ABSTRACT

Aim: To compare the fine-needle non-aspiration cytology (FNNAC) with fine-needle aspiration cytology (FNAC) in providing the adequate samples for the evaluation of thyroid lesions.

Materials and Methods: A total of 48 patients presenting with thyroid lesions at Standard Diagnostics Laboratory, Bangalore during period of Jan 2009 to October 2010, underwent both FNAC and FNNAC techniques. All the needle-sampling procedures were done by a single pathologist. The obtained samples were assessed for cytological evaluation based on sample adequacy, aspiration of blood, cellular features and possible diagnosis.

Results: FNNAC produced less inadequate samples (20.9 %) than FNA (31.25%).

Conclusion: The FNNAC is a better technique of sampling thyroid nodules and appears to produce more adequate specimen.

Keywords: Thyroid lesions, Fine Needle Aspiration Cytology, Non-aspiration

INTRODUCTION

Fine needle aspiration is an well-established diagnostic test in evaluating thyroid nodules. The procedure is primarily used to distinguish the malignant nodules of thyroid from the benign nodules that can be followed clinically. Its advantages include minimal invasion and it has been reported to have high sensitivity, specificity and accuracy. However, the major limitation of FNA in thyroid include inadequate and bloody specimens as thyroid is one among the rich vascular organs. An alternative sampling method, non-aspiration fine needle cytology, was developed in France in the 1980s by Brifford et al and described in the investigation of thyroid lesions by Santos in 1988. Using a fine needle and capillary pressure to suck cells into the needle lumen, avoids aspiration and has been reported to overcome the problem of inadequate and bloody specimens obtained from the highly vascular thyroid gland.

MATERIALS AND METHODS

The study population comprised of all patients who presented with thyroid swelling at the Pathology laboratory, Yelahanka diagnostic center from Jan 2009 to October 2010. The study received the ethical clearance from the in-house hospital joint ethic committee. After a thorough clinical examination, all the patients were subjected to both FNAC and FNNAC. A total of 48 cases of thyroid lesions were included in this study. The details of the technique of FNA were explained to the patient and an appropriate consent was obtained from each case before performing the procedure. The patients went through FNAC...
and FNNAC using 23-gauge needles. With the safe precautions, the procedures were performed by a single operator. FNAC or FNNAC sampling was carried out randomly with lesions. The same pathologist, who is blinded about the technique used to retrieve the samples, reviewed the slides. After careful interpretation of samples, they were grouped into three main categories as shown in the table 1.

RESULTS
A total of 48 patients with clinically palpable thyroid nodules had both FNNAC and FNAC performed. The demographic data, clinical data and the cytological data were obtained of all the cases. The study has more of the female patients 37 (77%) than the males 11(23%). The age range was 16 to 82 years with the mean of 46 years.

FNNAC: Out of 48 samples, 38 (79.1 %) samples were adequate (category 3) and 10 (20.9%) samples did not yield the required diagnostic specimen (Category 1+2), as shown in the Table 2.

FNAC: Out of 48 samples, 33 (68.75 %) samples were adequate (category 3) and 15 (31.25%) samples did not yield the required diagnostic specimen, as shown in the Table 2.

DISCUSSION
Fine Needle aspiration cytology has been well established as the base line investigation in evaluating the thyroid nodules. It is known for many advantages it provides like, simple technique, safe, rapid turn-around time etc. It provides the primary information and or diagnosis which helps in choosing the further rightful management of the thyroid lesions. Being a blind technique, it has a few drawbacks limiting its clinical utility. A major limitation of FNA of thyroid is blood in the samples, which interferes in the interpretation of the slide, thus leading to inferior quality samples. To combat this, nonaspiration technique has been tried by many researchers, Santos and Leiman described it first about its advantage over the FNA technique. This was well supported many other studies quoting that FNNAC produces less bloody and higher quality samples. Another study has established the value of FNNAC in other organs as well. The current study compared the adequacy of the two techniques primarily by the scoring method as indicated in the table 1. There was statistically significant increase of adequate samples in FNNAC, which is in compliant with other studies. However in both the techniques there were significant percentages of inadequate samples, which can be attributed to the limitation of aspiration cytology. Some of the studies indicate that usage of ultrasound/radiological assistance will enhance further the success of obtaining the adequate samples.

CONCLUSION
Fine needle cytology is one of the most important and well known techniques in evaluation of thyroid nodules. However, the technique has many limitations including sampling errors, inadequate sampling, etc. We found that non aspiration technique produces higher rate of adequate samples in comparison to FNAC. The sample adequacy can be further enhanced by radiological assistance.

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REFERENCES
2. P. Krishnappa, S. Ramakrishnappa, M.H. Kulkarni. “Comparison of Free Hand versus...


Table 1: Showing the different categories of the samples obtained

<table>
<thead>
<tr>
<th>Category</th>
<th>Criteria</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>No follicular cells in the smear</td>
</tr>
<tr>
<td>2</td>
<td>&lt; 6 groups of follicular cells</td>
</tr>
<tr>
<td>3</td>
<td>&gt;6 groups of follicular cells</td>
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</tbody>
</table>

Table 2: Showing the comparison of the adequacy of the samples obtained by FNNAC & FNAC

<table>
<thead>
<tr>
<th>Category</th>
<th>FNNAC</th>
<th>FNAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>38</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>48</td>
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