

Original Article

Incidence of Thyroid Cancer in Thyroid Swelling, Study of 200 Cases

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Abstract:

Objective: *The incidence of thyroid cancer has rapidly increased in the United States (US) and other developed countries over the past 30 years but there is no study to find out the true incidence of thyroid cancer in Bangladesh. The aim of this study is to compare FNAC with histopathology reports and to find out the true incidence of thyroid malignancy in thyroidectomy patients presenting with thyroid swelling.*

Methods: This is a prospective study of 200 thyroid swelling patients underwent thyroid surgery done at Shaheed Suhrawardy Medical College Hospital, a tertiary Care Hospital in Dhaka from July 2017 to December 2020. FNAC and histopathology reports were studied to find out the incidence of benign and thyroid malignancy among the thyroid swelling.

Results: The age of the patients ranged from 8 to 75 years. The mean age was 37.2 years. There were 156 female and 44 male patients with female male ratio 3.54:1. Diagnostic categorization of 200 thyroid swelling underwent surgery, FNAC based on Bethesda classification showed that 163 (81.5%) cases were cytologically benign, 37 (18.5%) cases were malignant category. Out of 200 cases histopathology showed 134 cases (67.0%) are benign and 66 (33.0%) are malignant thyroid swelling. Among the benign lesions 96.31% are colloid goiter and among the malignant lesions 93.4% are papillary thyroid carcinoma.

Conclusion: Although FNAC is an essential diagnostic test to rule out thyroid malignancy but histopathological examination is the only way to give true incidence of thyroid malignancy among the thyroid swelling and it is observed that there is high incidence of thyroid malignancy (33.0%) among the thyroid swelling patient underwent thyroid surgery.

Key words: *FNAC, Histopathology, Thyroid cancer*

Introduction:

The incidence of thyroid cancer has increased dramatically during the past three decades and it is now the fastest growing cancer in

women¹. Bangladesh especially North Bengal area is an endemic zone for iodine deficiency goitre and one of the aetiology of thyroid cancer is iodine deficiency. They present as

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visible neck swelling which moves on deglutition. Any patient presented with thyroid swelling are routinely investigated for ultrasonogram of the thyroid gland, serum TSH and FNAC. Final diagnosis requires morphological examination for which histopathological examination becomes mandatory test². In 1870 Rugu and his associate Joham Vent have first advocated surgical biopsy as an essential tool³. The diagnostic method of FNAC was first published in 1883 by Leyden.⁴ But the diagnosis of thyroid swellings using aspiration cytology was first reported by Martin and Ellis in 1930⁵. FNAC, however has limitation related to specimen adequacy, sampling techniques, skill of performing the procedure, interpretation of the aspirate, overlapping cytological features between benign and malignant follicular neoplasm and also in the detection of some papillary carcinoma associated with other pathology like multinodular goiter, cystic changes⁶. Mundasad et al had done a comparative study between FNAC and histopathology and founded that FNAC had a sensitivity(52.6%), specificity(86.6%) and accuracy(79.1%) for thyroid malignancy⁷.

Aims and Objectives: This study was carried out to see the true incidence of benign and malignant thyroid lesions among the thyroid swellings after histopathological examinations following thyroidectomy.

Methods:

This cross sectional study was done among patients undergoing thyroidectomy between July 2017 to December 2020 at Shaheed Suhrawardy Medical College Hospital, Bangladesh. The patients were selected consequently as and when they presented during the study period considering inclusion and exclusion criterias. The selected patients were examined clinically and routine

ultrasonography, TSH, FNAC, routine haematological investigations, Chest X-ray ECG, CT scan if indicated were done. All patients FNACs were done by two senior cytologists. All surgeries were done by the senior surgical staffs and all thyroidectomies specimens were examined by two senior histopathologists.

Statistical analysis

The data collected was analysed using SPSS version 20 and depicted using descriptive statistics.

Inclusion criteria

Patients with thyroid swelling with normal thyroid hormone profile undergoing thyroidectomy.

Exclusion criteria

Patients of thyroid swelling with hyper or hypo thyroid function, patients with co-morbidities, unfit for surgery, patients who refused surgery and inoperable thyroid malignancy were excluded from the study.

