CYTOMORPHOLOGICAL PROFILE OF DIFFUSE THYROMEGALY

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Abstract:
Occurrence of thyroid illness is common in India. Cytology plays an important role in preoperative diagnosis of thyroid lesions. We performed fine needle aspiration of diffuse thyroid lesions and studied the histomorphology of diffuse thyromegaly. We enrolled 52 patients received in our OPD, studied the smears and analysed the results.

Keyword: FNAC, Diffuse Thyromegaly

BACKGROUND:
Occurrence of thyroid illness is common in India. Prevalence of goitre is more than 40 million in India, with more than 2 billion globally. Thyroid enlargement is one of the most common problems in patients presenting at outpatient department of ENT particularly in females. Cytology plays an important role in preoperative diagnosis of both solitary nodules and in diffuse enlargement of thyroid gland. Soderstrom used FNAC for investigation of thyroid nodules for first time in 1952. It is a relatively simple technique without anaesthesia and no serious complications. FNA is one of the preoperative investigations to be correlated with clinical, radiological, and biochemical evaluation as applicable. Our study aims at analysis of cytomorphological features of diffuse thyromegaly.

MATERIAL AND METHODS:
The study was conducted at pathology department of a tertiary level medical college and hospital for a period of 3 months. Appropriate permission had been taken from the institutional ethical committee. Patients referred to FNAC OPD with clinical diagnosis of diffuse thyroid enlargement were included in the study. Uncooperative patients and patients with solitary/multinodular thyroid enlargement were excluded. All patients were clinically evaluated in detail and a cautious palpation of thyroid was done to judge in particular the site for aspiration. FNA was done using a 23 gauge needle attached to a 5 ml syringe under aseptic precautions. Several smears were prepared and promptly fixed.
in a fixative of 99% isopropyl alcohol and stained with hematoxylin and eosin stain. Whenever fluid was obtained all the contents were aspirated using a syringe attached to an aspiration needle. Macroscopic examination of fluid was done and then centrifuged. Smears were made from the sediment and stained by stains described above. Whenever a residual mass observed, material was collected by non aspiration technique.

**OBSERVATION:**
Of 163 cases received in OPD for FNA thyroid 56 cases had diffuse thyromegaly and rest 107 patients had solitary nodule / multinodular goitre. Of 56 patients 4 were hyperthyroid hence excluded and the rest 52 patients with diffuse thyromegaly were included in the study.

**GENDER DISTRIBUTION:** 49 patients out of 52 were females. This is about 94.2%. Males were about 5.8% (3 persons).

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**CHART 1- GENDER DISTRIBUTION.**

**DISTRIBUTION OF CYTOLOGICAL DIAGNOSIS:**
Hashimotos thyroiditis was commonest including 42.3% of patients (22 patients), followed by colloid goitre – 34.6% (18 patients), lymphocytic thyroiditis made 17.3% (9 patients). Dyshormonogenic goitre, acute suppurative thyroiditis, subacute thyroiditis included one case each (1.92%).

**CHART 2- CYTOLOGICAL DIAGNOSIS.**

<table>
<thead>
<tr>
<th>AGE DISTRIBUTION</th>
<th>HASHIMOT</th>
<th>COLLOID</th>
<th>LYMPHOCYTIC</th>
<th>DYSHORMONOC</th>
<th>SUBACUTE</th>
<th>ACUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10-20</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20-30</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30-40</td>
<td>8</td>
<td>3</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>40-50</td>
<td>3</td>
<td>2</td>
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<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50-60</td>
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<td>1</td>
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<td>0</td>
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<tr>
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</tbody>
</table>

Hashimotos thyroiditis was found in all age groups but commonly in 30-40 years of age. Colloid goitre was common in second decade and lymphocytic thyroiditis in first decade of life.

**DISCUSSION:**
Prior awareness of nature of disease alters the choice of treatment significantly. FNAC is a safe, simple,
cost effective procedure that can be performed on out patients with wide patient acceptance. It provides a more rapid and accurate diagnosis of thyroid lesions than any other combination of clinical or laboratory tests. The lesions that present with diffuse thyroid enlargement are

Multinodular (non toxic) goitre
Diffuse toxic goitre
Dyshormonogenic goitre
Autoimmune thyroiditis – Florid lymphocytic thyroiditis, Hashimotos thyroiditis
Acute suppurative thyroiditis
Subacute thyroiditis
Riedel’s thyroiditis
Neoplasms diffusely involving thyroid – malignant lymphoma, anaplastic carcinoma.

MULYINODULAR GOITRE:
FNB is usually done in multinodular goitre to investigate dominant nodule in order to rule out neoplasia. Multinodular goitre was not included in our study.

