Original Article

# Frequency of Malignancy in Goiter in Pakistan: A Review of 359 Thyroidectomics

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## ABSTRACT

**Objective:** To determine the frequency of malignancy in patients presenting with goiter undergoing for surgery.
**Study Design:** An observational study.
**Place and Duration of Study:** Surgical Department of Social Security Hospital Islamabad January 2002 to February 2011.
**Patients and Methods:** All patients more than 10 years of age underwent thyroidectomy were included in the study. Postoperatively histopathologies of specimens were evaluated in all patients.
**Results**: A total of 359 patients were operated and post operative histopathology specimens were reviewed. Eleven patients (3.06%) were having carcinoma. . Among all the thyroid carcinomas, papillary carcinoma was the commonest i.e. (45.45%, 5/11) followed by follicular carcinoma (27.27%, 3/11). Anaplastic carcinoma was seen in (18.18%, 2/11) and medullary carcinoma seen only in (9.09%, 1/11)
**Conclusion:** Thyroid carcinoma is not an uncommon condition. Frequency of papillary carcinoma is very high in females among all the thyroid carcinoma.
**Key words**: Goiter, Malignancy, Carcinoma Thyroid

## INTRODUCTION

Thyroid carcinoma represents the most frequent form of cancer of the endocrine glands. It may present either as a solitary nodule or as a dominant nodule in a multinodular goiter.[1] The incidence of malignancy varies from 0.9% to 13% in different parts of world.[2] In Pakistan, thyroid cancer is responsible for 1.0% cases of all malignant tumors.[3] There is a well recognized spectrum of pathological variants and their incidence and prognoses varies considerably. In differentiated carcinoma, papillary carcinoma spreads into lymph nodes, but follicular carcinoma spreads by blood stream. The growth is usually firm in consistency and it is common in younger age. Prognosis of differentiated carcinoma in low-risk cases is good, but in the presence of high risk conditions like age, more than 40 years in male and more than 50 years in female, distant metastasis, tumour larger than 5 cm in size, or capsular invasion prognosis is poor.[4]

In undifferentiated carcinoma medullary, anaplastic and lymphoma involved the lymph node and also spread by blood stream. Medullary thyroid carcinoma is associated with MEN type 2A and 2B. Anaplastic carcinoma is usually hard, irregular and infiltrating. It is an aggressive malignancy and prognosis is poor. This make-up the need for an early detection of carcinoma.[5]

Exposure to ionizing radiation, changing levels of iodine nutrition and increased pathologic diagnosis of clinically unimportant thyroid neoplasia have all been proposed as explanations for a world wide rise in the incidence of thyroid carcinoma over the past six decades.[6]

Goiter is common in the north-west areas of Pakistan.[3] The purpose of this study was to determine the frequency of malignancy in goiter among patients undergoing for thyroid surgery.

## PATIENTS AND METHODS

This observational study was carried out in the Surgical Department of Social Security Hospital Islamabad from January 2002 to February 2011. The Social Security Hospital Islamabad is a 300 bed, teaching hospital affliated with Islamabad Medical and Dental College, which provides health care to the workers and their families of upper Punjab industries who are residing in Northern and Central Punjab, Azad Kashmir and Khyberpukhtoonkha. Approval of the study was taken from the ethical committee of the institution. All patients of goiter reported for treatment were included in the study. Patients below age 10 years were not included in the study. Informed consent was taken from all the patients. Patients were admitted and detailed preoperative clinical, biochemical, histopathological and radiological evaluation was carried out. Patients were prepared for operation and all necessary routine investigations for thyroidectomy were carried out. After thyroid surgery all thyroid specimens were sent for histopathology. All preoperative, operative and post-operative findings were recorded in detail on a proforma. The results were evaluated and statistical analysis was done by using software EPI 6.

# RESULTS

A total of 359 patients were operated during the study period from January 2002 to February 2011. Majority patients were females (97.49%, 350/359) and males were only (2.51%. 9/359). Majority of the patients were from 5th (44.85%, 161/359) and 4th (31.40%, 92/359) decade of life. Histopathology of resected specimens revealed that 11/359 female patients (3.06%) were having malignancy. None of the male patients were having malignancy in our study. Among all the thyroid carcinomas, papillary carcinoma was the commonest i.e. (45.45%, 5/11) followed by follicular carcinoma (27.27%, 3/11). Anaplastic carcinoma was seen in (18.18%, 2/11) and medullary carcinoma seen only in (9.09%, 1/11) (Table-III). Papillary carcinoma was commonest in the age group 21-30 years and follicular carcinoma was more common in the age group 31-40 years i.e. (27.27 %, 3/11) in each group. The medullary and anaplastic carcinoma was seen in patients more than 50 years.

