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Original article

Histopathological Spectrum of Thyroid Lesions: A Retrospective Analysis in Albieda Medical Center

El Sharif Khalil[1]*, Hanan Mohamed[2], Khadeejah Abraheem[2]

[1]*Department of Pathology, Omar Almukhtar University, Albieda, Libya*
[2]*Department of Histology, Omar Almukhtar University, Albieda, Libya*
Corresponding Email. *elsharif.khaalil@omu.edu.ly*

Abstract
Disorders of the thyroid gland are a major health issue worldwide and represent a common concern in clinical practice. The histopathological diagnosis of different thyroid pathologies is both challenging and essential, as the diagnoses range from non-neoplastic to neoplastic conditions. This study aims to evaluate the histopathological patterns of lesions in thyroidectomy specimens among the population in El-Beyda city/ Libya. Thyroidectomy specimens received in the histopathology laboratory were included in the study. A total of 62 thyroid samples were histopathologically examined. The majority were female, 48 (77.4%), and 14 (22.5%) were males, female to male ratio (3.4:1). The age of the patients ranged from 15 to 78 years, with a mean age of 40 years. The histopathological types of thyroid lesions were 49 (79.0%) non-neoplastic lesions, while the thyroid neoplastic disorders were 13 (21%), of which 8 (12.9%) were benign conditions, including adenoma (both follicular and Hurtle cell type), and 5 cases (8.1 %) were malignant neoplastic lesions. In conclusion, the most prevalent histological variant of thyroid lesion in our study is a non-neoplastic thyroid lesion, with multinodular goitre and Hashimoto's thyroiditis being the most frequent subtypes. In comparison, neoplastic thyroid disease, although it is less frequent, Follicular adenoma is the most common.
Keywords. Benign Thyroid Lesion, Thyroid Tumor, Thyroid Adenoma, Thyroid Carcinoma.

Introduction

Thyroid gland disorders are among the most prevalent endocrine diseases worldwide and represent a common concern in clinical practice. Goitre, which is defined as thyroid gland enlargement, is endemic in mountainous regions of the world [1]. The primary thyroid lesions, such as simple goitre (diffuse and nodular), thyroiditis, and neoplasms, are among the most frequently encountered conditions in clinical practice, particularly in areas with inadequate or low iodine intake [2]. They may present clinically as thyroid nodules, cysts, or diffuse thyroid enlargements, such as goitres.

Although most of such different pathological variants are benign, a small percentage can be malignant, highlighting the need for thorough evaluation [3]. Furthermore, the histopathological appearance of thyroid tissue varies greatly depending on the condition. While normal thyroid tissue consists of follicles filled with colloid and lined by cuboidal or columnar cells, benign conditions such as colloid goitre reveal enlarged, colloid-filled follicles, and autoimmune diseases like Hashimoto's thyroiditis exhibit lymphocytic infiltration and atrophic follicles [4]. In contrast, malignant neoplasms such as papillary and follicular carcinoma have distinct nuclear and architectural features, while anaplastic carcinoma shows high pleomorphism and aggressive behaviour. Understanding these patterns helps in diagnosing thyroid conditions and differentiating between benign and malignant lesions [5].

The histopathological diagnosis of different thyroid pathologies is both challenging and essential, as the diagnoses range from non-neoplastic to neoplastic conditions. This study aims to evaluate the histopathological spectrum of lesions in thyroidectomy specimens among the population in El-Beyda city/ Libya.

Methods

This is a retrospective cross-sectional study carried out in the Department of Histopathology at El-Beyda Medical Centre, Libya, between 2021 and 2024. A total of 62 thyroidectomy specimens received in the histopathology laboratory were included in the study.

In the current research, all the thyroidectomy and subtotal thyroidectomy specimens from any age and sex were included. For each case, the laboratory request sheet and a copy of the histological report were reviewed and categorized according to clinical information such as age, gender, and the histological findings of thyroid disease were obtained. Fine needle aspiration cytology (FNAC) specimens were excluded from the study. Statistical analysis was done using the SPSS software.

