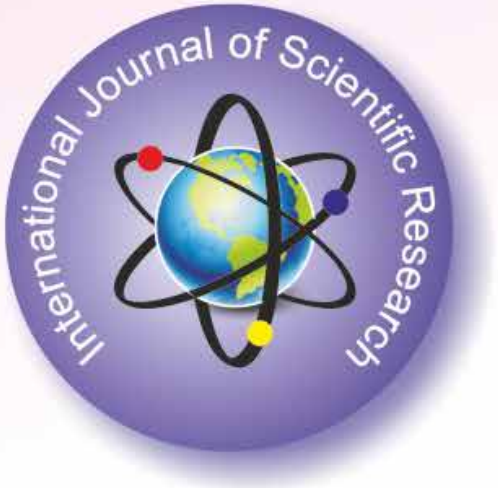
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Research Paper

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Cytohistopathological Correlation of Thyroid Swelling

Medical Science

KEYWORDS : Thyroid swelling, FNAC, USG guidance, Histopathology.

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ABSTRACT

In study of cytohistopathological correlation of thyroid swelling, 150 cases of clinically diagnosed palpable thyroid swellings have been subjected to fine needle aspiration cytology. FNAC yielded adequate material in 142 out of 150 of cases and histopathological specimens were available in 35 cases. Thyroid function test results and USG findings results were also available in most of the cases. We scrutinized cases showing any discrepancy in cytohistopathological findings with the aim of establishing the possible cause of error. Our aim of study was to differentiate between benign and malignant lesions to avoid unnecessary surgery. Sensitivity of FNAC in our study was 97% and specificity for malignant lesion was 100%.We conclude that FNAC is highly accurate in malignant lesion, However when encountered with benign lesion, it requires follow-up over a period of time particularly with USG guidance.

INTRODUCTION:

FNAC of thyroid swelling has been widely and successfully utilized for diagnosis. Our aim was to demonstrate effectiveness of this cheap and simple procedure for the different types of thyroid lesions, particularly differentiation of benign and malignant lesion which reduces unnecessary surgery for benign lesion (8).Although there is a large body of world literature claiming the accuracy and usefulness of thyroid cytology, there is also evidence showing possible limitations and pitfalls of this procedure (4,9).The first approach to the study of thyroid nodule should be TSH measurement. If serum TSH is subnormal, a radionuclide thyroid scan should be obtained .Because hot nodules rarely harbor malignancy, no additional cytological evaluation is necessary. In other patients with subnormal TSH levels, thyroid US should be performed. Taking into account the US results, the decision is made about whether FNAC directly or assisted by USG should be done(7).FNAC is still regarded as the single most accurate and cost-effective procedure, particularly if ultrasound is used as a guide for better sample collection (1),especially for cystic lesions (5).

MATERIALSANDMETHODS:

This study was done in N.H.L municipal medical college, Department of pathology, Ellisbridge,Ahmedabad for the period of 2 years from June 2010 to May 2012.Total 150 cases of thyroid swelling were aspirated with 23 gauge disposable needle fitted with 10ml of disposable syringe using standard procedures without local anesthesia(11).Both air dried and methanol fixed smears were prepared and stained with Hematoxyline and Eosine and May grunward giemsa following recommended steps(3). Diagnosis of cytological smear was done according to standard criteria defined by various authors (4,8,10). Subsequent histopathological specimen of all those cases were studied and correlated with cytology along with detailed clinical features. Biopsy was done with USG guidance in 50% of our cases.

RESULTS:

Out of 150 cases, 142 cases were adequate for reporting. Among the reported cases female cases were far outnumbered male cases with ratio of 5:1.Most of the cases were reported in the age group 10-70 years. Thyroid function tests results were available in almost all the cases. Most common presenting complaint was midline neck swelling. Majority of cases reported cytologically were Nonneoplastic (127)

(TABLE-1),followed by indeterminate (8)(TABLE-2) and malignant(7)(TABLE-3).Follicular neoplasm and Hurthle cell-neoplasm cannot be classified as benign or malignant by cytology alone(8).Hence in our study, these tumors were classified under indeterminate group as recommended by other authors (5). All malignant lesions without any overt follicular architecture were included in malignant group. In one case, cystic fluid was aspirated from lesion >3cm in DM but it was not resolved after aspiration. We repeated the FNAC from solid lesion with ultrasound guidance and it was cystic papillary carcinoma. In another case, Cytological findings were that of nodular colloid goiter but when we examined histopathological specimen, there was a small foci of micropapillary carcinoma(false negative case).One case with cytological finding of Hurthle cell neoplasm was Hashimoto's thyroiditis histopathologically.(False positive case).

DISCUSSION:

