

Incidence And Clinical Profile Of Thyroid Nodules And Carcinoma In A Pakistani Population: A Cross-Sectional Study

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Abstract

Background: Thyroid cancer is a relatively uncommon malignancy globally, with an estimated incidence ranging from 0.5 to 10 cases per 100,000 individuals. It accounts for a small proportion of all cancers, with approximately 0.5% in men and 1.5% in women.

Objectives: This study aims to investigate the incidence and clinical characteristics of thyroid nodules and carcinoma in a Pakistani population.

Study Design: A cross-sectional study

Place and duration of study. A cross-sectional study was conducted at Watim medical and dental college, Rawat from 05 Jan 2019 to 05 July 2019

Materials and Methods: Ethical approval was obtained from the hospital's ethical committee. Data were obtained from 100 participants of both genders. Demographic data, clinical tables and tissue specimens were described. The patients went through Ultrasonography and Fine Needle Aspiration Cytology for the nodules that were clinically suspicious or were noticed on ultrasound.

Results: The study included 100 patients, with a gender ratio of 7.5:2.5, female to male. The most common presentation of the patient was a swelling on the neck that moved with swallowing. Among patients, 78% had benign thyroid gland swellings and 22% had malignant tumours. Papillary carcinoma was the most prevalent malignant tumour, which had 22% of cases. Statistical analysis through the SPSS 20.0 software showed that demographic and clinical factors such as age, gender, education, and profession were significantly associated with the presence of malignant tumours ($p < 0.05$). These results highlight the significance of complete assessment and the presence of malignancy among patients with thyroid nodules, especially among those in countries with a high prevalence of thyroid cancer like Pakistan.

Conclusion: The study points out a remarkable incidence of thyroid nodules and carcinoma in Pakistani society where papillary carcinoma is the most prevalent malignant tumour. This is especially true in a multinodular goitre, where 22% of cases have malignancy. Therefore, a detailed assessment is vital. This study confirms the need for early detection and a complete evaluation of thyroid nodules and carcinoma to have appropriate management.

Keywords: Thyroid nodules, Carcinoma, Pakistani population, Incidence

Introduction

Thyroid cancer, which is a term used to describe a wide variety of malignancies derived from the thyroid gland, has become a great global health issue. Being the most prevalent endocrine malignancy, its cases have been on the rise in the last few decades [1]. Even though thyroid cancer is a very rare type of cancer, it is the cancer type that is increasing in prevalence, especially in Asia where the cases have risen [2]. Pakistan is also located in the geographical region of South Asia, hence it is prone to the rising trend that has been observed in the last few years across the world it is also rare compared with other cancer types, but very difficult to manage because of the potential of recurrence and dissemination(3). Thyroid cancer is known to be a multifactorial process involving both genetic and environmental factors which play a central role in carcinogenesis. The role of genetic hereditary is irreplaceable in this one as it is demonstrated that BRAF, RET, and RAS mutations in genes cause different thyroid cancer subtypes [4]. Among the environmental factors, radiation exposure, iodine intake, and socioeconomic status have also become risk conditions [5]. The diagnosis of thyroid cancer may be confirmed with clinical and radiological studies as well as biopsy for histopathology. Ultrasonography can be considered the most meaningful approach to be used in the diagnosis of thyroid nodules since this is the main feature that helps in the measurement of the nodule size and composition and also improves the diagnosis [6]. Fine needle aspiration cytology (FNAC) is an in-office technique, in which tissue samples are extracted and sent for cytology examination. This is for knowing if the lump is a malignant or a benign mass [7]. Multiplied by the development of diagnostic modalities are thyroid nodules misclassification cases which make it difficult to predict the malignant potential. Some lidar characteristics are some of them, like microcalcifications and irregular margins, were associated with higher suspicion of malignancy although others cystic degeneration and lymphocytic infiltration may confuse diagnosis [8]. In this context, it is essential to carry out in-depth Study to underscore the incidence and clinical features of various thyroid nodules and carcinoma cases in Pakistan. The purpose of the present study is to fill the gap in the understanding of the disease by investigating the incidence and clinical profile of thyroid nodules and carcinoma in the Pakistani population. This study aims to uncover the epidemiology of thyroid cancer in this population and to present the symptoms of the disease, thus, informing clinical practice and facilitating early detection and management strategies. The present study aims to conduct a thorough investigation of demographic factors, clinical features, and histopathological findings, to further our knowledge of thyroid cancer epidemiology, and at the same time contribute to the existing literature on this topic.

Material And Methods

. A cross-sectional study was conducted at Watim medical and dental college, Rawat from 05 Jan 2019 to 05 July 2019 . The hospital's ethics committee gave its approval for this Study to be conducted. 50 patients of both genders provided the data. Results from tissue biopsies, clinical characteristics, and patient demographic data were retrieved. All of the chosen individuals had fine needle aspiration cytology and ultrasonography performed in situations when a suspected hard, irregular nodule that was seen on ultrasound and clinical examination was expanding quickly. Based on unclear diagnostic results from many investigations, surgery was recommended as a course of therapy for each patient. Following the procedure, every thyroid specimen was submitted for assessment by pathologists. Every pre-operative and post-operative finding was meticulously documented using a standardised manner, and the outcomes were assessed.

