

Clinical Presentation of Thyroid Carcinoma – A Retrospective Study

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ABSTRACT

AIM: To estimate whether size of the tumour determines the outcome in differentiated thyroid carcinomas.

MATERIALS AND METHODS: A retrospective study was conducted in Government Rajaji Hospital, Madurai for a period of one year.

RESULTS: Among 60 cases of Thyroid cancer (TC) papillary thyroid cancer (PTC) is 48, follicular thyroid cancer (FTC) is 11 and the remaining 1 patient is an anaplastic cancer. Thyroid swelling is the common presenting symptom(95%). Nodal metastasis is present in 45.83% of PTC and 36.36% of FTC.

CONCLUSION: Size of the tumour is an individual parameter that helps to find out the risk for multifocality, invasion and the nodal metastases in both the papillary and follicular carcinoma of thyroid.

KEYWORDS: Thyroid Cancer, Papillary Thyroid Cancer, Follicular Thyroid Cancer.

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I. Introduction

Thyroid malignancy is overwhelmingly the commonest endocrine malignancy and it accounts for 1% of all the malignant cases. Patients can have varied presentations from asymptomatic to solitary thyroid nodule or multi-nodular goiter. Of all the thyroid nodules, the incidence of malignant lesions is around 5%. The majority of the patients with carcinoma thyroid have differentiated cancer with female to male ratio of 3:1^[1,2].

Cancers of the thyroid gland represents a spectrum of different histological entities with diverse clinical behavior. Differentiated thyroid carcinomas (DTC) have the best prognosis among endocrine malignancies while anaplastic cancers have the worst prognosis with a median survival rate of less than 6 months. Since Thyroid carcinoma (TC) are known to have a wide spectrum of clinical presentations, we intended to study various clinical presentations of TC and also to study the correlation between the size of the thyroid carcinoma in relation to the various pathological types of thyroid carcinoma.

II. Material And Methods

This retrospective study was conducted in the Department of General surgery and Department of Surgical endocrinology in Government Madurai Medical College Hospital, Madurai for a period of one year. The data was collected from all the cases diagnosed and treated for Thyroid Carcinoma with histopathological confirmation. The details were collected from the Medical Records Department of Government Rajaji Hospital and evaluated. The institutional ethical committee clearance was obtained for this study.

The total of 60 cases with confirmed histopathological diagnosis of TC above 13 years were included in the study. Patients not willing for any treatment after the diagnosis, recurrence or lost to follow-up were excluded from the study.

The presentation, clinical findings, investigations and line of management were documented in the data sheet. All cases of TC underwent preoperative ultrasonography of the neck and Fine needle aspiration cytology (FNAC) based on the sonographic features. If FNAC reported as DTC, Total Thyroidectomy (TT) with prophylactic central compartment neck nodal dissection was done. TT with selective neck dissection was done, if positive nodes found on the lateral neck. Selected patients underwent radioactive iodine ablation as per risk categorisation. All patients were started on suppressive dose of thyroxine. Data were analyzed using SPSS software (IBM SPSS statistics 20.0;

SPSS Inc, Chicago, IL). ANOVA, Chi-square test, and independent sample T test were used in analyzing the data as appropriate.

III. Results

Among total 60 cases of Thyroid cancer (TC), papillary cancer is 48, follicular cancer is 11 and the remaining 1 patient is anaplastic cancer. The incidence of TC was more among the fourth decade (36.7%) followed by fifth and second decades of life. Papillary thyroid cancer (PTC) was the most common malignancy followed by Follicular thyroid cancer (FTC). The peak incidence of PTC was also in the fourth decade. We had only one case each of medullary carcinoma and anaplastic carcinoma. There was a female preponderance with nearly 83.3% of patients belonging to female gender. PTC was the most common malignancy in females followed by FTC.

The predominant presentation in our study group was thyroid swelling which was found in 95% of the cases followed by the lymph nodal swelling in 10 cases, of which 3 cases had only lymph node swelling without any thyroid enlargement. The most common pressure effect found in our study group was hoarseness of voice which was found in 6 patients, followed by dyspnea and dysphagia which were the presenting symptom in 3 patients each (Table 1).

Table 1: Clinical symptoms found in this study group.

