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" FINE NEEEDLE ASPIRATION CYTOLOGY OF THYROID LESIONS WITH HISTOPATHOLOGICAL CORRELATION"

Neurosurgery

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ABSTRACT

Background: Thyroid is a frequent site of disease in human body. Fine needle aspiration cytology is a rapid, efficient, inexpensive and safe diagnostic method in these cases.

Method: In the present study, 100 cases of thyroid FNA's, have been analysed and cytohistopathological correlation has been interpreted wherever available

Results: In the present study, a total of 100 cases of thyroid swellings were studied. Of these 100 cases, 90 were diagnosed as non neoplastic lesions by FNAC and 10 as neoplastic lesions. Among 100 cases, 70 were biopsied subsequently and subjected to histopathological study

Conclusion: FNAC has high rates of sensitivity and positive predictive value in diagnosing thyroid lesions.

KEYWORDS

Fine Needle Aspiration Cytology; Cytohistopathological Correlation; Benign And Malignant Neoplastic Lesions.

INTRODUCTION

Thyroid lesions are one of the common conditions encountered in clinical practice. The diseases of thyroid are of great importance because most of them are amenable to medical or surgical treatment.[1]Often it is difficult to make an accurate diagnosis by clinical evaluation alone. Hence Fine Needle Aspiration Cytology (FNAC) study of such lesions along with clinical evaluation is emphasized in order to make an accurate diagnosis. . All palpable lesions can be assessed by FNAC technique, early diagnosis is often possible.[2] Its uses have decreased the number of thyroid surgeries performed and increased the ratio of malignant to benign lesions resected. FNAC examination has proved to be a simple, accurate, safe,and cost effective method for the preoperative diagnosis of benign and malignant thyroid nodules.3Its uses have decreased the number of thyroid surgeries performed and increased the ratio malignant to benign lesions resected. As a result, many thyroid surgeries for benign diseases have been avoided.[4]

AIMS AND OBJECTIVES

1) To study the cytomorphological features in various thyroid lesions and to provide accurate diagnosis
2) To correlate the cytological features with histopathological study of all surgically removed thyroid lesions
3) To evaluate sensitivity and specificity of FNAC of thyroid lesions

MATERIALS AND METHODS

The study was undertaken in the Department of Pathology,SANJAY GANDHI HOSPITAL . The study comprised of 100 patients who presented with the history of swelling of thyroid.

Aspiration was performed with 22 gauge needle attached to a 20ml disposable syringe. Smears were air-dried, methanol fixed and May-Grunwald Giemsa(MGG) stained. Few smears were wet fixed in 95% ethyl alcohol and stained with Haematoxylin and Eosin (H & E

RESULTS

The present study deals with the fine needle aspiration cytology (FNAC) of thyroid lesions and determination of the diagnostic accuracy of the aspiration cytology with histopathological correlation.

Age

Age group of patients referred for thyroid aspirations ranged from 20 years to 80 years with mean age of 39.66 years. Majority of the patients were in the age group of 21- 40 years.

Sex

Majority of the patients were females accounting for 88% forming a male to female ratio of 1:7.3

Among the total thyroid aspirations, 91% constituted Non-neoplastic lesions and the remaining 9% were Neoplastic lesions.

In FNAC of Non-neoplastic lesions, the different lesions along with the number of cases is shown below:

The most common lesion found in FNAC was Nodular colloid goiter with 65 cases, least

common was Hyperplastic nodule with 2 cases.

Different lesions seen in the thyroid aspirates are given above with Nodular colloid goiterbeing more common with 71% and least common was Hyperplastic nodule with 3%.

In FNAC of 100 cases, there were 9 cases of Neoplastic lesions which are as follows:

1. Follicular neoplasm
2. Papillary carcinoma
3. Hurthle cell neoplasm

The incidence of Papillary carcinoma was more with 66%, followed by Follicular neoplasm with 22% and Hurthle cell neoplasm with 12%.

The incidence of Neoplastic lesions was high between the age group of 21-40yrs and low between age group of 0-20 yrs, and was not seen in the age group of 61-80 yrs.

HISTOPATHOLOGICAL DIAGNOSIS OF THE LESIONS

In the present study of 100 cases, 70 patients underwent surgery and the histopathological diagnosis of the cases are [given] below

Non neoplastic lesions -60
Neoplastic lesions -10

In the present study, the incidence of Multinodular goiter was more on histopathology with 52 cases, followed by Hashimoto thyroiditis with 6 cases and 2 cases of Colloid cyst.

