

PREVALENCE OF MALIGNANCY IN GOITRE—A REVIEW OF 718 THYROIDECTOMIES

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Background: Thyroid malignancies are a heterogeneous group of tumours which show considerable variability in biological behaviour, histological appearances and response to therapy. Thyroid cancer is uncommon and represents only 1% of all malignancies. Objective was to determine the prevalence of malignancy in patients presenting with goitre. This prospective, observational study was conducted at Department of Surgery, Fauji Foundation Hospital, Rawalpindi from January 1999 to December 2008. **Methods:** All patients requiring surgery for goitre were included in the study. Postoperatively histopathologies of specimens were evaluated in all patients. **Results:** 718 patients were operated and post operative histopathology specimens were reviewed. 2.92% of patients were found to have malignancy. Prevalence of papillary and follicular carcinoma was 33.33% each. Anaplastic carcinoma was found in 23.81% of patients followed by Hurthle cell carcinoma in 9.53% of patients. **Conclusion:** All postoperative thyroid specimens should be subjected to histopathology. Prevalence of follicular carcinoma and anaplastic carcinoma is relatively higher in our country due to high incidence of iodine deficiency goitre.

Keywords: Goitre, Malignancy, Prevalence, Carcinoma Thyroid

INTRODUCTION

Thyroid malignancies are a heterogeneous group of tumours which show considerable variability in biological behaviour, histological appearances and response to therapy. Thyroid cancer is uncommon and represents only 1% of all malignancies.^{1,2} Thyroid carcinomas are the most common endocrine tumour, occur with an incidence of 25 to 40 cases per million populations per year. Incidence ranges from 0.9% to 13% in different parts of world.^{1,3} There is a well recognized spectrum of pathological variants and their incidence and prognoses varies considerably. The incidence of thyroid Carcinoma is increasing in USA and some other parts of the world.⁴ Majority of thyroid carcinomas are well differentiated having follicular cell origin and includes papillary, follicular and Hurthle cell carcinoma. Medullary thyroid carcinoma accounts for about 6% of thyroid cancers of which 20%-30% are associated with MEN type 2A and 2B. Anaplastic carcinoma is an aggressive malignancy and is responsible for less than 1% of thyroid carcinoma.³

Goitre is common in the north-west areas of Pakistan. The exact incidence of malignancy in goitre is unknown in our country due to lack of nationwide data and study. The purpose of this study was to see the prevalence of malignancy among patients operated for goitre, and to observe age and sex distribution and to compare the data with national and international literature.

MATERIAL AND METHODS

This prospective, observational study was carried out in the Department of Surgery, Fauji Foundation Hospital, Rawalpindi from January 1999 to December 2008. Most of the patients belonged to Rawalpindi, Hazara

Division, Murree Hills, Northern and Central Punjab, and Azad Kashmir. All patients of goitre reporting to the surgical outpatients department were included in the study. Patients with already diagnosed thyroid malignancy and coming for follow up in OPD were excluded in the study. Patients requiring admission had detailed preoperative clinical, biochemical and histopathological evaluation done. After thyroid surgery all thyroid specimens were sent for histopathology. All pre-operative, operative and post-operative findings were recorded in detail. The results were evaluated and recorded in tabulated form.

RESULTS

A total of 718 patients were operated during the study period from January 1999 to December 2008. There was a female predominance (96.80%) and majority of the patients were from 4th (30.50%) and 5th (36.35%) decade of life. Males were commonly seen in 2nd (47.83%) and 4th (30.43%) decade of life (Table-1). Histopathology of resected specimens revealed that 21 female patients (2.92%) were having malignancy. Among them papillary and follicular carcinoma was the commonest, i.e., 33.33% each, and 23.81% patients were having anaplastic carcinoma (Table-2). None of the male patients were having malignancy in our study.

Table-1: Age and Sex Distribution of the Patients under study (n=718)

Age Groups	Male	Female	Total	
11-20	11	66	77	10.72%
21-30	-	69	69	9.61%
31-40	7	212	219	30.50%
41-50	3	258	261	36.35%
51-60	2	65	67	9.34%
>60	-	25	25	3.48%
Total	23 (3.20%)	695 (96.80%)	718	100.00

Table-2: Histopathology of goitre in present study (n=718)

Age Group	CARCINOMA				TOTAL	Thyroiditis	Colloid Goitre	Total
	Anaplastic	Papillary	Follicular	Hurthle cell				
11-20	–	1	–	–	1 (4.77%)	6 (33.34%)	70 (10.31%)	77 (10.72%)
21-30	–	3	–	–	3 (14.28%)	4 (22.22%)	62 (9.13%)	69 (9.61%)
31-40	–	2	5	–	7 (33.33%)	3 (16.67%)	209 (30.78%)	219 (30.50%)
41-50	–	1	2	–	3 (14.28%)	5 (27.77%)	253 (37.26%)	261 (36.35%)
51-60	1	–	–	–	1 (4.77%)	–	66 (9.72%)	67 (9.34%)
>60	4	–	–	2	6 (28.57%)	–	19 (2.79%)	25 (3.48%)
Total	5 (0.69%)	7 (0.97%)	7 (0.97%)	2 (0.27%)	21 (2.94%)	18 (2.50%)	679 (94.56%)	718

