



Surgery

CORRELATION OF FNAC WITH HISTOPATHOLOGY IN CLINICALLY BENIGN GOITRES

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ABSTRACT Fine needle aspiration cytology is considered the gold standard diagnostic test for the diagnosis of thyroid nodules. Fine needle aspiration cytology is a cost effective procedure that provides specific diagnosis rapidly with minimal complications. Based on the cytology findings, patients can be followed in cases of benign diagnosis and subjected to surgery in cases of malignant diagnosis thereby decreasing the rate of unnecessary surgery. Purpose of the present study was to correlate the fine needle aspiration cytology findings with histopathology of excised specimens. This was a prospective study conducted on 55 consecutive patients between November 2013 and October 2015. The accuracy of FNAC of benign lesions is 96%. The accuracy of the test in the present series sensitivity 94.11%, specificity 95.23% overall accuracy 94.54%, positive predictive value 96.96%, negative predictive value 90.96%. Fine needle aspiration cytology is a simple, easy to perform, cost effective, and easily repeated procedure for the and diagnostic technique for evaluation of thyroid lesions.

KEYWORDS : FNAC, Histopathology, goiter

INTRODUCTION

Nodules of thyroid gland are very frequent. It is estimated 4-7% adults have palpable enlargement of thyroid and 10 times more have impalpable nodules. Most of them are benign and fewer than 5% are actually malignant. A multitude of diagnostic tests like ultrasound, thyroid nuclear scan, Fine Needle Aspiration Cytology (FNAC) and many more are available to evaluate goitre. Final diagnosis requires histological examination of lesions for which FNAC and Histo Pathological Examination (HPE) become mandatory tests. This study is carried out with the objective of comparing the findings of the two tests namely FNAC and HPE and to know how the former correlates with the later.

The technique of fine-needle aspiration was developed at Memorial Hospital in New York City in the 1920s. It is generally carried out with a "fine" needle (OD 0.6 to 0.9 mm), sometimes under image guidance. There is no question that the procedure is, in most instances, inexpensive, safe, quick, and when performed by experienced workers—quite accurate. It has contributed a great deal to transform cytology from a primarily screening tool to a powerful diagnostic technique. FNAC has evolved to be a useful and simple procedure for assessment of goiter. It is more suited for thyroid gland because of its minimally invasive nature and thyroid being a vascular gland.

MATERIALS AND METHODS

This is a prospective observational study carried out in Department of General Surgery, NRI General Hospital, China Kakani.

Sample Size and Duration:

A sample size of 55 cases in duration of 2 years.

INCLUSION CRITERIA

All patients with clinically benign goiters who came to NRIGH during the period from November

- 2013 to October 2015.
- All patients willing to undergo FNAC
- All patients who were subjected to surgical treatment after FNAC.

MATERIALS USED

1. SYRINGE	10 ml disposable plastic syringe
2. NEEDLE	25 G disposable needle
3. MICRO SLIDES	7.5 × 2.5 cm size
4. FIXATIVES	95% Isopropyl alcohol and ether and 2-5 drops of acetaldehyde

TECHNIQUE OF ASPIRATION (METHOD)

The patient is placed in the recumbent position with a pillow under the shoulders so that the neck is hyperextended. The skin is cleaned with

alcohol and infiltrated with 0.5% lidocaine in few patients. A 5 ml disposable syringe is used and inserted into the nodule in a direction perpendicular to the anterior surface of neck. The nodule is fixed by the opposite hand as the needle is inserted. When the needle is in place, the opposite hand holds the syringe; the hand that inserted the needle withdraws the plunger to create suction. The opposite hand again fixes the nodule for the rest of the procedure.

After the needle has been withdrawn from the nodule, it is detached from the syringe, a few ml of air is aspirated into the syringe, the needle is reattached, and the air is expressed through the needle to expel the specimen onto a glass slide. The specimen is inspected to assess its suitability for cytologic evaluation. The specimen desired consists of a drop of red-orange fluid.

After the specimen has been expressed onto a glass slide, it is smeared. A better technique is to place the top slide flat on the specimen and with the index finger press down and slide the top slide over the bottom slide. This produces a thin, evenly dispersed smear that is ideal for cytologic evaluation. The smear should be fixed immediately. Air drying will produce a loss of the nuclear detail so important for cytologic evaluation of Papanicolaou-stained preparations. The air-dried smears stained with Giemsa stain favoured by European cytopathologists are inferior in nuclear detail.

Analysis of Data:

The data collected in a specially designed proforma were processed and subjected to relevant statistical analysis.

Following statistical methods were applied in the present study.

- Cross tabs procedure
- Descriptive statistics
- Sensitivity
- Specificity
- Positive predictive value
- Accuracy

RESULTS

FNAC was done on 55 patients with Thyroid swellings. Thus, All the 55 cases were selected for correlation of cytological diagnosis with the histopathological diagnosis. The study group of 55 patients ranged from 18-70 years with mean age of 42.21 years. Majority of the thyroid nodules accrued in 3rd and 4th decades of life. In our study out of 55 cases, female were higher in frequency (n=45 ; 81.81%) than men (n=10; 18.18%).