Among the 10 Neoplastic lesions, 8 were Papillary carcinoma with a ratio of 80%, Follicular adenoma was 1 with a ratio of 10 % and Hurthle cell adenoma was 1 with a ratio of 10%.

Multinodular goiter:

There were 52 cases of of Multinodular goiter in our study.

Cytology:

Aspirations yielded 0.2 ml of colloid like material.
Smears studied were cellular and showed both hyperplastic and involutional forms of benign thyroid follicular cells arranged in

cohesive monolayered sheets, clusters and dispersed singly in a background of thick and thin colloid.

Histopathology:
Sections studied showed benign thyroid follicles of varying sizes lined by flattened to cuboidal epithelium, containing colloid and separated by fibrous septae.

Papillary Carcinoma
Cytology:
In 4 cases, smears showed high cellularity. Cells showed pale nuclei with fine granular chromatin, nuclear crowding and overlapping, nuclear grooves, intranuclear inclusions and psammoma bodies in the background of scanty and sticky colloid and were reported as Papillary carcinoma.

Histopathology:
All the cases showed branching papillae with fibrovascular core, lined by follicular cells. The cells showed ground glass appearance of nuclei, nuclear grooves , pseudoinclusions and calcifications reported as papillary carcinoma

Papillary Carcinoma with multinodular goitre.
In 1 case, smears showed high cellularity, with cells arranged in papillae, sheets and clusters. Cells showed pale nuclei with fine granular chromatin, nuclear crowding and overlapping, nuclear grooves, intranuclear inclusions and psammoma bodies in the background of abundant thick and thin colloid and was reported as Papillary carcinoma with Multinodular goiter which was a rare case in the present study

Follicular adenoma:
There was 1 case of Follicular adenoma in the present study.

Cytology:
Aspiration yielded 0.2 ml of blood mixed material and smears showed moderate to high cellularity, with cells present in repetitive microfollicular pattern, in monolayered sheets and in clusters.

Histopathology:
Sections showed encapsulated neoplasm, with cells arranged in closely packed microfollicular pattern, having moderate amount of eosinophilic cytoplasm and uniform round to oval nuclei with no capsular and vascular invasion.

Hurthle cell adenoma
There was 1 case of Hurthle call adenoma in the present study

Cytology:
Smears were highly cellular and showed poorly cohesive cells having abundant granular eosinophilic cytoplasm and uniform round to oval nuclei in a background of haemorrhage.

Histopathology:
Sections showed encapsulated tumour with cells in solid sheets and follicles separated by fibrovascular septae having abundant granular eosinophilic cytoplasm, round to oval nuclei showing mild atypia and inconspicuous nucleoli. No vascular or capsular invasion seen.

Cyto-Histopathological Correlation of Non–Neoplastic Lesions
In the present study of cytohistopathological correlation, 60 cases of Non- neoplastic lesions were correlated. There were 2 cases of Colloid cyst which were reported as Neoplastic lesions (Papillary carcinoma) on histopathology. Hence the false negative rate was 2.8% in the present study.

In the present study, 5 cases of Papillary carcinoma reported by FNAC were confirmed histopathologically. One case of Follicular adenoma was diagnosed as Follicular neoplasm on FNAC and 1 case of Hurthle cell adenoma was diagnosed Hurthle cell neoplasm on FNAC. All these cases showed positive cytohistopathological correlation.

DISCUSSION

In the present study, cytological features of thyroid lesions were studied and correlated with histopathology wherever available to determine its diagnostic accuracy.

Table 1: Shows Age Range in Different Studies In Comparison With Present Study

Study	Age range(yrs)
Silverman JF et al.[5] (1986)	16-79yrs
Burch HB et al.[6] (1996)	15-83yrs
Jogai S et al.7 (2005)	19-70yrs
Present study	20-80yrs

In the present study of 100 cases, majority were females with 88 cases and 12 males with a male to female ratio of 1:7, which correlates well with the study of Silverman JF et al.

Table 2: Comparative incidences of Non-neoplastic and Neoplastic lesions in different studies

Study	Non-neoplastic	Neoplastic	Ratio
Silverman JF et al. [5](1986)	228	80	1:2.9
Kumar S et al. [8] (2008)	82	7	1: 11
Lingegowda JB et al.[9](2010)	195	24	1:8
Present study	91	9	1:10.1

Hawkins F et al(10) in their study of 1399 cases, Colloid goiter were 885 , Hashimoto thyroiditis were 90, Subacute lymphocytic thyroiditis were 22, granulation tissue in 21, Toxic goiter were 50, Thyroglossal cyst were 6.

Gupta M et al(11) in their study of 75 cases, Nodular colloid goiter were 39 and Colloid cyst were 19 cases.