An adequate cytological smear of thyroid should contain at least 5-6 groups of well-preserved follicular cells with each group containing 10 or more cells (11).However specimen must be adequate in form of quality that is in thickness, fixation and staining. Additional factor that impact both adequacy assessment and interpretation include the clinical data, ultrasound finding, size of nodule and risk factors (7).Abundance in female cases in our study is consistent with that of other study. In our study, no. of cases which are inadequate for reporting was only 8(5%) out of 150 which are less as compare to previous studies(3).The reduced no. of cases as compared to previous study was because of increased use of ultrasound guidance.No of false positive cases in our study was comparable with other studies (10).No. of false negative cases in our study is less as compare to previous studies due to increased use of ultrasound guidance in our study. The specificity for cancer detection (100%) along with overall cytohistopathological correlation is quite comparable with reported by similar studies (2,5).Sensitivity in our study for cytohistopathological correlation was 97% which is quite comparable with other studies.In case of false negative diagnosis, FNAC smear showed abundant colloid with moderate no. of follicular cells arranged in sheets and occasional macrophage favoring diagnosis of nodular colloid goiter.(FIGURE-1) Histopathology of this lesion showed minute foci of papillary carcinoma. (FIGURE-2) Cause of detection or diagnosis failure was possibly the presence of small minute foci of the papillary thyroid cancer that was missed during aspiration. Similar cases were encountered by others (5,8).This type of error could be reduced if aspirates were obtained from different portions of swelling by the use of ultrasound. Finally, it must be kept in mind that papillary carcinoma can coexists with other neoplastic and nonneoplastic lesions such as Grave's disease, Nodular hyperplasia and Hashimoto's thyroiditis (7).In case of false positive diagnosis, FNAC smear showed small and large clumps of hurthle cells with scanty colloid pointing to Hurthle cell neoplasm (FIGURE-3).The histopathological features were consistent with that of Hashimoto's thyroiditis (FIGURE-4).Failure to demonstrate lymphocytes and to appreciate the nonneoplastic nature of hurthle cell were the cause behind the failure in these cases. Others have also reported similar problem (5).Multiple aspirations from various part of lesion could be helpful to get a correct cytological diagnosis. Cytological features favoring

diagnosis of thyroiditis over neoplasm in a Hurthle cell smear include the absence of poorly organized cell clusters having nuclear pleomorphism particularly anisonucleosis of hurthle cell in thyroiditis. Hurthle cells in Hashimoto's thyroiditis are more cohesive; form small cohesive groups lack nucleoli and more pleomorphism. (6)

CONCLUSION:

FNAC is single most recommended diagnostic procedure for the diagnosis of thyroid nodule since it allows the distinction of benign and malignant lesion and helps to decide the treatment plans (8).We also conclude that FNAC diagnosis of malignancy is highly significant and such patients should be subjected to surgery. A benign FNAC diagnosis should be viewed with caution as false negative results do occur. False negative cases can be reduced if strict criteria of specimen adequacy are applied; if benign nodules are followed by a repeated FNAC over a period of time and USG guidance is used. Major sources of error in diagnosis are related to poor specimen quality, interpretation of unsatisfactory smear as nonneoplastic in nature and sampling error. (7) .Technical procedure for the aspiration and smear preparation are important steps for obtaining suitable smears.

TABLE-1

NON NEOPLASTIC GROUP	No. of cases(127)
Simple colloid goiter	46
Nodular goiter	04
Colloid goiter with cystic changes	40
Grave's disease	10
Hashimoto's thyroiditis	22
Subacute thyroiditis	03
Dyshormonogenetic goiter	01
Cystic nodule	01

TABLE-2

INDETERMINATE GROUP	No. of cases(08)
Follicular neoplasm	07
Hurthle cell neoplasm	01

TABLE-3

MALIGNANT GROUP	No. Of cases(07)
Papillary carcinoma of thyroid	06
Cystic papillary carcinoma	01

TABLE-4

Cytological diagnosis	No. Of cases diagnosed on Cytology	No. of cases available for histopathology	Histopathological diagnosis		False positive	False negative
			Consistent with diagnosis	Inconsistent with diagnosis		
Non-neoplastic	127	24	23	1	0	1
Indeterminate	8	6	5	1	1	0
Malignant	7	5	5	0	0	0
Total	142	35	33	2	1	1

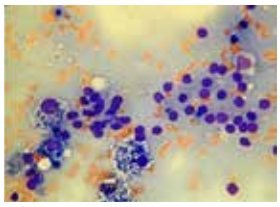
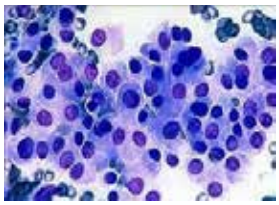


FIGURE-1

NODULAR COLLOID GOITER

FIGURE-2

MICROPAPILLARY CARCINOMA



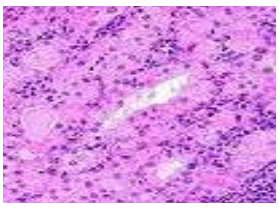


FIGURE-3

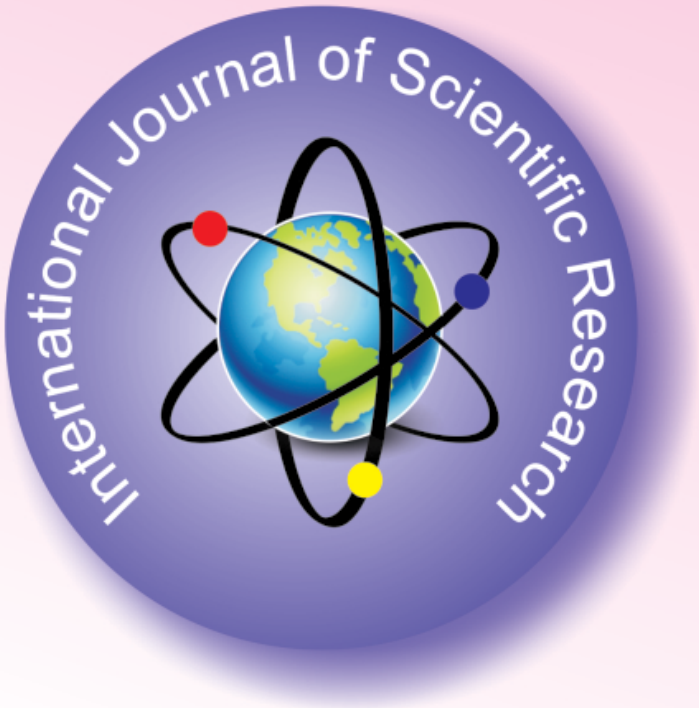
HURTHLE CELL NEOPLASM

FIGURE-4

HASHIMOTO'S THYROIDITIS

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