Research

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Prevalence of Thyroid Carcinoma in Mogadishu, Somalia: A Five-Year Retrospective Study

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1. Abstract

1.1. Background: Thyroid cancer represents 1% of all human malignancies and is the most prevalent type of endocrine gland cancer. Thyroid cancer has become more widespread worldwide in recent years, with an immediate and steady increase in cases. The actual cause of the global rise in thyroid cancer cases is nevertheless unknown. The objective of this study was to evaluate the prevalence of thyroid cancer and assess the rate of thyroid cancer according to gender and age in Mogadishu, Somalia.

1.2. Methodology: A cross-sectional retrospective study was employed to review the medical records of 132 cases with histologically confirmed thyroid cancer diagnosed between January 2018 and January 2023, presenting to Mogadishu Somali Turkey Hospital, Veritus Clinics and Diagnostics, Sagal Pathology Center, and Hedmark Laboratories and Diagnostics in Mogadishu, Somalia. Investigated parameters include the age of the patients, gender group, and type of tumor. The data were entered into Statistical Package for Social Sciences (SPSS) version 26 for Windows and analyzed.

1.3. Results: 132 patients with thyroid cancer were diagnosed at four different hospitals and diagnostic centers in Mogadishu. Females constituted 86.3% (n = 114), and males constituted 13.6% (n = 18). The average age of diagnosis was 30-49. More than two-thirds were over the age of 40. In histopathological and cytological examinations, papillary thyroid carcinoma (PTC) accounted for 74.2% of the cases, and follicular thyroid carcinoma (FTC) accounted for 12.8%. Medullary thyroid carcinoma (MTC) and anaplastic thyroid carcinoma (ATC) were the least common, representing 3.7% and 9%, respectively.

1.4. Conclusion: Thyroid cancer was more common in females. The most common malignant thyroid cancer was papillary thyroid carcinoma (PTC). Unfortunately, there is no cancer registry in our country. Therefore, Somalia requires a national cancer registry to evaluate the prevalence nationwide.

2. Keywords: Thyroid, Cancer, Somalia, Retrospective Study

3. Introduction

The thyroid gland, which consists of two connected lobes, weighs between 20 and 30 g in adults and is one of the biggest endocrine glands in the body [1]. Histologically, the thyroid gland comprises two different types of parenchymal cells. The first cell type, follicular cells, functions as the lining of the colloid follicles, iodine concentration, and thyroid hormone production. These cells are responsible for developing anaplastic, papillary, and follicular thyroid cancers. The second cell type, known as the parafollicular cells (C cells), is the cell that produces calcitonin and gives rise to medullary thyroid carcinoma (MTC). The majority of endocrine malignancies are formed from thyroid follicular cells, which account for 0.4% of all cancer-related fatalities and nearly 1% of all malignant disorders [2]. Thyroid carcinomas are classified into four types: papillary thyroid carcinoma (PTC), follicular thyroid carcinoma (FTC), medullary thyroid carcinoma (MTC), and anaplastic (undifferentiated) thyroid carcinoma (ATC). The PTC and FTC thyroid carcinomas make up the vast majority of thyroid cancers, and it is hypothesized that these cancers eventually differentiate into fatal and highly aggressive ATC. MTC and ATC are rare carcinomas [2, 3]. Based on various histological types and specific prognostic factors, the prognosis and survival of patients with thyroid cancer vary significantly. Differentiated thyroid carcinomas have independent prognostic factors, including patient age at diagnosis, size of the lesion, extrathyroidal extension, and the presence of distant metastases [2]. Throughout the world, the incidence of thyroid cancer has rapidly and consistently increased

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in recent decades. It is yet unknown why thyroid cancer is on the rise globally. The cause is most probably multifactorial, such as increased exposure to radiation and environmental carcinogens [4]. In Somalia, there is limited knowledge of the prevalence of thyroid cancer due to the lack of a national cancer registry. Therefore, the objective of this study was to determine the prevalence of thyroid cancer and assess the rate of thyroid cancer according to gender and age in Mogadishu, Somalia.

4. Materials and Methods

4.1. Setting

The study was conducted at Mogadishu Somali Turkey Research and Training Hospital, Veritas Clinics and Diagnostics, Sagal Pathology Center, and Hedmark Laboratories and Diagnostics. Investigated parameters include the age of the patients, gender group, and type of tumor.

4.2. Study Design

A hospital and diagnostic centers-based cross-sectional study was conducted between January 2018 and January 2023. The study population included all patients confirmed for thyroid cancer.

4.3. Inclusion and Exclusion Criteria

The study included all patients admitted to the above-mentioned hospital and diagnostic centers with diagnosed thyroid carcinoma; all patients without thyroid carcinoma were excluded.

4.4. Data Analysis

The data were entered into Statistical Package for Social Sciences (SPSS) version 26 for Windows and analyzed. Descriptive statistics such as frequency, percentage, and median, were used to describe selected variables.

4.5. Ethical consideration

The ethical approval was taken from the Ethical Research Committee of the Mogadishu Somali Turkish Training and Research Hospital (Ref No: MSTH/10269). In addition, all study participants and the parents of participants under 18 years of age previously consented to use their medical and surgical data in this study. This study was carried out in accordance with the contents of the Helsinki Declaration.

