Spectrum of Histopathological Patterns of Thyroid Lesions: A 2 Year Retrospective Study

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Abstract

Introduction: Thyroid is a readily palpable gland in the anterior inferior neck. Thyroid pathologies are common worldwide and are commonly encountered in clinical practice. Diseases of the thyroid are of great importance because most of them are amenable to medical and surgical management. Thyroid enlargement is a common problem especially in young population causing pressure symptoms and cosmetic deformity. Thyroid lesions may be developmental, inflammatory, hyperplastic and neoplastic. Though FNAC has taken a prominent role on the evaluation of thyroid lesions, thyroid carcinoma closely resembles its benign counterpart making histopathology the gold standard in the diagnosis. Aim of the study is to evaluate the different patterns of thyroid lesions. Methods: Two years retrospective study carried out from July 2015 to June 2017 at SVS Medical college and hospital, Mahabubnagar on 115 biopsy specimens received in the department of pathology. Results: Total number of 115 cases were studied histopathologically out of which 85 were non neoplastic lesions and 30 were neoplastic.Among the non neoplastic lesions multinodular goitre was the most predominant and papillary carcinoma of thyroid in the neoplastic cases.

Keywords: Thyroid Lesions; Goitre; Adenoma; Papillary Carcinoma.

Introduction

Thyroid gland is unique among the endocrine glands in having wide spectrum of diseases ranging from functional enlargement to neoplastic lesions. Thyroid pathologies are common worldwide and are commonly encountered in clinical practice. These diseases are associated with hyperthyroidism, hypothyroidism and mass lesions of the thyroid. Diseases of the thyroid are of great importance because most of them are amenable to medical and surgical management. Thyroid enlargement is a common problem especially in young population causing pressure symptoms and cosmetic deformity. Though FNAC has taken a prominent role on the evaluation of thyroid lesions, thyroid
carcinoma closely resembles its benign counterpart making histopathology the gold standard in the diagnosis [3].

Objective of the study is to evaluate the different patterns of thyroid lesions and its age and gender distribution.

Materials and Methods

Two years retrospective study carried out on 115 cases, from July 2015 to June 2017 in SVS Medical college, Mahabubnagar. The material for this study includes all lobectomy, hemi thyroidectomy, subtotal and near total thyroidectomy specimens received in our department. All the thyroid specimens received were fixed in 10% formalin for 24 hrs. (The regular practice followed in the department).

Gross features of specimen as entered in records were noted. Usually multiple sections are processed depending on size and nature of the lesion. Routine tissue processing was done and sections were stained with hematoxylin and eosin. After detailed study of the sections under the light microscope the final diagnosis was given.

The lesions were classified based on the histological diagnostic features into: Goitres(colloid/nodular), Inflammatory, Neoplastic lesions.

Immunohistochemistry was done on all cases of papillary carcinomas & the single case of medullary carcinoma. The cases diagnosed as papillary carcinoma were stained for CK7 and CK20. The case diagnosed as medullary carcinoma was stained with CEA. Autolysed specimens and inadequate biopsies were excluded from this study. The data was analysed and results were studied.

Results

A total number of 115 thyroid specimens received over two years period. There were 105 females (91.3%) and 10 males (8.7%) giving a female to male ratio of 10.5:1 (Table 1).

In total 63 cases belong to age group 20-40 years (Table 2). The non neoplastic lesions were 73.9%, neoplastic lesions were 26.1% (Table 3).

Among the non neoplastic lesions the most common diagnosis was multinodular goiter (45.8%) (Table 4) (Figure 1).

Among the neoplastic lesions the most common diagnosis was papillary carcinoma (56.7%). Immunohistochemistry showed that all cases of papillary carcinoma thyroid (17) stained positive for CK7 and negative for CK20. The case of medullary carcinoma was immunoreactive for CEA (Table 5) (Figure 2 & Figure 3).

Table 1: Gender wise distribution of Thyroid lesions

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of Cases</th>
<th>Percentage of Cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>10</td>
<td>8.7</td>
</tr>
<tr>
<td>Female</td>
<td>105</td>
<td>91.3</td>
</tr>
<tr>
<td>Total</td>
<td>115</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 2: Age wise distribution of Thyroid lesions

<table>
<thead>
<tr>
<th>Age (In Years)</th>
<th>Number of Cases</th>
<th>Percent of Cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20</td>
<td>5</td>
<td>4.3</td>
</tr>
<tr>
<td>20-40</td>
<td>63</td>
<td>54.8</td>
</tr>
<tr>
<td>40-60</td>
<td>41</td>
<td>35.7</td>
</tr>
<tr>
<td>&gt;60</td>
<td>6</td>
<td>5.2</td>
</tr>
</tbody>
</table>