S. No.	Symptoms	No. of. cases	Percentage
1	Thyroid Swelling	57	95
2	Lymph Nodal Swelling	10	16.33
3	Hoarseness of Voice	6	10
4	Dysphagia	3	5
5	Dyspnea	3	5
6	Symptoms of Hyperthyroidism	1	1.33
7	Distant Metastasis	5	8.13

Indirect laryngoscopic examination was done preoperatively, which revealed vocal cord palsy in 8 of them, of which 6 patients had hoarseness of voice clinically. Six patients were diagnosed with PTC, while the other 2 cases being FTC and anaplastic carcinoma one each.

Results of the FNAC :

The results of the FNAC showing PTC or suspicious for PTC in 45 cases, Follicular/Hurthle cell neoplasms in 5 cases, Follicular cells of undetermined significance in 4 cases, anaplastic carcinoma in 1 case, medullary carcinoma in 1 case and non diagnostic in 4 cases. Total eight cases which revealed cytological report as “Follicular cells of undetermined significance” and “Non diagnostic” were subjected to sonographic guided FNAC of which 3 cases showed diagnosis of PTC and preceded accordingly and 3 cases showed follicular/Hurthle cells and were preceded accordingly, whereas two cases did not have any cytological diagnosis even after repeat FNAC and were subjected to total thyroidectomy.

Ultrasonographic findings:

There were hypoechogenic nodules found in 47 cases in total, irregular margins in 37 cases and fine punctuate internal calcifications found in 35 cases and the features in total were compared. Also sonogram identified nodes in 13 cases, which were not palpable clinically. Computed Tomography (CT) of the neck revealed invasion of the tumour in 21 cases, of which 18 cases were PTC and 3 cases were of FTC.

Size of the thyroid swelling:

The clinical and radiological size of the thyroid nodule suspicious of malignancy was measured and they were correlated with the incidence of lymph node metastasis, as we know that the diameter of the tumour is an independent prognostic factor and the association between them is analyzed. The mean size of the nodule was 3.2cm (2-9cm).

Lymph Node metastasis found among the histological variants of the thyroid carcinoma in the study.

The incidence of lymph node metastasis among the histological variants of thyroid carcinoma were analyzed (Table 2).

Table 2: No. of cases of the lymph node metastasis found among the histological variants of thyroid carcinoma.

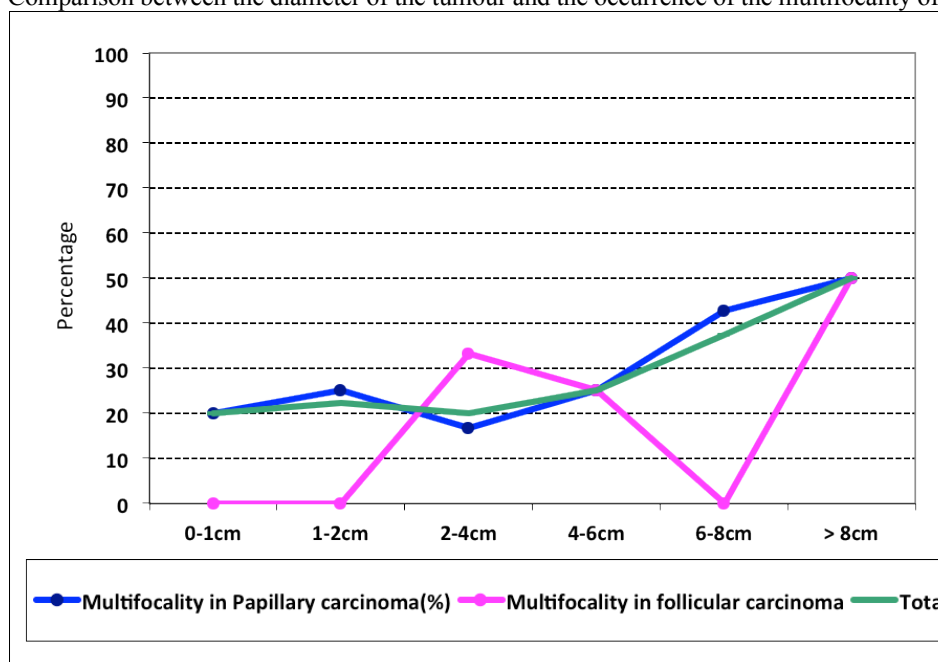
Histological variant	No. of cases	No. of. Cases with nodal metastasis	Percentage of nodal metastasis
Papillary carcinoma	48	22	45.83%
Follicular carcinoma	11	4	36.36%
Anaplastic Carcinoma	1	0	0
Total	60	26	43.33%