Results:

The age of the patients ranged from 8 to 75 years with a mean age 37.2 years (Table I) The thyroid lesions were more common in females than male in a ratio of 3.54:1 (table II) Table III shows FNAC findings of 200 cases where 163 are benign and 37 cases are malignant lesion with benign malignant ratio is 4.4:1. Among the benign lesions the most common lesion is multinodular or colloid goiter (78.5%). Table IV shows out of 37 malignant cases of FNAC finding, 94.56% is papillary carcinoma. Histopathological examinations of all 200 thyroidectomy specimens showed 124 cases (62%) are colloid goiter and 59 cases(29.5%) are papillary carcinoma (Table V). Table VI shows incidence of benign and malignant lesions among 200 specimens. There are 134(67%)

benign lesions and 66(33%) malignant lesions, so approximately benign and malignant ratio is about 2:1 which is very worrying. Finally among the thyroid cancer about 93.4% is papillary carcinoma (Table VII).

Table I :
Age distribution of thyroidectomy patients (n-200)

Age in yrs	No. of patients	Percentage (%)
8-20	7	3.5
21-30	36	18
31-40	74	37
> 40	83	41.5

Mean age 37.2

Table II :
Sex distribution (n-200)

Sex	No. of patients	Percentage (%)
Female:	156	78
Male:	44	22

Female: Male = 3.54:1

Table III :
FNAC of thyroid swelling (n =200)

Diagnosis	No. of patients	Percentage (%)
Nodular or colloid goiter	157	78.5
Papillary thyroid	35	17.5
Follicular lesion	4	2.0
Lymphocytic thyroiditis	2	1.0
Non Hodgkin's lymphoma	1	0.5
Medullary carcinoma thyroid	1	0.5

Table IV :
FNAC diagnosis of thyroid malignancy (n-37)

Diagnosis	No. of patients	Percentage (%)
Papillary carcinoma of thyroid	35	94.56
Follicular carcinoma	0	0
Medullary carcinoma	1	2.7
Non Hodgkin's lymphoma	1	2.7

Table V :
Histopathological diagnosis of thyroid swelling (n-200)

Diagnosis	No. of patients	Percentage (%)
Colloid/MNG	124	62.0
Lymphocytic thyroiditis	8	4.0
Follicular adenoma	2	1.0
Papillary carcinoma	59	29.5
Hurthle cell adenoma	3	1.5
Follicular carcinoma	2	1.0
Medullary carcinoma	1	0.5
Non Hodgkin's lymphoma	1	0.5

Table VI
Incidence of benign and malignant lesions based on histopathology (n-200)

Diagnosis	No. of patients	Percentage (%)
Benign lesions	134	67.0
Malignant	66	33.0

Benign: Malignant = 2:1 (approx)

Table VII :
Incidence of thyroid cancer based on histopathology (n-66)

Diagnosis	No. of patients	Percentage (%)
Papillary carcinoma (including Hurthle cell adenoma)	62	93.4
Follicular carcinoma	2	3.03
Medullary carcinoma	1	1.5
Non Hodgkin's lymphoma	1	1.5

Discussion :

The incidence of thyroid cancer has rapidly increased in the United States (US) and other developed countries over the past 30 years⁸. Although some researchers believe this is a true increase in thyroid cancer⁹, but this increase is due to better diagnostic testing such as ultrasonography and fine-needle aspiration biopsy, resulting in the detection of disease that is unlikely to cause symptoms or death of the patient¹⁰.

Other countries have seen similar increases in thyroid cancer. From 1993 to 2011, South Korea witnessed a 15-fold increase in thyroid cancer with nearly the entire increase attributed to papillary cancers¹¹. Davies and Welch also showed, using the SEER program and data, that the rates of follicular, medullary and anaplastic thyroid cancers show no significant change from 1973 to 2002¹². Our study also found similar result of increasing incidence of thyroid cancer and most of which are papillary carcinoma. The most important part of our study is limitation of FNAC which includes false negative result and false positive results. Sikder had done accuracy of fine needle aspiration cytology and had found that accuracy was 90% and sensitivity was 68.75%¹³. Bloch had done a comparison study between FNAC and histopathology and

had found accuracy of FNAC was 91.6%¹⁴. In our study false positive was 7 and false negative was 27 out of 200 thyroidectomy patients and overall sensitivity were 57.8%, specificity 95%, PPV 84% and NPV 83.22%.

Conclusion:

As the incidence of thyroid cancer is increased over the last decade. It is also increased in Bangladesh. Our study observed 33% cases are thyroid cancer among the thyroid swelling underwent thyroid surgery. Ultrasonography and FNAC are both essential diagnostic tool for thyroid swelling but final diagnosis to rule out thyroid cancer is surgical excision and biopsy. In our study benign to malignant ratio is about 2:1 so FNAC proven benign lesions should not left untreated.

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