DIFFUSE TOXIC GOITRE:
Cytological findings may be of value in cases suspected to represent early toxic phase of Hashimotos thyroiditis or in the rare case of suspected malignancy. But usually FNA is avoided in toxic goitre.

DIFFUSE NON TOXIC GOITRE:
Common lesions that presents with diffuse non toxic goitre are Colloid goitre, Lymphocytic thyroiditis, Hashimotos thyroiditis. FNAC reliably distinguishes between colloid goitre and autoimmune thyroiditis in most cases. This is important because latter requires life long treatment and follow up. Antibody levels and TSH may provide diagnosis but antibody levels are positive in only 60-80% of cases. Thus cases may be missed if antibody estimation is used as a sole screening indicator of overt disease. On the other hand 10-15 % patients with positive antibodies may not have thyroiditis. Also cytological pattern may be diagnostic well before antibody levels in serum have risen significantly. Thus FNA is an essential tool in diagnosis of diffuse non toxic goitre. Main limitation is since thyroiditis affects the glands focally diagnostic material will not be obtained in upto 10% of cases. Repeat aspirations reduce this false negative rate.

Cytologically colloid goitre shows no difference from normal thyroid except for presence of abundant colloid of varying thickness.

Florid lymphocytic thyroiditis shows mixed population of lymphocytes, immunoblast, plasma cells, centroblasts and centrocytes. Thyroid follicular cells are relatively sparse and cells do not show oxyphilic change. Occur more commonly in women and in younger patients. In our study lymphocytic thyroiditis contributed to around 17% of cases. All were female patients and half of them are 10-20 years old.

FIGURE 1-SMEAR STUDIED SHOWS LOOSE CLUSTERS OF FOLLICULAR EPITHELIAL CWLLS WITHOUT OXYPHILIC CHANGE ADMIXED WITH POLYMORPHOUS POPULATION OF LYMPHOCYTES.(H&E,X100)
In Hashimotos thyroiditis lymphoid component is less prolific and increased population of follicular cells show oxyphilic change. There is close association between epithelial and lymphoid cells so that the lymphocytes seem to adhere to groups of epithelial cells. Hashimotos thyroiditis is common in women and can occur in any age but common in older age group. In our study Hashimotos was the commonest among the diffuse lesions of thyroid – 42%. All were females with many cases in 30-40 years of age.

Possibility of lymphoma should be carefully considered in any case of florid lymphocytic infiltration of thyroid particularly in older patients more than 60 years of age.

**FIGURE 2- SMEAR STUDIED SHOWS CLUSTERS OF FOLLICULAR EPITHELIAL CELLS SHOWING OXYPHILIC CHANGE WITH LYMPHOCYTES ADHERING TO EPITHELIAL CELLS (H&E,X400).**

**FIGURE 3-SMEAR STUDIED SHOWS NUMEROUS POLYMORPHS (H&E,X400).**

**SUBACUTE THYROIDITIS:**

Presents as a painful diffuse enlargement of thyroid often accompanied by fever, elevated ESR, and sore throat. Granulomatous reaction of mononuclear and multinucleated histiocytic cells to colloid escaped from damaged follicle is the hallmark of the disease. Multinucleated giant cells are extremely large with clumps of phagocytosed colloid. Background is dirty with variable number of follicular epithelial cells. We had only one inflammatory reaction mimicking thyroiditis. We received only one case during the duration of study, a male patient around 45 years of age.

**ACUTE SUPPURATIVE THYROIDITIS:**

It is a rare condition seen in immunocompromised patients. Smear shows presence of numerous polymorphs and evidence of necrosis. Close examination of any non inflammatory cell in the smear is essential since anaplastic carcinoma can be associated with necrosis and prominent
DYSHORMONOGENIC GOITRE:
Uncommon disease caused by defects in enzymes involved in synthesis of thyroid hormone. Usually presents in childhood often with hypothyroidism. FNA shows worrisome cytological atypia in smears. We received one case in study period.

RIEDELS THYROIDITIS:
Common in women. Characterised by complete replacement of thyroid gland tissue by fibrous tissue which may extend outside the gland causing fixation of gland. FNB is unlikely to yield any cellular material.

CONCLUSION:
In our study we included 52 patients who presented to FNA OPD with diffuse thyromegaly. Most common lesion diagnosed was Hashimoto's thyroiditis comprising 42% of lesions and occurring in all age groups, common in 30-40 years of age. Colloid goitre is second most common – 34% of lesions occurring in all age groups. Lymphocytic thyroiditis is common in women and in 10-20 years of age comprising around 17% of total lesions. We received one case each of those rare lesions dyshormonogenic goitre, acute suppurative thyroiditis, sub acute thyroiditis. We did not receive any case of malignancy in diffuse thyroid lesions.

REFERENCES: