



Corelation of FNAC and Histopathology in the Study of Thyroid Lesions

DR.K.SUNIL KUMAR

DR.G BALESWARI

ASSOCAITE PROFESSOR OF PATHOLOGY,KURNOOL MEDICAL COLLEGE,KURNOOL,ANDHRA PRADESH.

DR.TAMIL ARASI

ABSTRACT

Objective : FNAC is the first line screening tool for evaluation of thyroid lesions. It helps in early detection and proper management of thyroid lesions and helps to reduce unwanted surgeries.

Methods – One year retrospective and 2 years prospective study undertaken in the department from August-2010 to July-2013. The study comprised 605 patients, who present with history of swelling of thyroid.

Results – Among 605 FNAC cases 75 % , were non-neoplastic thyroid lesions, out of which 33 % were goiters, 29 % Hashimoto's thyroiditis, Neoplastic lesions comprised 25 % , out of which 23.4 % were benign and 1.6 % were malignant , 23.4 % of benign lesions were reported as atypical (or) follicular neoplasm (or) suspicious of malignancy. Histopathological examination of thyroid specimen was specially advocated for these lesions.

In out study 288 cases had cyto histopathological correlation. All the 123 cases reported as goiters on cytology were reported as nodular or adenomatoid goiter on histopathology, with 100 % cyto histopathological correlation. Cases reported as toxic hyperplasia and Hashimoto's thyroiditis on cytology were consistent with the histopathological diagnosis. Out of 47 cases of colloid cyst reported on cytology, 45 were colloid cyst, 2 were follicular adenoma with cystic change and 2 were papillary carcinoma. 71 cases reported as atypical or follicular neoplasm were confirmed histopathologically as follicular adenoma in 58 cases, hurthle cell adenoma in 3 cases, follicular carcinoma in 6 cases, follicular variant of papillary carcinoma in 3 cases, medullary carcinoma in 1 case. There was 100 % cytohistopathological correlation in cases of papillary carcinoma, medullary carcinoma and anaplastic carcinoma.

KEYWORDS : FNAC, Thyroid, Histopathology.

Introduction :-

Thyroid gland is unique among endocrine organs as it is the largest endocrine gland in the body and first to develop in fetal life. Different diagnostic modalities are used to evaluate and diagnose efficiently thyroid nodules. These include clinical examination, thyroid function test, Ultra sonography, fine needle Aspiration cytology and Histopathological examination. FNAC is widely accepted and has become corner stone in evaluation of thyroid nodules because it is a simple and accurate screening test with high sensitivity and specificity in the preoperative evaluation of thyroid lesions.

Materials and Methods

The present study is a one year retrospective and two prospective study undertaken in dept of pathology, Kurnool Medical College, Kurnool, during the period of August 2010 to July 2013. The study comprised of 605 patients who presented with history of swelling of thyroid which were referred from the department of surgery, Medicine ENT etc., Few smears were fixed in 95% ethyl alcohol and stained with H&E and PAP method, and some are airdried and stained with Giemsa. FNAC slides were reported as per the Bethesda system for reporting thyroid cytopathology as follows:

- Non – Diagnostic or Unsatisfactory
- Benign
- Atypia of undetermined significance (or) Follicular lesion of undetermined significance
- Suspicious of Follicular neoplasm
- Suspicious of Malignancy
- Malignant lesion

RESULTS.

Cytological study of Thyroid lesion was undertaken in 605 patients (3 yr period) to study the spectrum of Pathological findings and it was correlated with the histopathological findings in 288 patients.

Most of the cases in our series presented as Nodular swelling and thy-

roid swellings are common in females when compared to males. The incidence of thyroid lesions are more in the age group of 11 – 30 yrs (i.e) 320 cases and least common at the age group of > 70 yrs (i.e) 13 cases.

Histopathological examination was recommended for thyroid nodules reported as follicular lesion of undetermined significance, suspicious of follicular neoplasm, follicular neoplasm, suspicious of malignancy and Malignant lesion on cytology.

The specimens received were fixed with 10% formalin and detailed gross examination was done and sections were taken from the representative areas for paraffin sectors and stained by H& E.

Cytological diagnosis was correlated with histopathology wherever possible and efficacy of FNAC was determined.

From the total number of cases, the sex distribution of thyroid aspirates show more percentage of females 568 (94%) where as males were only 37 (6%) M : F ratio in our study is 1:15:35.

In our study, majority of the thyroid lesions (74.5%) were benign lesions, with 10.7% of the cases reported as follicular lesion of Undetermined significance. 6.9% and 6.2% of the cases were suspicious of follicular neoplasm and malignancy respectively. 1.7% of the cases were reported as malignancy on cytology and histopathological confirmation advised.

Cytopathological diagnosis of thyroid lesions as per the Bethesda system.

Cytological	No. of cases	%
Benign	451	74.5
Atypical of follicular Lesion of Undetermined Significance.	65	10.7
Suspicious of follicular neoplasm	42	6.9

Suspicious of Malignancy	37	6.7
Malignancy	10	1.7
Total	605	100

Our study comprised of 605 FNAC cases 75% of them were Non neoplastic thyroid lesions out of which 33% were goiters followed by 29% of the cases reported as Hashimotos thyroiditis. Neoplastic lesions comprised of 25% out of which 23.4% were Benign and 1.6% were Malignant. The ratio of Benign to Malignant lesions was 15.7 : 1. The 23.4% of Benign lesions were either reported as Atypical (or) follicular neoplasm (or) suspicious of Malignancy. Histopath exam of Thyroid specimen was specially advocated for these lesions.

Thyroid lesions	No. of cases	%
Non Neoplastic Lesions	451	75
Goiter	198	33
Cyst	42	7
Grave's disease	37	6
Hashimotos Thyroidites	174	29
Neoplastic Lesions	154	25
Benign	144	23.4
Atypia / Follicular Lesion Of Undertermined Sig.	65	11
Follicular Neoplasm	79	13
Suspicious of Malignancy.	10	1.6
Malignancy	6	0.99
Pap carcinoma	2	0.33
Medullary Carcinoma	2	0.33

Distributions of Histopath Lesions of Thyroid

Sl.No.	Histopath	No. of cases
1	Colloidgoiter	56
2	Nodular Hyperplasia	45
3	Colloid Cyst	45
4	Hashimotos Thyroiditis	14
5	Follicular Adenoma	110
6	Hurtle cell Adenoma	12
7	Follicular Carcinoma	6
8	Papillary Carcinoma	18
9	Medullary Carcinoma	3
10	Anaplastic Carcinoma	2
	Total	311

In our study series there were 288 cases which had cyto Histopathological correlation. All the 123 cases reported as goiters on cytology were reported as Nodular (or) aderonatoid goiter on histopathology with 100% Cyto Histopathological correlation. Cases, reported as toxic hyperplasia and Hashimoto's Thyroiditis on cytology were consistent with the histopathological diagnosis.

Out of 47 cases of colloid cyst reported on cytology, 45 were colloid cyst, 2 were follicular adenoma with cystic change and 2 were papillary carcinomas. 71 cases reported as Atypical (or) follicular neoplasm were confirmed histopathologically as follicular Adenoma in 58 cases, Hurtle cell adenoma in 3 cases, follicular carcinoma in 6 cases, follicular variant of Papillary carcinoma in 3 cases and Medullary carcinoma in 1 cases. There was 100% cyto histopathological correlation in cases of Papillary carcinoma, Medullary carcinoma and Anaplastic

carcinoma.

