Original Research Article

Histopathological study of thyroidectomy specimens

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ABSTRACT

Introduction: Diseases of thyroid gland are common and have wide spectrum of entities ranging from functional, immune mediated to neoplastic lesions. The aim of this study is to describe the different pattern of lesions in thyroidectomy specimens.

Objectives: To study occurrence of various lesions of thyroidectomy specimens.

Materials and Methods: This study was done in Dept. of pathology, Mysore Medical College over a period of 2 years from Feb 2017 to Feb 2019. The thyroid diseases were classified on histological grounds into congenital, non-neoplastic and neoplastic lesions that were further sub classified as benign and malignant as per WHO histological classification of thyroid tumors.

Results: A total of 104 thyroidectomy specimens were received during this study period. 91 cases (87.5%) were females and 13 cases (12.5%) were males with F: M ratio of 7:1. Non neoplastic lesions accounted for 72% and includes colloid goiter, multinodular goiter, nodular hyperplasia, hashimoto’s thyroiditis, thyroglossal cyst and lymphocytic thyroiditis. Neoplastic lesions accounted for 30% and consists of follicular adenoma as benign neoplasm, 17 malignant cases, 13 cases were of papillary thyroid carcinoma classic type, two cases of follicular carcinoma, one case of well differentiated follicular carcinoma of undetermined malignant potential and one case of non invasive follicular tumor with papillary like nuclear features.

Conclusion: Thyroid lesions predominantly affects females. Most commonly seen during 3rd decade of life. Colloid goiter is the commonest non-neoplastic followed by multinodular goiter. Follicular adenoma was the most common benign neoplasm, papillary carcinoma of thyroid was the common thyroid malignancy seen.

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1. Introduction

The lesions of thyroid are very common worldwide and are commonly encountered in clinical practice.1 Lesions of the thyroid may be developmental, inflammatory, hyperplastic or neoplastic. Enlargement of thyroid gland is relatively common and is known to affect 15% of population.2 Enlargement can be diffuse, multinodular or solitary nodule. Surgery is usually done for the patients with solitary nodule because of suspicion of malignancy although malignancy is found only in 6-14% of solitary nodules.3–5 Pathological lesions of thyroid gland are of importance because they affect function of other organs and are amenable to treatment which can be medical or surgical. Surgical excision and histopathological evaluation is very essential to establish a diagnosis. Most of thyroid nodules are benign and malignancy occur in approximately 5-20% of cases. Autopsy studies have shown that nodules in thyroid are very common and has been found in 50% of cases. Most of the thyroid nodules are benign and malignancy occur in 5% of cases.6 Carcinoma of thyroid is relatively a rare tumor and incidence of carcinoma in multinodular goiter varies from 4% to 17%.7 Increasing incidental thyroid cancer incidence has been attributed to improved imaging methods like radionuclide scanning and ultrasonography and successful surgical intervention. Hence present study

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was done to assess the histopathological diagnosis of 104 thyroidectomy specimens and evaluation of their frequency in relation to age and sex of the patient.

2. Materials and Methods

This was a retrospective study done for a period of 2 years from Feb 2017- Feb 2019. Total 104 thyroidectomy specimens were received which were fixed in formalin. Specimens were from lobectomy, hemithyroidectomy, near total thyroidectomy to total thyroidectomy. And these specimens were processed to make paraffin embedded tissue blocks and sectioned. All sections were stained with Haemotoxylin and Eosin. Slides were analysed taking into account of clinical, gross and microscopic details.

3. Results

Total 104 thyroidectomy specimens were studied. Female preponderance was noted, 91 cases were females (87.5%), 13 cases(12.5%) were men (Figure 1). Commonest age group affected was 20-30 years (Table 1).

On gross examination, majority of the specimens were total thyroidectomies. 75% were diffusely enlarged, 20% had multinodular enlargement and 5% had solitary nodule.

On histomorphological grounds, 73 cases (72%) were non-neoplastic, 14 cases (13.4%) were benign and 17 cases(16.3%) were malignant.

Analysis of non-neoplastic lesions showed 34 cases (32.6%) of colloid goiter, 29 cases (27.8%) multinodular goiter, 5 cases (4.8%) of hashimoto’s thyroiditis, 3 cases (2.8%) of thyroglossal cyst, one case (0.96%) of lymphocytic thyroiditis and one case (0.96%) of nodular hyperplasia (Figure 2).

Among benign lesions, follicular adenoma accounted for 14cases (13.4%). Out of 17 malignant cases (16.3%) – 13 cases (12.5%) of PCT, 2 cases (1.9%) of follicular carcinoma with minimal invasion, 1 case (0.96%) of well-differentiated follicular tumor of undetermined malignant potential(WDFT-UMP) and 1 case (0.96%) of Non-invasive follicular thyroid carcinoma with papillary like features (NIFTP) (Figure 3)(Table 3) were noted. Among 13 cases of PCT, 11 Cases were classic type PCT, 1 case was follicular variant of PCT and 1 case was encapsulated follicular variant of PCT. One case of papillary carcinoma showed multicentricity and Hashimoto’s thyroiditis in surrounding thyroid tissue. One case of follicular carcinoma showed foci of medullary carcinoma.