5. Results

We studied a total of 132 confirmed thyroid cancer cases over 5 years (2018–2023). Females constituted 86.3% (n = 114), and males constituted 13.6% (n = 18) as indicated in Table 1. The majority of the study populations in the age range 30-49 constituted 51/132 (38.6%) patients, followed by age range 50-69 constituted 37/132 (28%) patients, followed by age ranges 10-29 represented 29/132 (21.9%), and 70-89 were represented the least group 14/132 (10.6%), as indicated in Table 1. However, most of the patients were diagnosed as having PTC, which represented 98/132 (74.2%), followed by FTC, which represented 17/132 (12.8%), followed by ATC, which was found at 12/132 (9%), and MTC, which was the least common tumor type, representing 5/132 (3.7%) as indicated in Table 1.

Variables	N/ (%)
Gender	
Female	114 (86.4%)
Male	18 (13.6%)
Age groups	
10-29	29 (21.9%)
30-49	51 (38.6%)
50-69	37 (28%)
70-89	14 (10.6%)
Type of Tumor	
Papillary TC	98 (74.2%)
Follicular TC	17 (12.8%)
Medullary TC	5 (3.7%)
Anaplastic TC	12 (9%)

Table 1: This table shows the demographic features and the type of thyroid carcinoma.

6. Discussion

The most common malignant endocrine tumor is thyroid cancer, which accounts for only 1% of all malignancies and often presents in a clinically euthyroid patient as a unilateral, painless thyroid nodule [5]. A total of 132 thyroid cancer cases were studied. We found that the most common age groups affected by thyroid carcinoma were 30-49 years old, as shown in Table 1. This finding is similar to the results found in the Republic of Yemen, where the most common age groups were 30–40 years old [6]. The female-to-male ratio was reported as 4.29:1, but in our study, it was 6.3:1, as shown in Table 1 [5]. Females are more likely than males to be affected by thyroid cancer, and women are three times more likely than men to get thyroid cancer worldwide [7, 8].

PTC is the most common form of thyroid cancer globally [7]. In this study, PTC was more common than the other variant of thyroid carcinoma, accounting for 74.2% of the cases, as shown in Table 1. This histopathologic distribution of thyroid cancer is comparable to that reported previously from Saudi Arabia [5]. This finding was also similar to a study published in the Republic of Yemen [9]. According to reports, PTC is the most frequent malignant thyroid tumor, occurring between 57% and 93% [5, 10]. We observed a female-to-male ratio of 7.2:1 in PTC. It is interesting to note that the prevalence of PTC varies throughout studies, accounting for 60% in Pakistan, 63.6% in France, 87% in Spain, and 100% in India [11]. Multifactorial factors contribute to the global increase in PTC [12]. Moreover, PTC has more aggressive multiple histologic variations [13].

FTC accounts for around 10% of all thyroid cancer cases with a good prognosis [14]. FTC was found to account for 12.8%, as shown in Table 1, as compared to reports from southwestern Saudi Arabia, where it occurred at only 4.3%. These findings do not match our results [11]. ATC is an uncommon and highly aggressive cancer that accounts for approximately 1% to 2% of all thyroid cancers with a poor prognosis [15, 16]. ATC was found in 9% of all

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thyroid patients, as shown in Table 1. A female-to-male ratio of 5:1 is observed in ATC. Our study is similar to a recent comprehensive study conducted in the United States that examined 5359 patients with ATC, of whom most were female [17, 18].

MTC is a rare neuroendocrine tumor that develops from the thyroid gland's parafollicular cells (C cells) and accounts for 1–2% of all thyroid cancer cases [19, 20]. According to the literature, MTC accounts for approximately 14% of all thyroid cancer-related deaths [21]. In our study, MTC was found to be the least common tumor type in 3.7% of all cases, as shown in Table 1, as compared to the United States, which accounted for approximately 4% of all thyroid cancers [22]. A 4:1 female-to-male ratio is observed in MTC cases in this study.

Total or subtotal thyroidectomy is the most common method of treatment for all types of thyroid cancer, with the exception of primary thyroid lymphoma. L-thyroxine is essential for papillary and follicular tumors, especially because it helps suppress TSH. In certain conditions, radioactive iodine may improve survival in patients with well-differentiated papillary and follicular cancers. L-thyroxine suppression, total or subtotal thyroidectomy, or referral to other hospitals were the treatments provided for our patients. The most common long-term side effects of surgery include recurrent laryngeal nerve palsy, hypothyroidism, and hypoparathyroidism. Since some patients were referred to other hospitals and others disappeared from follow-up, the follow-up of our patients was inconsistent [5].

7. Limitations

The limitations of our study are that we collected the data from four hospitals and centers in Mogadishu due to the small number of diagnostic centers in Mogadishu hospitals, which may not be representative. Our study was also limited to the prevalence of thyroid carcinoma and was not included in identifying risk factors for thyroid cancer.

8. Conclusion

Our study showed that all patients in Mogadishu, Somalia, with thyroid cancer were predominantly female, with an average age between 30 and 49 years. All patients diagnosed with thyroid cancer, 74.2% of whom had PTC, require total or subtotal thyroidectomy, which is the mainstay of treatment and follow-up. We recommend that studies be conducted in the future to identify thyroid cancer risk factors. Lastly, a national tumor registry is required to determine the incidence and prevalence of thyroid cancer across the country and implement a national healthcare plan to enhance diagnostic tools and treatment strategies for thyroid cancer patients.

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10. Author Contributions:

All authors made a significant contribution to the work reported, whether that was in the conception, study design, execution, acquisition of data, analysis, and interpretation, or in all these areas; took part in drafting, revising, or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has to be submitted; and agreed to be accountable for all aspects of the work.

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