**Table No. I: Age and Sex Distribution of the Patient under study (n=359)**

| Age groups | Male | Female | Total |
|---|---|---|---|
| 11-20 | 1 | 3 | 4 (1.11%) |
| 21-30 | - | 19 | 19 (5.29%) |
| 31-40 | 3 | 89 | 92 (25.63%) |
| 41-50 | 3 | 158 | 161 (44.85%) |
| 51-60 | 2 | 73 | 75 (20.89%) |
| >60 | - | 8 | 8 (2.23%) |
| Total | 9 (2.51%) | 350 (97.49%) | |

**TABLE No. 2: Histopathology of Goiter N=359**

| Age Groups | Carcinoma | Thyroiditis | Colloid Goiter | **Total** |
|---|---|---|---|---|
| 11 - 20 | - | 1 | 3 | **4 (1.11%)** |
| 21 – 30 | 3 | 2 | 14 | **19 (5.29%)** |
| 31 – 40 | 3 | 1 | 88 | **92 (25.63%)** |
| 41 – 50 | 2 | 2 | 157 | **161 (44.85%)** |
| 51 – 60 | 2 | - | 73 | **75 (20.89%)** |
| >60 | 1 | - | 7 | **8 (2.23%)** |
| Total | 11 (3.06%) | 6 (1.68%) | 342 (95.26%) | **359** |

**Table No.3: Types of Carcinoma N=11**

| Age Groups | Differentiated | | | | **Total** |
|---|---|---|---|---|---|
| | Papillary | Follicular | Medullary | Anaplastic | |
| 11-20 | - | - | - | - | - |
| 21-30 | 3 | - | - | - | **3 (27.27%)** |
| 31-40 | 1 | 2 | - | - | **3 (27.27%)** |
| 41-50 | 1 | 1 | - | - | **2 (18.18%)** |
| 51-60 | - | - | 1 | 1 | **2 (18.18%)** |
| >60 | - | - | - | 1 | **1 (9.09%)** |
| **Total** | **5 (45.45%)** | **3 (27.27%)** | **1 (9.09%)** | **2 (18.18%)** | **11** |

# DISCUSSION

Thyroid carcinoma commonly presents as a lump in the neck which clinically may be solitary or multinodular. The other symptoms of carcinoma like hoarseness of voice, lymphadenopathy in the neck and distant metastasis are suggestive of advanced disease.[7] All solitary nodules should be viewed with suspicion for malignancy especially when it is of recent origin, firm, fixed, irregular in shape and increasing in size rapidly or when there is family history, history of neck irradiation, hoarseness of voice, accompanied with lymph adenopathy and development of rapidly enlarging nodule in very young (<15 years) or old (>65years) patient. Dominant nodule in a multinodular thyroid probably has the same cancer risk as truly solitary nodule.[8,9]

The incidence of malignancy in goiter has been found to vary from 3-17% in different parts of the world.[10,11,12] The literature review has shown that the incidence of malignant tumors in patients with solitary nodule does not differ much from those with multinodular goitre.[8,9] The incidence reported by Prades and his colleagues[13] in France is 12.2%, Benzarti et al[14] in Tunis found 9.5% and in another study[15] conducted at Sarajevo showed incidence of malignancy about 8% . In local studies done by Waseem Memon[16] and Haq et al,[17] the prevalence is 7.6% and 2.92% respectively. In our study the prevalence is 3.06%.

Thyroid carcinoma is more common in females and male to female ratio is 2.5:1.[17] In our study, all patients having carcinoma were females. Regarding the high incidence among females, it is suggested that some hormonal factors are involved in its pathogenesis.[17] Different studies suggests that recent pregnancy with in about 5 years, is a thyroid carcinoma risk.[18,19,20] Other suggested risk factors for thyroid carcinoma in women are exogenous estrogens, including oral contraceptives, lactation suppressant drugs, postmenopausal estrogen

therapy and fertility drugs.[17] Although positive associations between hormonal and reproductive factors and the incidence of thyroid carcinoma have been found in some studies, they are generally weak and not always consistent across studies.[20,21]

Majority of primary thyroid carcinoma are of the differentiated type and papillary thyroid carcinoma is the predominant histologic form in most parts of the world. This is more common in females younger than 40 years of age.[22] Radiation is considered as one of the major etiologic factor in papillary carcinoma especially in children exposed under the age of 5 years. The relationship between radiation and carcinoma thyroid was first described by Duffy and Fitzgerald in 1950.[23] This relationship was subsequently confirmed by many epidemiological studies. It is now clear from Chernobyl accident experience that incidence of carcinoma thyroid is increased from 0.5 per million to 95 per million.[24] In local studies the prevalence of papillary carcinomas vary between 33% to 65%. [3,16,17,22] In our study the frequency is 45.45% and it is more common in females younger than 30 years of age.

The second most common type is follicular thyroid carcinoma among differentiated carcinomas. Studies showed that incidence is high in geographic distribution associated with iodine deficiency goiter. Prevalence in Pakistan ranges from 20% to 33% in various studies. [3,16,17,22] In our study it is 27.27% and it is more common in females more than 30 years of age.

Undifferentiated carcinoma is more common in old age i.e. >50 years. Anaplastic carcinoma is more common having incidence of up to 15% as reported in various studies.[5,19] In our study the incidence is 18.18% followed by medullary carcinoma i.e. 9.09%. It is also found primarily in iodine deficient areas.[3,17]

# CONCLUSION

Thyroid carcinoma is not an uncommon condition. Histopathologies of all the thyroid specimen must be carried out to see the malignancy as frequency of papillary carcinoma is very high in females among all the thyroid carcinoma.

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