Table 3: Distribution of thyroid lesions

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Cases</th>
<th>Percent of Cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoplastic</td>
<td>30</td>
<td>26.1</td>
</tr>
<tr>
<td>Non Neoplastic</td>
<td>85</td>
<td>73.9</td>
</tr>
<tr>
<td>Total</td>
<td>115</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4: Distribution of non neoplastic Lesions of thyroid

<table>
<thead>
<tr>
<th>Thyroid Lesions</th>
<th>Number of Cases</th>
<th>Percent of Cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multinodular Goiter</td>
<td>39</td>
<td>45.8</td>
</tr>
<tr>
<td>Adenomatous Goitre</td>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>Colloid Goitre</td>
<td>25</td>
<td>29.4</td>
</tr>
<tr>
<td>Auto Immune Thyroiditis</td>
<td>6</td>
<td>7.1</td>
</tr>
<tr>
<td>Hashimotos Thyroiditis</td>
<td>14</td>
<td>16.5</td>
</tr>
</tbody>
</table>

Table 5: Distribution of neoplastic Lesions of thyroid

<table>
<thead>
<tr>
<th>Thyroid Lesions</th>
<th>Number of Cases</th>
<th>Percent of Cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follicular Adenoma</td>
<td>11</td>
<td>36.7</td>
</tr>
<tr>
<td>Papillary Carcinoma</td>
<td>17</td>
<td>56.7</td>
</tr>
<tr>
<td>Follicular Carcinoma</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Medullary Carcinoma</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>Anaplastic Carcinoma</td>
<td>1</td>
<td>3.3</td>
</tr>
</tbody>
</table>
Fig. 1: Samples and immunohistochemistry of multinodual goitre, colloid goitre, hashimoto’s thyroiditis, follicular adenoma, and follicular adenoma.

Fig. 2: Samples and immunohistochemistry of papillary thyroid carcinoma, follicular variant of papillary thyroid carcinoma, and medullary thyroid carcinoma.
Anaplastic Thyroid Carcinoma

Anaplastic Thyroid Carcinoma

Anaplastic Thyroid Carcinoma

Fig. 3: Samples and immunohistochemistry of anaplastic thyroid carcinoma.

Discussion

Diffuse or localized swelling of thyroid region is commonly presenting clinical symptom which requires early diagnosis and treatment. In the present study, total number of cases were 115 over a period of 2 years. The pattern of these lesions varied from non-neoplastic lesions like multinodular goiter, hashimoto’s thyroiditis, autoimmune thyroiditis, colloid goiter to neoplastic lesions. Though FNAC is the first line of investigation, thyroid carcinoma closely resembles its benign counterpart making histopathology gold standard diagnosis. In our study, most common age group involved was 20-40 years, similar to Anushree et al. [4], Roopasolomata et al. [5] and VL Ramesh et al. [6]. Thyroid lesions affect both sexes with female preponderance. In our study female to male ratio was 10:1, where as in Singh P et al. [7], it was 4:7:1 and in Mandal S, et al. [8] it was 5:1. It was due to the fact that thyroid disorder was female prone, due to the presence of estrogen receptors in thyroid tissue. In the present study, non-neoplastic lesions were predominant over neoplastic lesions, similar to Sankaran study [9] and VL Ramesh et al study. In our study, among the non-neoplastic lesions multinodular goiter (45.8%), in contrast to Meachim & Young [10](49.18%), Arora & Gupta [11] (15.95%) and Sankaran study (36%) where colloid goiter was predominant. In our study thyroid carcinoma more common in females with mean age of 48 years, in contrast to study conducted by Merchant [12], where mean age was 42 years. In the present study, among the neoplastic lesions papillary thyroid carcinoma was the most predominant, similar to Seleye-fubara et al. [13], woolner et al. study [14], Burn & Taylor [15] and Thomas study [16].

Immunohistochemically, the cells of papillary carcinoma are reactive for pan-keratin stains. Their usual profile is CK7+/CK20-. [17]. The case of medullary carcinoma was immunoreactive for CEA. CEA is a reliable marker for the diagnosis of Medullary carcinoma thyroid with a higher sensitivity than calcitonin. Calcitonin is lost in differentiation of MTC whereas CEA expression is retained by these lesions [18].

Conclusion

Thyroid swelling is the common presentation in most of the thyroid lesions. Thyroid lesions are more common in females. Majority of the patients are between 2nd and 4th decade. Non-neoplastic lesions are more common than neoplastic lesions. Among the non-neoplastic lesions multinodular goitre is the most common. Among the neoplastic lesions papillary thyroid carcinoma is the most common lesion. Papillary carcinomas are CK7+/CK20-. Medullary carcinomas express CEA strongly. The present study was undertaken to review histomorphological patterns with an
insight of IHC of thyroid and to correlate type of thyroid lesion with age and gender of the patient.

References

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