Evaluation of Thyroid Swelling By Fine Needle Aspiration Cytology: A Single Institute Experience in Uttrakhand Region of Northern India.

Dr.Deepika Jain1, Dr.Navneet Jain2

1Dr.Deepika Jain M.D, Assistant professor (Department of Pathology) Government Doon medical college,Dehradun.
2Dr.Navneet Jain, M.S. Associate professor (Department of Surgery) Government Doon medical college, Dehradun

Abstract
Background
Thyroid lesions are one of the common conditions encountered in clinical practice. In India especially Uttrakhand region Iodine deficiency is a major public health problem so many of the patients present with solitary or diffuse goitre. FNAC is found to be the most effective tool for the evaluation of these lesions and helps to differentiate infective, inflammatory benign lesions to neoplastic and malignant lesions.

Aim & Objectives
The aim of the present study was to determine the epidemiological profile of various thyroid lesions Using fine needle aspiration cytology (FNAC) at our institute.

Material And Method
A retrospective study was conducted in Government Doon Medical college, Dehradun for the duration of June 2012 to June 2015. Total 251 cases were evaluated.

Result
The most common age group of presentation was 40-50 years with M:F -1:12.8 Out of total 251 cases of thyroid, FNAC revealed 222 cases (86.8%) as benign which comprises of 8(3.18%) Unsatisfactory lesion, colloid goitre 181 cases (72.1%) and lymphocytic thyroiditis 38 case (15.1%), 3 case (1.1%) each as follicular lesion of indeterminate significance, 9 cases (3.58%) were reported as follicular neoplasm, 2 (0.79%) as suspicious for malignancy, and 7 cases (2.78%) as malignant.

Conclusion
Benign thyroid swellings are the most common presentation for which FNAC is a single most effective sensitive tool for diagnosis of these lesions and highly effective in determining the nature of disease.

Keywords: Thyroid, FNAC, benign, malignant, Uttrakhand.

I. Introduction
Diseases of the thyroid gland are one of the commonest endocrine disorders in India as well as in the world. It is estimated that nearly 42 million people in India suffer from thyroid diseases (1). About 40% of the general population are affected by diseases of thyroid which may manifest with hypothyroidism, hyperthyroidism, cosmetic issues, and problems in other organs such as compression. The incidence of thyroid malignancy is about 2-4% (2). Therefore, the accurate evaluation of thyroid nodules is crucial. FNAC of these swelling considered to be the gold standard diagnostic test for the identification of benign and malignant thyroid lesion (3). It is the single most effective test for the preoperative diagnosis of thyroid nodular swelling thereby decreasing the rate of unnecessary surgery and when needed helps to determine the type and extent of the surgery (4).

II. Aim And Objective
The aim of this study was to determine the epidemiological profile of various types of thyroid diseases and an attempt to study efficacy of FNAC according to new Bethesda classification(5) at our centre.

III. Material And Method
A retrospective study was conducted in department of pathology, Government Doon Medical college, Dehradun for the period of 3 year (June 2012- June 2015). A total of 251 FNA from thyroid swelling were done during this period. Informed consent was taken from the patient. The records of these 251 patients who undergone FNA during study period were retrieved and information about age, sex and cytopathological
diagnosis were recovered (Corresponding histopathology were not available in most of the cases in our setup). Aspiration was performed using disposable 10ml syringe with 23G needle. To reduce contamination of specimen with blood not more than 2 – 3 passes were made and non-aspiration technique was used in some. Adequacy of cytological smear is judged by presence of 5 – 6 groups of well-preserved follicular cells, with each group containing 10 or more cells, according to Bethesda system of Classification of thyroid diseases. Minimum 3 smears were made for each case. Staining was done by Papanicolaou and Giemsa methods. Cytological smear were reviewed according to standard guide lines and diagnosis was according classified and correlated with age and sex. The data from the past 3 years were retrieved, compiled, summarised and analysed statistically using frequency distribution and percentage proportion.

IV. Result

In our study total 251 cases were included which were adequate for reporting. The age and gender wise distribution of total thyroid lesions are shown in Table(I&II).