4. Discussion

In the present study commonest age group presented with thyroid disorder was between 2nd and 3rd decade of life. While study carried by Fatima A. et al. found age incidence to be common in 3rd and 4th decade. Ramesh et al found common age group from 3rd to 5th decade and Jagadale K. et al. found thyroid lesions common at 4th to 6th decade.
Table 4: Age, Sex and histological categories of all thyroid lesions

<table>
<thead>
<tr>
<th>Age Group</th>
<th>M</th>
<th>F</th>
<th>M</th>
<th>F</th>
<th>M</th>
<th>F</th>
<th>M</th>
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<th>M</th>
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<td>4</td>
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<tr>
<td>21-30</td>
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<td>61-70</td>
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<td></td>
<td>03</td>
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</table>

Table 3: Histomorphological distribution of neoplastic thyroid lesions

<table>
<thead>
<tr>
<th>Neoplastic</th>
<th>No. of cases</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follicular adenoma</td>
<td>14(13.4%)</td>
<td>03</td>
<td>11</td>
</tr>
<tr>
<td>PCT</td>
<td>13(12.5%)</td>
<td>02</td>
<td>11</td>
</tr>
<tr>
<td>Follicular carcinoma</td>
<td>02(1.92%)</td>
<td>00</td>
<td>02</td>
</tr>
<tr>
<td>WDFT –UMP</td>
<td>01(0.96%)</td>
<td>00</td>
<td>01</td>
</tr>
<tr>
<td>NIFTP</td>
<td>01(0.96%)</td>
<td>00</td>
<td>01</td>
</tr>
<tr>
<td>Total</td>
<td>31(29.8%)</td>
<td>05</td>
<td>26</td>
</tr>
</tbody>
</table>

Fig. 3: Colloid goiter a): Gross- grey brown capsulated nodule; b): Thyroid follicles of varying sizes filled with colloid

Analysis of sex showed female predominance of 87.5% similar to Fatima et al at 89.2% and 90% in Ramesh et al and Jagadale et al. Non-neoplastic lesions in present study were 72% and neoplastic were 29% which correlated with Jagadale et al 71.4% of non neoplastic lesions. However, Ramesh V.C. et al found 47.5% and Fatima et al found 83.3% of non neoplastic lesions respectively (Table 5).

Comparing the non-neoplastic lesions colloid goiter (32.6%) and multinodular goiter (27.8%), Hashimoto’s thyroiditis (8%) were the common lesions.

Our present study correlated well with Jagadale K et al with colloid goiter 21.4%, MNG 28.6% and Hashimotos thyroiditis 8.57%. Comparision with other studies for non neoplastic lesions is shown in Table 6.

Analysis of neoplastic lesion showed follicular adenoma 14 cases (13.4%), followed by papillary thyroid carcinoma 13(12.5%), Follicular carcinoma 2cases (1.9%), WDFT-UMP 1case (0.9%), NIFTP 1case (0.9%) Analysis of neoplastic lesions show predominance in females (Figure 3). Comparison with other studies is shown in the Table 7.

Out of 29 cases of Multinodular goiter in our study, 2 cases showed incidental papillary carcinoma. Similarly, Jain et al found 3 cases of papillary microcarcinoma out of 35 cases operated for multinodular goiter.
Table 5: Comparison of non-neoplastic lesions and neoplastic lesions of thyroid

<table>
<thead>
<tr>
<th>Thyroid lesions</th>
<th>Ramesh VL (n=120)</th>
<th>Jagadale K (n=70)</th>
<th>Fatima et al (n=120)</th>
<th>Present study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non neoplastic</td>
<td>47.5%</td>
<td>71.4%</td>
<td>83.33%</td>
<td>72%</td>
</tr>
<tr>
<td>Neoplastic</td>
<td>52.5%</td>
<td>28.6%</td>
<td>16.67%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Table 6: Comparison of non-neoplastic lesions of thyroid

<table>
<thead>
<tr>
<th>Non neoplastic</th>
<th>Ramesh V L (n=120)</th>
<th>Jagadale K (n=70)</th>
<th>Fatima et al (n=120)</th>
<th>Present study (n=104/2019)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colloid goiter</td>
<td>5.83%</td>
<td>21.4%</td>
<td>29.1%</td>
<td>32.6%</td>
</tr>
<tr>
<td>Multinodular goiter</td>
<td>29.16%</td>
<td>28.6%</td>
<td>42.5%</td>
<td>27.8%</td>
</tr>
<tr>
<td>Hashimoto thyroiditis</td>
<td>9.16%</td>
<td>8.57%</td>
<td>9.1%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Table 7: Comparison of neoplastic lesions of thyroid

<table>
<thead>
<tr>
<th>Neoplastic lesion</th>
<th>Ramesh V L (n=120)</th>
<th>Jagadale K (n=70)</th>
<th>Fatima et al (n=120)</th>
<th>Present study (n=104)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follicular adenoma</td>
<td>36%</td>
<td>7.2%</td>
<td>12.5%</td>
<td>13.4%</td>
</tr>
<tr>
<td>Papillary carcinoma</td>
<td>15%</td>
<td>8.7%</td>
<td>2.5%</td>
<td>12.5%</td>
</tr>
</tbody>
</table>

et al found malignant foci in 21 cases (8.1%) among 258 clinically diagnosed nodular goiter in which papillary carcinoma was the most common type of malignancy. Hence thorough screening of all thyroidectomy specimens to rule out occult carcinoma as the risk of carcinoma in MNG is significant.

5. Conclusion

The present study was concluded with the following observations

1. Neoplastic and non neoplastic lesions were common in females 87.5%.
2. Common age group affected 2nd to 3rd decade.
3. Commonest non neoplastic lesion was Colloid goiter (32.6%) followed by multinodular goiter (27.8%).
4. Commonest benign neoplasm was follicular adenoma (13.4%).
5. Commonest malignant neoplasm was papillary carcinoma (12.5%).
6. The present study highlights the importance of histopathological typing of thyroid lesions for their better management.
7. All thyroidectomy specimens should be thoroughly grossed to rule out occult malignancy as the risk of carcinoma in Multinodular goiter is significant.

6. Source of Funding

None.

7. Conflict of Interest

None.

References


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Bharathi M Professor and HOD

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