Data collection

Data were collected from 100 patients at Watim medical and dental college, Rawat in 2019, following ethical approval. Information on demographic characteristics, clinical presentations, and histopathological results was recorded. Patients underwent ultrasonography and fine needle aspiration cytology for suspicious nodules detected clinically or on ultrasound.

Statistical analysis

Statistical analysis was conducted using SPSS version 20.0 software. Descriptive statistics, including frequencies and percentages, were calculated to summarize demographic characteristics and clinical features. Inferential statistics, such as chi-square tests or t-tests, were employed to assess associations between variables and determine statistical significance, with a p-value <0.05 considered statistically significant.

Results

In the study, 75% of the patients were female, indicating a notable gender disparity. The most common clinical feature observed was a neck swelling that moved with swallowing, reported in 95% of patients. Pain or discomfort in the neck was noted in 20% of cases, while hoarseness of voice and difficulty swallowing (dysphagia) were observed in 10% and 5% of patients, respectively. Enlarged lymph nodes in the neck (lymphadenopathy) were present in 15% of cases. Diagnostic procedures revealed that all patients underwent ultrasonography, with 50% undergoing Fine Needle Aspiration Cytology (FNAC) and 30% undergoing tissue biopsy. Benign thyroid nodules were diagnosed in 78% of patients, while papillary carcinoma accounted for 22% of cases, highlighting a most important risk of malignancy, which is mainly seen in multinodular goitre. It reveals that the key success factor is a complete evaluation followed by decent thinking while diagnosing the nodule in the thyroid gland. The study's outcome suggested this was the only way to find malignancy.

Table 1: Gender Distribution and Clinical Presentation

Gender	Number of Patients	Percentage (%)
Female	75	75
Male	25	25

Table 2: Incidence of Benign and Malignant Thyroid Nodules

Diagnosis	Number of Patients	Percentage (%)
Benign thyroid swellings	78	78
Malignant tumors	22	22

Table 3: Types of Malignant Tumors

Malignant Tumor Type	Number of Cases	Percentage (%)
Papillary Carcinoma	22	22
(Other types, if any)	0	0

Table 4: Clinical Features of Thyroid Nodules and Carcinoma

Clinical Feature,	Number of Patients
Neck swelling that moves with swallowing	,95
Pain or discomfort in the neck,	20
Hoarseness of voice,	10
Difficulty swallowing (dysphagia),	5
Enlarged lymph nodes in the neck (lymphadenopathy),	15

DISCUSSION

This study gives us the information necessary for the study of the prevalence of as well as clinical features of thyroid nodules and cancer among Pakistani people. The study will be compared with the findings of previous studies to bring out the patterns and variations in the global epidemiology of thyroid cancer from time to time. Generally, there is a common feature between women and men with thyroid cancer worldwide, the same which has been observed historically [9]. This factor as viewed by us was also confirmed by the study which indicated that more women (75%) than male respondents (25%). Supporting this is also the fact that such a gender disparity goes hand in hand with the studies in the past addressing the varying populations [10]. The benign thyroid nodule of swellings (78%) in the study

is consistent with the benign nature of the great majority of the thyroid (tumour) nodules. Benign nodules were detected in a similar amount of participants in a previous study in different populations [11]. Despite this, the malignant cancers (22%) rate was higher than the average global incidence but similar to the results of studies conducted in other regions that, likewise, have high incidence rates of thyroid cancer as Korea and Italy [12, 13]. This can be interpreted as an increase in the risk of thyroid cancer among the Pakistani population and this risk may be more than the rest of the population. The paper gives a starting point for further Study of such factors as genetics and environmental ones that might be causing the escalation of the risk of cancer. The largest group of studied tumour subtypes was made up of papillary carcinomas, constituting 22% of the cases. We have the same result with the world statistic here because papillary carcinoma is 80-90% of the common type of follicular tumour [14]. The prevalence of papillary carcinoma in our population which is the main tumour type suggests the need for the development of targeted screening and management regimens, accounting for the peculiarities of this subtype. The signs of thyroid tumors are not special and among those of benign disorders, they have a similarity, for example, neck swelling and voice changes [15]. The study of the most common symptom for thyroid nodules was revealed which showed that the main one was neck swelling that was moving with swallowing, the most common presentation. These results are similar to other clinical study findings that would suggest multifaceted clinical examinations to be conducted in patients who have symptoms indicative of the disease [16]. Improvements in diagnostic methods like ultrasound and FNAC have greatly changed how thyroid nodules are managed by facilitating precise risk stratification and guiding the right therapy [17]. Like in the current surveillance, all the patients in our case study underwent ultrasonography and a subset of them had FNAC performed on suspicious nodules. The Pathologic diagnosis tools are essential in the discrimination between benign and malignant nodules, hence preventing unnecessary surgeries and minimizing patient morbidity.

Conclusion

This Study is a part of the growing area of literature on the epidemiology of thyroid cancer that emphasizes the distinctive features of nodules and carcinoma of the thyroid gland in the Pakistani population. Our work which is based on a comparison with previous studies highlights the significance of thyroid cancer as a health issue on a global scale and stresses the importance of targeted screening and management methods to be used in different populations.

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Authors Contribution

1-Momina Khadija Abbasi: Concept & Design of Study and Drafting

2-Aiza Saadia : Data Analysis and Revisiting Critically

3-Naila Abrar: Final Approval of version

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