In the present study of 100 cases, 91 were Non-neoplastic and 9 Neoplastic lesions. In Non-neoplastic lesions, 65 were Nodular colloid goiter, 3 were Primary hyperplasia, 12 were Hashimoto thyroiditis, 9 were Colloid cyst and 2 were Hyperplastic nodule. Hence the present study is similar with the studies given above.

In the present study, of the 9 cases of neoplastic lesions, 2 cases were Follicular neoplasm, 6 cases were Papillary carcinoma and 1 was Hurthle cell Neoplasm which is similar with the study of Kumar S et al.

In the present study, 5 cases of Papillary carcinoma on FNA were confirmed with histopathology with, but 2 cases which were diagnosed as Colloid cysts turned out to be Papillary carcinoma and its variants and 1 case of Follicular adenoma on FNAC turned out to be encapsulated follicular variant of Papillary carcinoma with a diagnostic accuracy of 62.5% which is comparable with the study of Gupta M et al(11) .

Table3 : Comparisons of Statistical data

Study	Sensitivity	Specificity	Accuracy
Silverman JF et al.[5] (1986)	93%	95.1%	94%
Hawkins F et al.[10] (1987)	86.3%	95.3%	93.7%
Burch HB et al (1996)	80%	73.2%	75.2%
Afroze N et al.(2002)	80.9%	99.3%	94.5%
Gupta M et al[11] (2010)	80%	86.6%	84%
Present study	77%	98.3%	97.7%

CONCLUSION

FNAC of thyroid lesions has been shown to be safe, simple, cost effective and accurate method for the management of palpable thyroid lesions.

It helps to categorize Non-neoplastic from Neoplastic thyroid lesions. Its use has decreased the number of surgeries performed

The present study suggests that FNAC gives good positive correlation with histopathology with high sensitivity and specificity.

Hence FNAC is a well established first line diagnostic test and effective screening tool which aid in the diagnosis and management of patients with thyroid lesions.

References

1) Mitra A, Abbas AK. The endocrine system.In: Robbins and Cotran Pathologic Basis of Disease, 8th edn. Kumar V, Abbas AK, Fausto N, Aster JC (eds). Philadelphia: Saunders 2010:1097- 1164.
2) Thyroid. In: Fine needle aspiration cytology, 4thedn. Orell SR, Sterrett GF, Whitaker D. Philadelphia: Churchill Livingstone; 2005:125-164
3) Borget I, Vielh P, Leboulleux S, Allyn M, Iacobelli S, Schlumberger M et al. Assessment of the cost of fine needle aspiration cytology as a diagnostic tool in patients with thyroid

nodules .Am J Clin Pathol 2008;129:763-771.
4) Harach HR. Usefulness of fine needle aspiration of the thyroid in an endemic goitre region. Acta Cytologica 1989 ; 33: 31-35.
5) Silverman JF, West LR, Larkin EW, Park HK, Finley JL, Swanson MS et al. The role of Fine-Needle Aspiration Biopsy in the Rapid diagnosis and Management of Thyroid Neoplasm.Cancer 1986; 57: 1164-1170.
6) Burch HB, Burman KD, Reed HL, Buckner L, Raber T, Ownbey JL. Fine Needle Aspiration of Thyroid Nodules-Determinants of Insuffiency Rate and Malignancy Yield at Thyroidectomy. Acta Cytol 1996; 40 (6): 1176-1183.
7) Jogai S, Jassar AA, Temmim L, Dey P, Adesina AO, Amanguno HG. Fine needle aspiration cytology of the thyroid: a cytohistologic study with evaluation of discordant cases. Acta cytol. 2005;49(5):483-488.
8) Kumar S, Aquil S, Dahar A. Role of Fine Needle aspiration cytology in thyroid Diseases. Journal of Surgery 2008; 13(1): 22-25
9) Lingegowda JB, Muddegowda PH, Kumar NR, Ramkumar KR. Application of pattern Analysis in Fine Needle Aspiration of solitary nodule of Thyroid, Journal of Cytology 2010; 27(1):1-11
10) Hawkins F, Bellido D, Bernal C, Rigopoulou D, Valdepenas MPR, Lazaro E, et al. Fine needle aspiration Biopsy in the Diagnosis of Thyroid Cancer and Thyroid Disease.Cancer 1987; 59: 1206-1209.
11) Gupta M, Guptha S, VedBhushan Gupta. Correlation of Fine Needle Aspiration cytology with Histopathology in the Diagnosis of Solitary Thyroid Nodule, Journal of Thyroid research 2010:1-5.