ABSTRACT: BACKGROUND: Hashimoto thyroiditis is the most common form of thyroiditis. The incidence is found more in the coastal areas for which iodine excess is described as a probable etiology. Ours is a coastal area, where significant number of females is coming to the hospital with diffuse enlargement of thyroid. This prompted us to do the current study. FNAC is a simple, cost effective, diagnostic modality which when used in combination with sonological and serological investigations, helps the clinicians in the correct diagnosis, even in the early stage of the disease. 

MATERIALS AND METHODS: Retrospective study was done for a period of 18 months from January 1st 2013 to JUNE 31st 2014. The clinical, sonological and serological aspects of 80 cases of Hashimoto’s thyroiditis were studied and compared with the cytomorphological features. RESULTS: The peak incidence of Hashimoto’s thyroiditis was seen in women of 2nd decade. Coexisting colloid goiter was noted in significant number of cases. Subclinical thyroid and euthyroid cases (serologically) showed cytomorphological features diagnostic of thyroiditis. Correlation with sonological features were seen in 66 % of cases. Lymphocytic infiltrate in follicular cell clusters, background lymphocytes and plasma cells and hurthle cells were diagnostic of hashimoto’s thyroiditis. CONCLUSION: The increased frequency of Hashimoto’s thyroiditis in younger age group, in euthyroid cases and its coexistence with colloid goiter should prompt us to take more detailed and large scale study in Kerala, especially in the coastal areas. FNA should be done as a first line mode of investigation, since it helps in identifying Hashimoto thyroiditis in the initial stages when the serological findings may be normal.

KEYWORDS: Hashimoto’s thyroiditis, FNAC, Subclinical hypothyroidism, Hurthle cells, Lymphocytes.

INTRODUCTION: Hashimoto thyroiditis (HT) is the most common form of thyroiditis and the second commonest thyroid disorder next only to colloid goitre. The incidence of thyroiditis is increasing in the recent years. The incidence is found more in the coastal areas for which iodine excess is described as a probable etiology. Ours is a coastal area, where significant number of females is coming to the hospital with diffuse enlargement of thyroid. This prompted us to do the current study. Fine needle aspiration cytology (FNAC) is a simple and cost effective diagnostic modality, which when used in combination with sonological and serological investigations, helps the clinicians to make correct diagnosis, even in the early stage of the disease.

MATERIALS AND METHODS: This is a retrospective study done on 80 cases of Hashimoto Thyroiditis (HT) diagnosed from 1st January 2013 TO 31st June 2014 (18 months). The clinical details, sonological and serological findings available for the cases were taken. For all the cases, FNA was done using non aspiration technique with 23-25 gauge needles. 2-4 rapid passes were made.
If the initial aspirate was not adequate, repeat aspirations were made using aspiration technique. Samples were taken from both lobes of thyroid in case of diffuse enlargement and also from the nodules if present. Papanicolaou staining was done and the smears were examined.

The diagnostic criteria for Hashimoto thyroiditis included-lymphocytes and plasma cells infiltrating the follicular epithelial cells (Fig. 1), increased number of lymphocytes in the background with or without lymphoid follicles (Fig. 2), hurthle cell change (Fig. 3), multinucleated giant cells, epithelioid cell clusters, and anisonucleosis (Fig. 4).

Presence of colloid, macrophages and honey combing pattern of follicular epithelial cells were also examined for coexisting colloid goitre. Clinical details including the age and sex distribution, nodular presentation were analyzed. The correlation between the cytological features, sonological and the serological findings were also studied.

**RESULTS:** Out of 80 patients, 92.5% (n=74) were females and 7.5% (n=6) were males. The age group of patients ranged from 11-65 years with 58.75% (n=47) in 3rd and 4th decade. (Table 1) The age and sex distribution.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-20</td>
<td>1</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>21-30</td>
<td>1</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>31-40</td>
<td>3</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>41-50</td>
<td>0</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>51-60</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>61-70</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 1

Clinical examination revealed diffuse enlargement in 56% (n=45), nodularity in 38% (n=30) and solitary nodule in 6% (n=5).Serological data were available for 70 cases. 27.5% (n=19) were euthyroid, 68.5% (n=48) hypothyroid and 4% (n=3) hyperthyroid. Of the hypothyroid, 40% (n=28) were having subclinical hypothyroidism. (Table 2)

<table>
<thead>
<tr>
<th>Clinical and laboratory findings</th>
<th>Frequency in our study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female: Male</td>
<td>12.3:1</td>
</tr>
<tr>
<td>Diffuse presentation</td>
<td>56.25% (n=45)</td>
</tr>
<tr>
<td>Nodular</td>
<td>37.5% (n=35)</td>
</tr>
<tr>
<td>Overt hypothyroid</td>
<td>28.5%</td>
</tr>
<tr>
<td>Subclinical hypothyroid</td>
<td>40%</td>
</tr>
<tr>
<td>Euthyroid</td>
<td>27.5%</td>
</tr>
</tbody>
</table>