DISCUSSION

Thyroid carcinoma is the leading cause of death among endocrine cancers after carcinoma of the ovary.^{3,5} Thyroid carcinoma usually presents as a lump in neck which clinically may be solitary or Multinodular. All solitary nodules should be viewed with suspicion for malignancy. Dominant nodules in a multinodular goitre probably have the same cancer risk as truly solitary nodule. A thyroid nodule should be viewed with suspicion if it is of recent origin, firm, fixed, irregular in shape and increasing in size rapidly. More over patients with family history, or history of neck irradiation, hoarseness of voice, accompanied with lymph adenopathy and development of rapidly enlarging nodule in very young (<15 yrs) or old (>65 yrs) patient should also be viewed with suspicion.¹ Incidence of malignancy in thyroid nodules is about 10%.^{2,6} Incidence of thyroid cancer is about 0.85% in males and 2.5% among females in United States. Study conducted by Benzarti *et al* in Tunis found 9.5% incidence of malignancy.⁷ Similarly another study conducted at Sarajevo showed 8% incidence of malignancy.⁸ A 12.2% incidence of malignancy in Multinodular goitre was reported from France by Prades *et al*.⁹ However only 2.92% of our patients presenting with a goitre were found to be suffering from thyroid malignancy.

Overall females have a higher incidence of carcinoma thyroid.^{10,3} The tumours are rare in children and increase in frequency with increasing age. Female to male ratio is 2.5:1.^{2,3} In our study out of the 718 patients operated for goitre, all the patients having carcinoma of thyroid were females. Regarding high incidence among females, it is suggested that some hormonal factors are involved in its pathogenesis. Three different studies by Rossing¹¹ from Washington, Sakoda¹² from San Francisco and Memon¹³ from Kuwait suggest that recent pregnancy with in about 5 years is a thyroid carcinoma risk factor and that this risk is even higher with more than one recent pregnancies. Other suggested risk factors for thyroid carcinoma in women are exogenous estrogens, including oral contraceptives, lactation suppressant drugs, postmenopausal oestrogen therapy and fertility drugs. These associations, however, were usually weak and not dose dependent. In a recent pooled analysis, current oral contraceptive users had a moderately increased risk,

which disappeared 10 or more years after discontinuing use. No significant risks were reported for use of hormone replacement therapy or fertility drugs, but the odds ratio for drugs used to suppress lactation was elevated.^{13,14} 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.

Ninety to 95% of the thyroid cancers are well-differentiated cancers of follicular cell origin.³ These include papillary, follicular and Hurthle cell carcinomas. Papillary thyroid Carcinoma is the predominant (about 70–80%) histologic form in most parts of the world.^{2,3,11} This is particularly true in females younger than 40 years of age.

Radiation is considered as one of the major etiologic factors in papillary carcinoma especially in children under the age of 5 years who had irradiation of head and neck in the past for some other pathology. However other factors such as improved diagnosis may be important as well. In some countries the incidence of Thyroid Carcinoma is no longer increasing.^{2,3,11} Thirty-three percent of the malignancies found in our study were follicular carcinomas. A similar incidence of papillary carcinoma was observed. All the patients were females and majority of them were less than 40 years of age. Qureshi *et al*² from Jamshoro, Sindh, Pakistan have also reported similar observations. Reasons for this low prevalence of thyroid malignancy in our patients could probably represent a lower rate of head and neck therapeutic radiations in our group of patients. The relationship between radiation and carcinoma thyroid was first described by Duffy and Fitzgerald in 1950.¹⁵ 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.¹⁰

Follicular thyroid carcinoma is the second commonest (10–15%) among differentiated carcinomas in older population, i.e., 50 years or more with female predominance.^{2,3,5} Studies showed that incidence is high in geographic distribution associated with iodine deficiency goitre. Prevalence among our patients is high, i.e., 33.33%. Almost similar (28.59%) observation was made by Qureshi *et al*² from Jamshoro, Sindh. This

high incidence is probably due to high incidence of iodine deficiency goitre in Kashmir, Northern Areas, northern Punjab, and NWFP from where majority of our patients belong.

Hurthle cell carcinoma is a subtype of follicular carcinoma which closely resembles follicular carcinoma on gross and histological appearance. It tends to occur in older patients i.e. 60–75 years of age.^{3,9} In >60 year age group in our study, 2 (9.53%) patients were diagnosed to have Hurthle cell carcinoma.

Among the undifferentiated carcinomas, anaplastic carcinoma is having an incidence of up to 15% as reported from different parts of the world.^{3,12} It is also found primarily in iodine deficient areas. This could possibly be one of the reasons of high prevalence noticed among our patients, i.e., 23.81%. Similar observation was also made by Qureshi *et al* from Jamshoro, Sindh.²

CONCLUSION

All postoperative thyroid specimens should be subjected to histopathology. Thyroid malignancies so picked can then be managed properly to improve survival in these patients. Prevalence of Follicular carcinoma and anaplastic carcinoma is relatively higher in our country due to high incidence of iodine deficiency goitre. Prevalence of Papillary carcinoma is relatively lower in our country probably due to less exposure to radiation in childhood.

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