Out of 207 cases reported as benign on cytology as per Bethesda system, 205 cases were confirmed as benign on histopathology with 2 cases diagnosed as malignant lesion accounting for 0.9% false negativity. The incidence of true positively in our study series was 100%. Cases reported as follicular lesion (or) showing Atypical cells on cytology posed a diagnostic challenge. Out of these 71 cases, 61 cases were benign lesions while 10 were malignant lesions.

DISCUSSION

FNAC is a safe, simple and inexpensive technique and plays an important Role in the diagnosis of Thyroid lesions. The present study was conducted to know its accuracy in the diagnosis of thyroid neoplasm.

In our study age group of patients is similar to other studies as seen above, most of the patients in our study were between 11 – 30 yrs. Most of the patients were females as seen in the next table below.

In our study the male to female ratio was 1:15:35, which is more than other studies.

FNAC study of 605 cases, Non neoplastic lesions were 451 and Neoplastic were 154 cases, in Non neoplastic lesions, the most common were Nodular goiter and graves disease cases were least common. In Neoplastic lesions, 144 were benign, most common being the follicular neoplasm while 10 were malignant. Among the malignant, 6 were papillary carcinoma, 2 were Medullary carcinoma and 2 were Anaplastic carcinoma.

Comparative Incidence of Non neoplastic and Neoplastic Lesions in difference studies.

Study	Non Neoplastic	Neoplastic	Ratio
Silver non Jan Fetal (1986)	228	80	01:02:09
Suresh Kumar etal (2008)	82	7	01:11:00
Jyothi Lingegowda Betal (2010)	195	24	01:08:00
Guhanallice Metal (2008)	197	25	01:07:09
Present studies	451	154	01:02:09

Comparative Study of different Non neoplastic lesions on FNAC

	Nodular goiter	Toxic goiter	Lymphocytic Thyroiditis	Hashimoto's Thyroiditis
Farzana shahid etal (2010)	65	--	4	2
Silverman Jan Fetal (1986)	156	5	1	3
Kennets Suer (etal) (1983)	133	1	41	-
Present studies	198	37	38	174

Conclusion – FNAC is the first line screening tool for evaluation of thyroid lesions. It helps in early detection and proper management of thyroid lesions. It bridges down the gap between clinical evaluation and final surgical pathological diagnosis in majority of cases and helps to reduce unwanted surgeries.

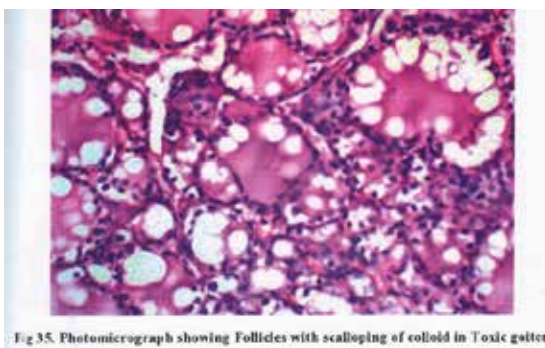
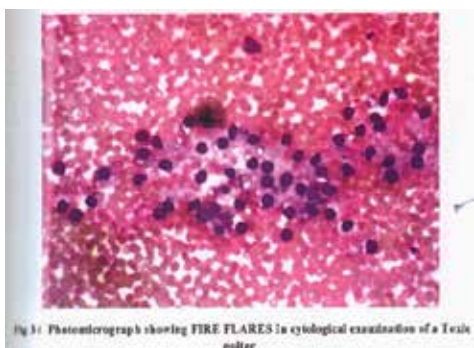