<table>
<thead>
<tr>
<th>Age group(years)</th>
<th>Total No of cases</th>
<th>Percentage(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>25</td>
<td>9.9</td>
</tr>
<tr>
<td>21-30</td>
<td>48</td>
<td>19.1</td>
</tr>
<tr>
<td>31-40</td>
<td>45</td>
<td>17.9</td>
</tr>
<tr>
<td>41-50</td>
<td>64</td>
<td>25.4</td>
</tr>
<tr>
<td>51-60</td>
<td>41</td>
<td>16.3</td>
</tr>
<tr>
<td>61-70</td>
<td>23</td>
<td>9.1</td>
</tr>
<tr>
<td>70-80</td>
<td>05</td>
<td>1.9</td>
</tr>
</tbody>
</table>

The youngest patient was 8 years old and oldest of 78 years old. Most of the cases were from 21-50 years. The commonest age group of presentation was 40-50 years (Table I). Male to Female( M: F) ratio was 1:12.8(Table II).

<table>
<thead>
<tr>
<th>Gender</th>
<th>Total no of cases</th>
<th>Percentage(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>18</td>
<td>7.1</td>
</tr>
<tr>
<td>Female</td>
<td>231</td>
<td>92.0</td>
</tr>
</tbody>
</table>

Out of 251 thyroid lesion 3.1% were unsatisfactory, 86.8% benign, 1.19% Undetermined, 3.58% Follicular neoplasm, 3.18% suspicious and 2.78% were positive for malignancy. These malignant neoplasm were further classified into Papillary CA (1.59%), Medullary CA (0.79%) and Anaplastic CA (0.39%). (Table III.)

<table>
<thead>
<tr>
<th>Category</th>
<th>Diagnosis</th>
<th>Total number of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Unsatisfactory</td>
<td>08</td>
<td>3.10</td>
</tr>
<tr>
<td>2.</td>
<td>Benign</td>
<td>222</td>
<td>86.8</td>
</tr>
<tr>
<td>3.</td>
<td>AUS/FLUS</td>
<td>03</td>
<td>1.19</td>
</tr>
<tr>
<td>4.</td>
<td>Follicular neoplasm</td>
<td>09</td>
<td>3.58</td>
</tr>
<tr>
<td>5.</td>
<td>suspicious for malignancy</td>
<td>02</td>
<td>3.18</td>
</tr>
<tr>
<td>6.</td>
<td>Positive for malignancy</td>
<td>07</td>
<td>2.78</td>
</tr>
</tbody>
</table>

AUS-Atypia Of Undetermined Significance, FLUS-Follicular Lesion Of Undetermined Significance

V. Discussion

FNAC provide a definite diagnosis of malignancy, with tumour type, enabling appropriate therapeutic surgery in one stage and for benign conditions can help the patients into those which potentially may require surgical as opposed to medical and endocrinological management or need surveillance. Nonetheless FNAC is the most reliable diagnostic tool in the management of patients with such lesion. Our study shows highest incidence of thyroid swelling in the 41-60 years of age group followed by 37.0% in the 21-40 years of age group. These results are comparable to the study done by Htwe TT, et al[6] found highest (45.2%) incidence of thyroid swelling in the 41–60 year age group, followed by 42.9% in the 21–40 year age group. In present study Female predominance is striking with M: F ratio was 1:12.8. These results are comparable to a study done by Hirachand S et al with M:F ratio was 12.3:1.(7) In this study the FNAC findings was as follows, 222 cases were benign(86.8%). Out of benign lesion most of the cases were of colloid goitre 72.1% followed by 15.1% cases of lymphocytic thyroiditis and 1.1% sub-acute thyroiditis. Neoplastic lesion constitutes 3.58%(9 cases) and malignant lesion 2.78%(7 cases). These results are similar to study conducted by Parikh U.R et al [8] studied


VI. Conclusion

FNAC is firmly established as first line diagnostic test for the evaluation of goitre and single most effective test for the preoperative diagnosis of solitary thyroid nodule. It is highly efficacious in distinguishing between benign and malignant thyroid lesions. There was marked female predominance in all types of thyroid diseases. The majority of thyroid lesions were benign presenting as simple goitre followed by chronic lymphocytic thyroiditis. Papillary carcinoma was the commonest malignancy encountered.

Bibliography


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