Results

A total of 62 thyroid samples were submitted during a 4-year-period to the department of Histopathology at El-Beyda Medical Centre. Most of the studied group was female, 48 (77.4%), and 14 (22.5%) were males, female to male ratio (3.4:1). The age of the patients ranged from 15 to 78 years, with a mean age of 40 years (Table 1).

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Table 1.Demographic Characteristics of the thyroid lesions

Variables	Values
Total cases, n (%)	62 (100%)
Mean age (years)	15 – 78 (40.3)
Gender	
Female, n (%)	48 (77.4%)
Male, n (%)	14 (22.5%)

When the cases were assessed according to the histopathological findings, of these 62 cases, 49 (79.0%) appear to be non-neoplastic lesions. These non-neoplastic conditions include multinodular goitre (MNG) 42 (67.7%) (both diffuse and nodular goitre), Hashimoto thyroiditis 5 (8.1%) and other non-neoplastic lesions include cyst and foreign body granuloma 2 (3.2%). On the other hand, the number of cases with thyroid neoplastic disorders was 13 (21%), of which 8 (12.9%) were benign conditions, including adenoma (both follicular and Hurthle cell type), and 5 cases (8.1 %) were malignant neoplastic lesions. The subtypes of malignant thyroid conditions identified in this study include papillary 4 (6.5%) and medullary carcinoma, one case (1.6%) (Figure 1).

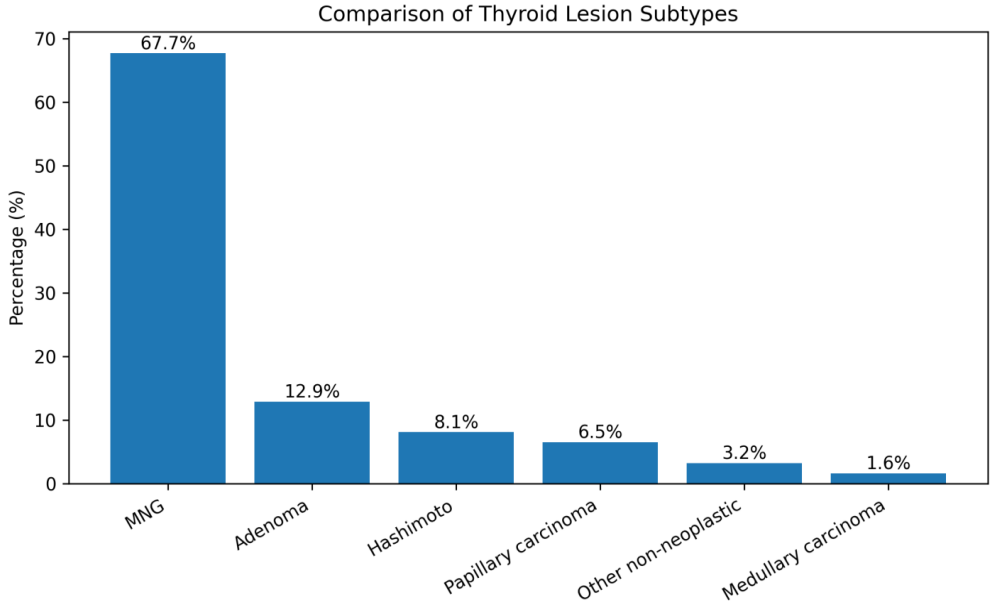

Figure 1. A Comparative analysis of histopathological thyroid patterns, illustrating the significantly higher prevalence of non-neoplastic Multinodular Goiter (MNG) relative to neoplastic subtypes

Discussion

Diseases of the thyroid gland are among the most common endocrine disorders affecting the general population [1]. Regarding gender distribution, female is more affected by thyroid diseases than males [6,7]. Histological findings of thyroid lesions include a wide spectrum ranging from non-neoplastic to neoplastic lesions [7]. The reported studies of benign and malignant cases in surgically treated thyroid diseases vary significantly across different regions of the world. The prevalence and patterns of thyroid disorders are affected by several factors, including sex, age, ethnicity, and geographical location [8].

The current study assesses the gender distribution of thyroid disorders among the participants. The overall male-to-female ratio of thyroid lesions was (3.4:1), indicating a significant gender-related variation in the prevalence of thyroid diseases. Our data is consistent with several other studies that have also proved a higher incidence of all thyroid disorders among females. A report by Burkan N et al. (2021) showed that females have a higher chance of developing thyroid nodules and goitre, which implied a possible association between female hormonal factors and thyroid disease occurrence [9]. Also, Poppe K. et al. (2021) stated that the prevalence of thyroid lesions, particularly goitres, is higher in females, attributed to the fluctuations in progesterone and oestrogen hormone levels [10]. All these findings support the sex variations reported in our study, as the majority of the overall thyroid lesions were observed in women.

In addition, the present study revealed that the most affected age group is 30 to 50 years, confirming that the middle-aged population is the most affected by thyroid diseases. This data is consistent with the results reported by Alyahya A et al (2021), who further documented that the highest prevalence of thyroid diseases manifested among the ages of 18 and 60 [11]. Furthermore, research conducted by Shimura H et al. (2021) highlights a notable rise in the identification of thyroid nodules and related conditions amongst populations under 45 years [12]. Recently, a study by Naz S. et al (2024) and Azab, A. (2025) concluded that a significant

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age-dependent discrepancy in thyroid diseases, revealing that the most affected individuals were aged 30 to 50 and 40–49, respectively [13,14].

Regarding the histopathological variants of thyroid lesions in this study, non-neoplastic thyroid diseases were found to be more prevalent than neoplastic conditions. For instance, multinodular goitre and Hashimoto 's thyroiditis appears to be the most frequent causes of thyroid enlargement. This data agrees with the observation published by Abdulla D. et al. (2012) [15]. The non-neoplastic thyroid diseases also tend to be more frequent in middle-aged women. The variation between neoplastic and non-neoplastic disease distribution amongst males and females in our study argues that gender is a crucial determinant in the type of thyroid pathology. These results align with existing data by Priyanka S. et al. (2023), who showed that female is more susceptible to non-neoplastic thyroid lesions [16]. These distinct distributional patterns potentially bear clinical implications in diagnosis and treatment approaches, requiring gender specific strategy in the management of thyroid disorders. In contrast, neoplastic lesions were much less common than non-neoplastic conditions in this retrospective study, with follicular adenomas being the most common benign neoplasm. Comparable patterns were reported by Ghartimagar D. et al. (2020), who pointed out that benign tumours, especially adenomas, were the most prevalent thyroid neoplastic disease [17].

Compared to inflammatory and benign lesions, thyroid cancer comprised a much smaller proportion. In our study, Papillary carcinoma was the most frequent malignant variant, next to it is medullary carcinoma. Comparable data was reported by Ariyibi and Duduyemi, that papillary carcinoma is the most common malignant thyroid lesion, although the rate was lower (41.8%), followed by follicular carcinoma (32.7%) [18,19]. Ijomone et al. showed a rate of 55% and 30% for papillary carcinoma and follicular carcinoma, respectively. Moreover, Bukhari and Sadiq in Pakistan have the same pattern with papillary carcinoma 90.2% and follicular carcinoma 2% [20]. Consistent with global trends, our data confirms the predominance of papillary carcinoma relative to other histological subtypes of thyroid cancer.

Conclusion

This study revealed that the most prevalent histological variant of thyroid disease in our study is a non-neoplastic thyroid lesion, with multinodular goitre and Hashimoto's thyroiditis being the most frequent subtypes. In comparison, neoplastic thyroid disease, although it is less frequent, Follicular adenoma is the most common, next to it papillary carcinoma.

Conflicts of Interest

There are no personal, financial, or professional conflicts of interest to declare.

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