Fig 25. Cut section of the specimen of Multi Nodular Goiter

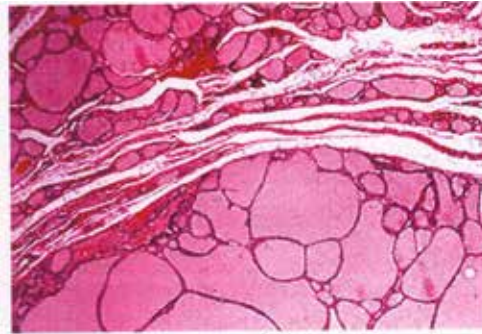
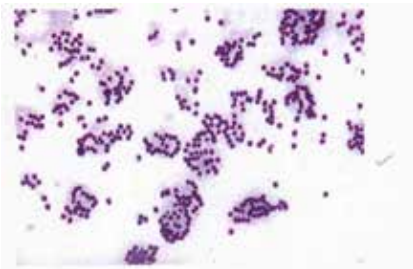


Fig 26. Photomicrograph of a Multinodular Colloid Goiter



Photomicrograph showing microfollicular arrangement in a Follicular neoplasm

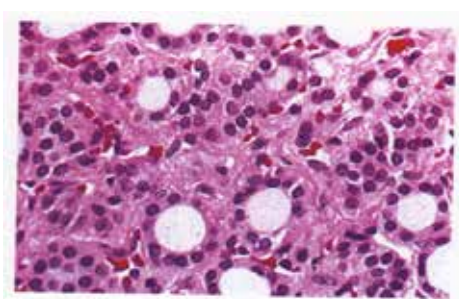


Fig 44. Photomicrograph of a high power view of a field in Follicular adenoma

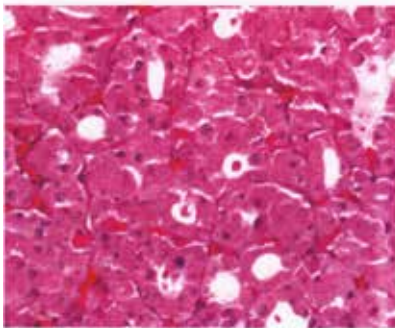
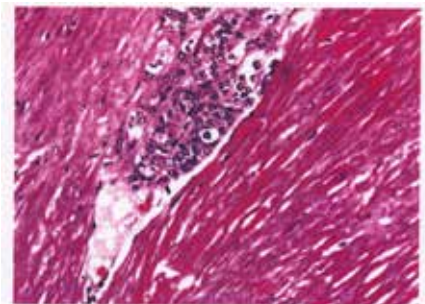


Fig 47. Photomicrograph of a high power view of Hurthle cell Adenoma



Photomicrograph of Follicular Carcinoma showing Infiltration into adjacent tissue

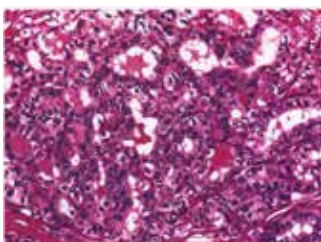


Fig 54. Photomicrograph of Follicular variant of Papillary carcinoma

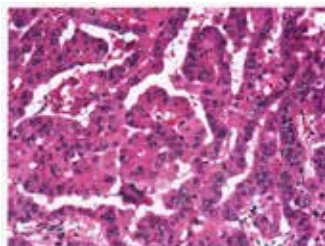


Fig 55. Photomicrograph of a Papillary Carcinoma

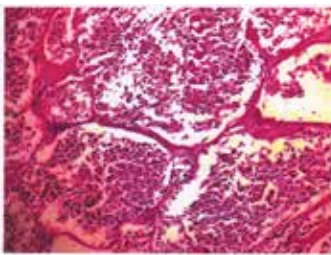


Fig 62. Photomicrograph of Medullary Carcinoma showing amyloid deposition

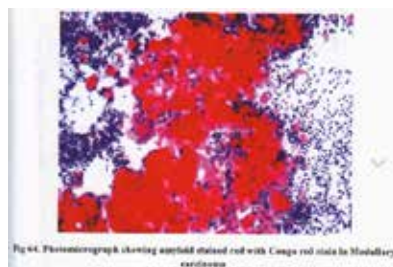


Fig 64. Photomicrograph showing apical stained cut with Congo red stain in Medullary carcinoma

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