In total 26 cases of lymph node metastasis was found clinically and of those, 22 cases had PTC and 4 cases had FTC. There were 5 cases of TC with distant metastasis with 3 cases being PTC and 2 cases being FTC. There were 13 cases of PTC with multifocality and 3 cases of FTC with multifocality. FTC has increased incidence of multifocality surprisingly as the tumour size increases over 4 cm but the statistical correlation could not be found due to less number of cases in FTC. There was weak statistical correlation between multifocality in PTC and the diameter of the tumour once the diameter of the tumour increases above 4 cm (P value- 0.03) (Table 3 and Figure 1).

Table. 3: Comparison between the diameter of the tumour and the multifocality of the tumour.

Diameter of the tumour	Papillary Carcinoma			Follicular Carcinoma			All cases of Thyroid Carcinoma		
	No. of cases	Multifocality	%age	No. of cases	Multifocality	%age	No. of Cases	Multifocality	%age
0-1cm	5	1	20.00	0	-	0	5	1	20.00
1-2cm	8	2	25.00	1	-	0.00	9	2	22.22
2-4cm	12	2	16.67	3	-	33.33	15	2	20.00
4-6cm	12	4	33.33	4	1	25.00	16	5	31.25
6-8cm	7	2	28.57	1	1	0.00	8	3	25.00
> 8cm	4	2	50.00	2	1	50.00	6	3	50.00
Total	48	13	27.08	11	3	27.27	59	16	27.12

Figure. 1: Comparison between the diameter of the tumour and the occurrence of the multifocality of the tumour.



There was statistically correlation found between the diameter of the tumour and extra thyroidal extension in cases of papillary carcinoma as the diameter of the tumour increases. But there was no clear cut statistical association found in the follicular carcinoma between diameter of the tumour and the extra thyroidal extension. The lymph node metastasis correlated well with diameter of the tumour. There were 3 cases of isolated lymph node metastases without any thyromegaly. PTC with a diameter of more than 2cm and FTC with a diameter of more than 4cm had increased incidence of nodal metastasis.

The statistical correlation was found between the diameter of the tumour and the multifocality, extra thyroidal extension and lymph node metastasis in papillary carcinoma and the p value found to be 0.02, 0.01 and <0.0001 respectively. In the cases of follicular carcinoma there was statistical correlation found between the diameter of the tumour and the extra thyroidal extension with the p value of 0.001 in both the cases. There was no

statistical correlation found between the diameter of the tumour and the distant metastases in PTC or FTC (Table 4).

Table 4: Statistical correlation comparing the various morphological parameters comparing the diameter of the tumour in the papillary and follicular carcinomas in our study group.

S.No.	Parameters	p Value	
		Papillary carcinoma	Follicular carcinoma
1.	Comparison between the diameter of the tumour and the multifocality	0.02	0.3
2.	Comparison between the diameter of the tumour and the extra thyroidal extension	.01	0.001
3.	Comparison between the diameter of the tumour and the lymph node metastasis	<0.0001	0.001
4.	Comparison between the diameter of the tumour and the distant metastasis	0.26	0.35

IV. Discussion

Differentiated thyroid cancers are on the increase in the recent past. In an autopsy study by Fukunaga et al reported data from multiple countries that there was an 11% overall incidence of occult papillary thyroid cancer^[3]. At the time of presentation, up to 80%-90% of the primary lesions are confined to the gland^[4]. Encapsulation of the tumor is seen in 10% of the cases^[5].

In our study TC cases common in the 4th decade & 5th decade of life followed by third decade, where as the western literature showed the commonest age group affected is the 5th and the 6th decade. The mean age at the diagnosis is 49 years in the western studies and in our study group it was found to be 38 years^[6,7].

The study conducted in England and Wales in 1993 to know the sex ratio of hormone dependent cancers by Dos Santos Silva et al showed that thyroid cancer is predominantly seen in women in a ratio of 3:1^[8]. Certain studies showed a Female to male ratio to be around 1:1.6 to 1:3^[9]. In our study the sex ratio was found to be 5:1. Even though the overall incidence of differentiated thyroid cancer is more common among the females than in males, a nodule in a male is more likely to be malignant variety than in a females^[10].

