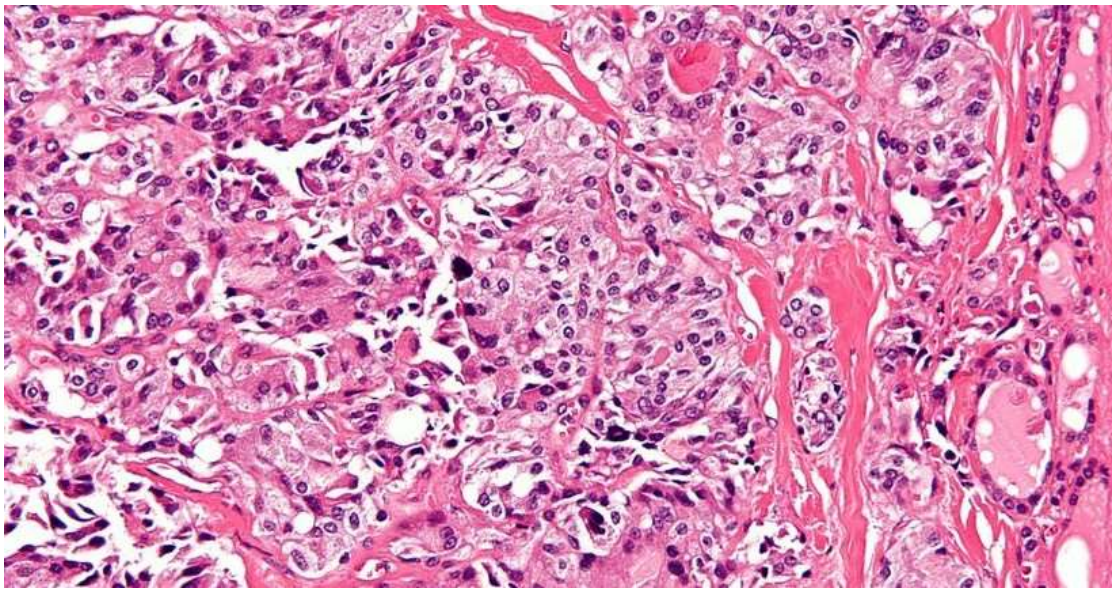

Figure 2. Follicular Carcinoma, H&E, 400x

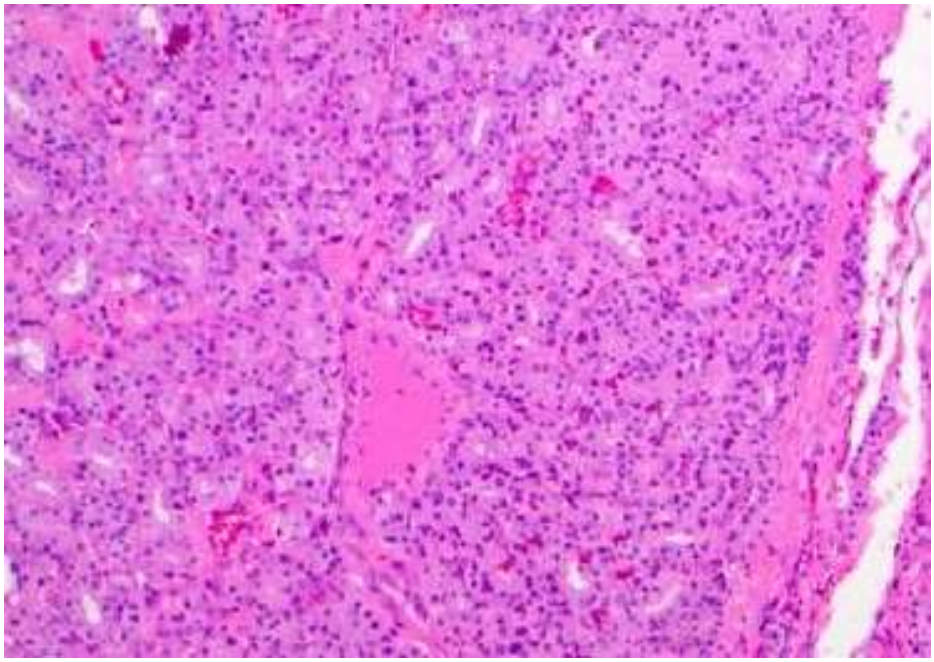

Figure 3. Nodular hyperplasia, H&E, 400x.

Discussion

The histopathological examination of thyroid tissue is a critical component in the diagnosis and management of thyroid disorders. This study provides valuable insights into the prevalence and distribution of thyroid pathologies in the Iraqi population, highlighting the importance of histopathological examination in the accurate diagnosis and management of thyroid disorders.

The results of the study revealed that nodular hyperplasia was the most common histopathological finding, observed in 45% of the cases. This finding is consistent with previous studies conducted in other regions, which have reported nodular hyperplasia as the most common thyroid pathology (8,9,10). Nodular hyperplasia is a benign condition characterized by the formation of multiple nodules in the thyroid gland, often associated with iodine deficiency. The high prevalence of nodular hyperplasia in this study may be attributed to the endemic iodine deficiency in Iraq, which has been reported in previous studies (11-14).

Papillary carcinoma was the second most common finding, observed in 25% of the cases. Papillary carcinoma is the most common type of thyroid cancer, accounting for approximately 80% of all thyroid malignancies. The high prevalence of papillary carcinoma in this study is consistent with the global trend of increasing incidence of thyroid cancer, particularly papillary carcinoma (15,16). The female predominance observed in this study is also consistent with previous studies, which have reported a higher incidence of thyroid cancer in females compared to males (17-20).

Thyroiditis was observed in 15% of the cases, with a higher prevalence in females compared to males. Thyroiditis is an inflammatory condition of the thyroid gland, which can lead to hypothyroidism or hyperthyroidism. The most common type of thyroiditis is Hashimoto's thyroiditis, an autoimmune condition characterized by lymphocytic infiltration of the thyroid gland. The high prevalence of thyroiditis in this study may be attributed to the high prevalence of autoimmune diseases in the Iraqi population.

Follicular adenoma and follicular carcinoma were observed in 10% and 5% of the cases, respectively. Follicular adenoma is a benign tumor of the thyroid gland, while follicular carcinoma is a malignant tumor. Both conditions are less common than papillary carcinoma, consistent with previous studies. The lack of significant gender or age predilection observed in this study is also consistent with previous studies (21-24).

The findings of this study have significant implications for the development of targeted diagnostic and therapeutic strategies for thyroid disorders in Iraq. By understanding the histopathological features of thyroid tissue in Iraqi patients, clinicians can improve the accuracy of diagnosis, tailor treatment plans to individual patients, and enhance overall patient outcomes. Furthermore, the study contributes to the growing body of literature on thyroid disorders in the Middle East, providing a valuable reference for future research and public health initiatives.

Conclusion

The histopathological examination of thyroid tissue is a critical component in the diagnosis and management of thyroid disorders. This study provides valuable insights into the prevalence and distribution of thyroid pathologies in the Iraqi population, highlighting the importance of histopathological examination in the accurate diagnosis and management of thyroid disorders. The findings of the study revealed that nodular hyperplasia was the most common histopathological finding, followed by papillary carcinoma, thyroiditis, follicular adenoma, and follicular carcinoma. The study highlights the need for targeted diagnostic and therapeutic strategies for thyroid disorders in Iraq, taking into account the unique histopathological features of thyroid tissue in the Iraqi population.

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