Table 2

Sonological correlation was available in 69 cases.66% of thyroiditis cases showed heterogeneous (mixed) echotexture with or without micronodules, Sonological features of thyroiditis with nodular colloid goiter was seen in 19% of cases. The frequency of various sonological features is shown in Table 3.
Sonological findings | Frequency in our study
--- | ---
Mixed echogenicity with or without hypoechoic micronodules (thyroiditis) | 66\% (n=45)
Mixed echogenicity and multiple iso/hyperechoic nodules (Thyroiditis with nodular goiter) | 19.1\% (n=13)
Multiple nodules (nodular colloid goiter) | 11.7\% (n=8)
Solitary nodule | 4\% (n=3)

Table 3

Of the total number of cases, 81\% (n=15) presented with cytological features of thyroiditis only, whereas, 19\% (n=15) showed coexisting benign follicular lesions which were diagnosed on the basis of monolayered sheets/clusters of follicular epithelial cells, macrophages and background colloid. All of these were cases which had nodular presentation clinically.

The frequency of cytomorphological features of Hashimoto’s Thyroiditis: Table 4.

<table>
<thead>
<tr>
<th>Cytomorphologic features</th>
<th>Percentage of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased background lymphocytes</td>
<td>92%</td>
</tr>
<tr>
<td>Lymphocytic infiltration of follicles</td>
<td>87%</td>
</tr>
<tr>
<td>Hurthle cells</td>
<td>68%</td>
</tr>
<tr>
<td>Anisonucleosis</td>
<td>62%</td>
</tr>
<tr>
<td>Plasma cells</td>
<td>45%</td>
</tr>
<tr>
<td>Giant cells</td>
<td>8.5%</td>
</tr>
<tr>
<td>Epithelioid cells</td>
<td>6%</td>
</tr>
<tr>
<td>Colloid</td>
<td>25%</td>
</tr>
<tr>
<td>Histiocytes</td>
<td>15%</td>
</tr>
</tbody>
</table>

Table 4

DISCUSSION: In our study, the female to male ratio was 12:1, where as in other similar studies it was 10:1.\(^1\) The classic age group described for thyroiditis is 30-50 yrs\(^2\) where as in our study the peak was in younger age group 21-30 yrs.

Bhatia et al from India found majority in 3\(^{rd}\) and 4\(^{th}\) decade.\(^3\) Many authors have linked the increased incidence of HT particularly in coastal areas to excess of iodine.\(^4\)\(^-\)\(^6\) Even though the diffuse presentation was the most common presentation, nodular presentation was also seen in significant number.

Nodules are seen in early stage of disease. Higher incidence of nodularity may be due to the younger age of the patient or may be due to the coexisting colloid goiter. 40\% of cases had subclinical hypothyroidism.

Bagchi et al found incidence of 8.17\% in their study\(^7\) and Chandanwale et al found an incidence of 15.38\%.\(^8\) 27.5\% of cases were euthyroid. Staii et al found 50\% cases of thyroiditis were...
in euthyroid and subclinical hypothyroid state. The commonest sonological finding was heterogenous (mixed) echogenicity with small hypoechoic nodules which are highly diagnostic of HT.

But thyroiditis is seen even in cases of isolated nodules. Coexistence of thyroiditis and colloid goiter is seen in significant no of cases. Regarding the cytomorphology, background lymphocytes and plasma cells, lymphocytic infiltrate in the follicular cell clusters, anisonucleosis and hurthle cell change were important findings.

In the younger patient's florid lymphocytic infiltrate and less number of hurthle cells were seen where as in older age group, hurthle cell proliferation and lymphoepithelial lesions were more frequent. Florid hurthle cell proliferation, giant cells and granuloma were seen in only few cases.

**CONCLUSION:** The increased frequency of Hashimoto thyroiditis in younger age group, in serologically euthyroid cases and its coexistence with colloid goiter should prompt us to take more detailed and large scale study in Kerala, especially in the coastal areas. FNA should be done as a first line mode of investigation in diffuse enlargement of thyroid, since it helps in identifying Hashimoto thyroiditis in the initial stages even when the serological findings are normal.

**REFERENCES:**

9. Staii, Anca, et al. Hashimoto thyroiditis is more frequent than expected when diagnosed by cytology which uncovers a pre-clinical state. Thyroid Research 3 (2010).


Fig. 1: Lymphocytic infiltrate in follicular epithelial cell clusters
Fig. 2: Background lymphocytes
Fig. 3: Hurthle cells
Fig. 4: Anisonucleosis
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