Males have high propensity to metastasize, both to regional nodes and distally. Mitchell et al. found that males were more likely to have advanced stage tumors at diagnosis. These factors combined with the age at which men develop thyroid cancer contribute to higher mortality rates among the male gender (7.1%) compared to women (3.5%). In our study we didn't find any significant difference between genders in the stage specific incidence between the groups, which can be due to the less number of cases in the male gender. B.B. Yeole, reported that incidence of thyroid carcinoma in Bombay and other parts of India is quiet low in the both the sexes in comparison with international experience and preponderance to Muslims has been reported^[11].

The most important finding suggestive of malignancy is implied by the presence of cervical lymphadenopathy. The predominant symptom in the present study was thyroid mass which was in accordance with literature^[7,12].

The percentage of patients presenting with dysphagia and dyspnea are very much less (6% each) compared to the study by Simon et al (25% and 10.5%). We had 8.33% of patients with distant metastases compared to 12% in Kannan RR et al study^[7,13].

FNAC was found to be useful in diagnosis of thyroid carcinoma. The sensitivity of FNAC could not be found out in this study. In the present study the papillary carcinoma was the most common type of thyroid malignancy seen in the hospital accounting for about 80 percent of the cases, which was in accordance with other studies^[7].

In a Meta analysis, it was found that nodal metastasis was found in 36% of the papillary carcinoma cases and 17% of the patients with FTC. Even though the lymph node metastases play an important role as prognosis in follicular carcinoma, the importance in PTC is less. In our study we found high incidence of lymph node metastases in PTC (45.83% of cases) and 36.36% of FTC cases. In all the cases of TC, it was found that 43.33% of the cases are with lymph node metastasis, which is higher than many studies showed a lymph node metastasis of 28-37%. This can be presumed due to the long duration of the thyroid swelling presented in many of the cases and the sensitivity of the ultrasound of the lateral and central neck in detecting the suspicious nodes in the thyroid carcinoma.

The lymph node metastasis is related to the histological variants of both papillary and follicular carcinoma. Lymph node metastases were found high in tall cell, columnar cell variant and less in follicular variant of the papillary carcinoma of thyroid. The propensity for papillary cancer to spread in the lymphatics within and outside the gland is striking. 5-10% of patients with PTC present with distant metastases at some time in course of the disease^[14]. Natural prognosis of the metastatic cancer seems to be volume related. It is worse in patients with bone, lung and CNS metastases^[15].

In our study we found distant metastasis present in five cases of which three cases had papillary carcinoma. Although the papillary carcinoma has high propensity for lymph node metastases, the incidence of haemetaogenous spread is less in compared to the follicular carcinoma and in our study it was found to be 18.2% of cases.

In our study we found a clear relation between the primary tumor diameter and the development of more advanced disease. When tumor diameter is taken in to consideration, FTC of the thyroid showed a more indolent clinical course than the PTC in our study. In contrary other studies showed more indolent course in cases of PTC.

The tumor size adjusted risk of multifocal carcinoma was statistically significant in papillary carcinoma of thyroid (p value - 0.02) with the multifocality found in 20% of cases with tumour diameter less than 4 cm and 34% of cases of lesions above 4cm in diameter and there was cumulative risk of multifocality with increased size and the need for aggressive therapy in PTC. Multifocality was found only in tumours above 4cm in cases of FTC of thyroid but the statistical correlation was not found due to the less number of cases in the study.

The identification of primary tumor size as a risk factor in itself is not new. Many prognostic scoring systems have embraced this parameter. The findings from the present study are largely in agreement with those of Machens *et al*. However, Machens *et al* – regardless of histological entity – found an increased risk of distant metastases for tumors larger than 20 mm comparable to 20 mm in the present study^[16].

Machens *et al* suggest pursuing aggressive diagnostic and therapeutic measures to rule out malignancy in any nodule exceeding 20 mm in diameter; these constitute about one third of all thyroid nodules. Pursuing this strategy in all nodules over 10 mm would involve a far greater part of the population and would there fore incur much greater costs^[16].

The limitations of the study are that it is a retrospective study of the thyroid carcinoma where as other disorders of thyroid was not studied for the comparisons. Also the sensitivity of the FNAC and other modalities in establishing the diagnosis of the thyroid carcinoma preoperatively could not be observed.

V. Conclusion

To conclude the size of the tumour is an individual parameter that helps to find out the risk for multifocality, invasion and the nodal metastases in both the papillary and follicular carcinoma of thyroid.

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