

A Study of Thyroid Lesions with Emphasis on Cytological and Histopathological Co-Relation

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Abstract

Introduction: The most commonly encountered clinical problem are the lesions of the thyroid. Most of these can be treated medically or surgically. Fine needle aspiration cytology and histopathological examination together are very helpful in establishing the diagnosis. The role of a pathologist is thus very crucial in establishing the nature of thyroid lesions. *Materials and methods:* We have taken up a prospective study for a period of two years at Narayana Medical College and General Hospital. We have analysed a total of 250 cases during this period. Cytological and histopathological slides were reviewed and the results were analysed. *Results:* In our study there was a female predominance with non-neoplastic lesions predominating the neoplastic lesions. Nodular goiter was most common among benign lesions and papillary carcinoma was common in the malignant category. Histopathology plays an important role in the diagnosis of lesions which are missed on cytology or inconclusive on cytology. *Conclusion:* Fine needle aspiration cytology and histopathology go hand in hand in the diagnosis of thyroid lesions giving almost 100% results.

Keywords: Cytology; Histopathology; Thyroid; Lesions.

Introduction

Lesions of the thyroid gland are the most commonly encountered clinical problem. These lesions are classified etiologically into (i) developmental (ii) inflammatory (iii) hyperplastic and (iv) neoplastic lesions. A wide variety of thyroid disorders are seen ranging from simple goiters to malignant tumors. Involvement may be systemic as in Graves' disease or localised ex: goiter or tumors [1]. Thyroid gland diseases have gained importance as most of them are amenable to medical or surgical management. The most challenging task for a physician is to establish the nature of these lesions and to differentiate benign from malignant lesion [2]. Pathologist plays a key role in establishing the nature of these lesions by cytological and histopathological examination. Fine needle aspiration has proved to be a reliable, cost

effective diagnostic modality in the diagnosis of thyroid lesions [3,4,5]. The main limitation associated with fine needle aspiration is specimen adequacy which may be variable and may not always be representative. This limitation can be minimised by histopathological examination [6]. Thus the combined use of fine needle aspiration and histopathological examination help in establishing the exact nature of most of the thyroid lesions.

Materials and methods

A prospective study was undertaken for a period of two years from 2014 to 2016 at Narayana Medical College, Nellore. A total of 250 cases were included in the our study. Relevant clinical history was taken and thyroid profile was done in all these cases. Fine needle aspiration was done in all cases and in a few deep seated lesions it was done under ultrasound guidance. The specimens received in our department were adequately processed and histopathological examination was done. The results were analysed.

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Results

In our study, the male to female ratio was 1:15 with female predominance. Females were 235 (94%) and the remaining were males 15 (6%).

The most common age group affected was between 20 to 30 years accounting for 73 cases (29%) and the least number of cases were seen in the age group of 70-80 years, 5cases (2%) Table 1.

Benign lesions, 234 cases (93%) outnumbered the malignant lesions, 16 cases (7%) in our study. In the benign category, nodular goiter was the most common lesion whereas dys hormonogenic goiter was the least common lesion. In the malignant category, papillary carcinoma was the most common lesion whereas anaplastic carcinoma was the least common lesion.

Cytological examination was done in all the cases and Bethesda system of reporting was followed in our study (Table 2).

We received the specimens for histopathological examination in our department. Majority of them were hemi-thyroidectomy (85%) and only few were total thyroidectomy specimens (15%). Around 31 cases were medically treated and so we did not receive the

specimens. Nodular goiter was the most common lesion in histopathology followed by Hashimoto's thyroiditis in the second position. In nodular goiter, associated changes seen were cystic degeneration and adenomatous hyperplasia for which cyst macrophages and sanderson polsters were seen respectively on histopathology. Follicular cells showing oxyphil cell change with lymphoid follicles and germinal centers were seen in Hashimoto's thyroiditis. All the 14 cases which were diagnosed as malignancy on cytology were confirmed on histopathology. Papillary carcinoma was the most common malignancy and anaplastic carcinoma was the least common malignancy reported in our study.

The grey zone for reporting of thyroid lesions in Bethesda reporting system are category III, IV and V. 1 case of category III (Atypia/Follicular lesion of undetermined significance) turned out to be follicular variant of papillary carcinoma on histopathology. In the category IV (Follicular lesion), there were 14 cases in cytology and on histopathology 12 cases were follicular adenoma, one case was follicular carcinoma and the last one turned out to be follicular variant of papillary carcinoma. Lastly 2 cases of category V (Suspicious of malignancy) proved to be papillary carcinoma on histopathology (Table 3).

Table 1: Age distribution

Age group	Number	%
10-20	10	04
20-30	73	29
30-40	50	20
40-50	57	23
50-60	20	08
60-70	35	14
70-80	05	02

Table 2: Bethesda reporting of thyroid lesions

Bethesda System	Number of Cases	% of Cases
Category I : Non diagnostic	03	1.2
Category II: Benign	219	86.4
Category III: Atypia/Follicular lesion of undetermined significance	01	0.4
Category IV: Follicular lesion	14	5.6
Category V : Suspicious of malignancy	02	0.8
Category VI : Malignant	14	5.6

Table 3: Cytohistopathological co-relation of thyroid lesions

	Cytology	Histopathology
Non diagnostic	03	-
Benign	219	210
Atypia/Follicular lesion of undetermined significance	01	-
Follicular lesion	14	-
Suspicious of malignancy	02	-
Malignant	14	19

Discussion

In our study on thyroid lesions a total of 250 cases were analysed. Majority of the patients in our study were seen in the age group between 2nd to 3rd decade. Least number of cases were seen in the 7th to 8th decade. Our findings were similar to those seen in the studies done by Solomen et al [7] and Gupta et al [8]. The male to female ratio in our study was 1:15 which was higher when compared to Solomen et al [7], Gupta et al [8], Singh P et al [9], Sangalli et al [10] and Mandal et al [1]. Distribution of cases in our study with respect to malignancy was similar to the studies done by Solomen et al [7], Gupta et al [8], Hill AG et al [12] and Churg EB et al [13]. The non-neoplastic lesions outnumbered the neoplastic cases in our study with concordance with other studies. In the non neoplastic lesions, the most common lesion in our study was multinodular goiter which was similar to those seen in Solomen et al [7] and Gupta et al [8].

Hashimoto's thyroiditis was the next common lesion in our study similar to the findings seen in the studies done in Middle East [14,15]. Hashimoto's thyroiditis was the least commonly seen lesion in the study done by Solomen et al [7]. There were three cases in the grey zone in our study. One case which was reported as atypia in cytology was diagnosed as follicular adenoma on histopathology. The remaining two cases reported as suspicious of malignancy in cytology were proved to be malignant on histopathology. One was diagnosed as follicular carcinoma and the other was follicular variant of papillary carcinoma. In such lesions histopathology plays a key role. Similar findings were seen in the study done by Renu Sukumaran et al [16]. The most common type of malignancy seen in our study was papillary carcinoma, followed by follicular carcinoma and anaplastic carcinoma were seen in our study. Our findings were seen in the studies done by Solomen et al [7], Gupta et al [8] and Renu Sukumaran et al [16].

Conclusion

Thyroid lesions are very commonly seen especially in females. Fine needle aspiration cytology plays an important role in the diagnosis of most of these lesions. Histopathology plays a key role in a few cases where a definitive diagnosis is not possible on cytology. Thus the combined use of cytology and histopathology is the most reliable diagnostic methodology in thyroid lesions.

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