The youngest patient of our series was a girl of 18 years with nodular goitre the oldest patient was a woman of 72 years, a case of papillary carcinoma.

Table 1 : Accuracy Of Diagnostic Test Of Fnac Of Thyroid Goitres

FNAC	HPE POSITIVE	HPE NEGATIVE
Positive Test	32 True Positive(TP)	1 False Positive (FP)
Negative Test	2 False Positive (FP)	20 True Negative(TN)

DISCUSSION

We use the simplified four-category system for FNAC results which include Inadequate, Benign, Suspicious, and Malignant. In present study the all the 55 patients have undergone surgery according to, clinical findings suggesting the diagnosis of benign or malignant goiter diagnosis.

In our study we can calculate the true frequency of false negative results, because all patients with benign cytological findings undergo surgery.

The false positive rate (FPR) indicates that a patient malignant FNAC result was found on histological examination to have benign lesion. The false positive rate (FPR) was 1.81% in this study, which calculated as False Positive X 100 / False Positive + True Negative. However, this is expected for FNAC of the thyroid as a large group falls in the category of malignant and suspicious or consistent with follicular neoplasm, out of which a significant number turn out to be follicular adenomas or hyperplastic / adenomatous nodules. This was because all the above need further surgical management. In our study FNAC showed fifty (90.90%) non neoplastic and five (9%) neoplastic. Among nonneoplastic thyroid swelling, nodular goitre was common. followed by hashimotos thyroiditis which was two cases (3.63%) and five (9%) Follicular neoplasm. In this study 1 out of 5 cases are confirmed as follicular carcinoma and 1 case as papillary carcinoma (5.6%) on subsequent histology comparable to reported 9% of thyroid aspirates. Hence, it is better and reasonable to consider patients with suspicious FNA results for either repeat aspiration or surgical intervention. The majority of our patients were in the third to fourth decade of life, females being predominant.

The majority of the cases were benign, of which multinodular goitre was the most common pathology (58%). Among the neoplastic follicular adenomas are (30%) and of malignancies, the cases are papillary carcinomas (2%). The sensitivity, specificity and accuracy value of positive smears were 94.11%, 95.23% and 94.54% respectively.

The age of the patients varied from 18-72 years mean age of 43 years.

The sex ratio Female : Male in the present study group was 4.5:1 with 45 females and 10 males. 5 out of 55 patients we have studied were follicular neoplasms in the FNAC. (9.09%) HPE revealed 3 papillary carcinoma (5.45%) and 1 (1.81%) follicular neoplasm with total of 7.27% malignant goiters in the study.

Among the malignant lesions papillary carcinoma comprise the most. The incidence of papillary carcinoma in the literature where is from 50% to 80% in the present study.

FNAC and HP of THYROID LESIONS Degenerative changes and old haemorrhages are characterized by histiocytes, seen as large cells with peripherally pushed pyknotic nuclei and cloudy cytoplasm with many vacuoles and granules of degraded or digested material. Hurthle cells look longer than follicular cells with well-defined cellular borders with granular cytoplasm and moderate to large nuclei. Fine needle aspirates usually consist of numerous lymphocytes and plasma cells with follicular cells showing Hurthle cells. Hurthle cells contain abundant dense granular cytoplasm and may possess hyperchromatic, highly atypical nuclei.

CONCLUSION

The cell pattern approach in diagnosing thyroid lesions on FNAC raises differential diagnosis.

By observing cell morphology, background details along with predominant cell pattern, final diagnosis can be clinched easily and accurately.

Papillary, microfollicular, syncytial pattern are commonly seen in neoplasm. In our study, diagnostic accuracy, sensitivity and specificity was 94.54%, 94.11% and 95.23% respectively.

Meticulous examination of all the smears for predominant cell pattern,

cellular morphology & background details will be of great importance in minimizing false negative diagnosis in thyroid FNAC.

SUMMARY

55 patients who presented with palpable thyroid swelling and are clinically benign were studied during the 2 years period. All the 55 patients were subjected to FNAC underwent surgical treatment followed by HPE.

The FNAC results were compared with the results of HPE the majority of the patients were in their 3rd and 4th decade of life. The female to male ratio is 4.5 :1.

In the FNAC results showed 48 Nodular goiters in Hashimoto thyroiditis, 5 Follicular neoplasms.

Out of 55 cases reported cytologically benign 29 were nodular goiters. 4 Hashimoto thyroiditis and 15 Follicular adenomas .i.e., 48 benign and 2 cases reported a papillary carcinoma.

They were the false negative cases. The accuracy of FNAC of benign lesions is 96%. The accuracy of the test in the present series sensitivity 94.11%, specificity 95.23% overall accuracy :94.54%, positive predictive value 96.96%, negative predictive value 90.96%.

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