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Diagnostic accuracy fine needle aspiration cytology of thyroid gland lesions.

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ABSTRACT

INTRODUCTION : *Nodular enlargement of thyroid is frequent and constitutes commonest indication for excision. Since most of the nodules are benign, symptomless, small in size, they do not require surgical excision. This study was undertaken to evaluate the utility of FNAC as a rapid diagnostic method in various thyroid lesions*

METHODOLOGY:*Total 300 patients with enlarged thyroid attending OPD at Dr.SCGMC, Nanded from Jan 2011 to Dec 2013 were studied.*

SUMMARY OF RESULTS: *Age incidence varied from 10-75 yrs. The commonest age group affected was 21-30 yrs. Male to female ratio was 1:6.3. The duration of symptoms ranged from 15 days to 10 years. Maximum number of cases presented with midline swelling of the neck. On cytology 195 (65%) cases were diagnosed as colloid goiter, 46 (15.34%) as thyroid cyst, 18 (6%) as colloid goiter with cystic change, 5(1.67%) as hemorrhagic cyst with goiter, 3(1%) as acute thyroiditis, 2(0.66%) as granulomatous thyroiditis, 10(3.33%) as lymphocytic thyroiditis, 12 (4%) as thyroid adenoma, 2(0.66%) as hurthle cell adenoma, 3 (1%) as follicular neoplasm, 2(0.66%) as papillary carcinoma, 1 (0.33%) as anaplastic carcinoma and 1(0.33%) as suspicious smear. Histopathological examination was possible only in 36 cases. The overall sensitivity was 100%, specificity was 97.61% and accuracy was 97.72%*

CONCLUSION*: FNAC is a safe, simple, reliable, quick, inexpensive, outpatient method in diagnosis of thyroid swelling and is free from limitations of surgical biopsy.*

KEY WORDS*: Colloid goiter, Cyst, FNAC, Malignancy, Thyroiditis.*

I. INTRODUCTION

Thyroid lesions were continued to be investigated by incisional biopsies and often required second definitive operation. Thus to avoid biopsies, alternative method of FNAC was adopted by James Edward et al in 1981[1]. Nodular enlargement of thyroid is frequent and commonest indication for excision.The thyroid nodule can be cystic or solid. Most of cystic nodules are benign in nature and among the solid nodules only 3 % are malignant in nature[2]. Since most are benign and symptomless, FNAC helps to differentiate benign from malignant.

II. AIMS AND OBJECTIVES

2.1 To characterize the cytological smear pattern of various thyroid lesions.

2.2 To compare the cytological diagnosis of thyroid lesions with histopathological diagnosis for correlation in cases where surgical resection was done.

2.3 To establish accuracy of aspiration as an early diagnostic aid.

2.4 To correlate between clinical and cytological findings.

2.5 To evaluate and establish techniques of FNAC as a routine procedure for thyroid swelling at this institute.

III. MATERIALS AND METHODS

3.1 The prospective study was carried out in the Department of Pathology, Dr.SCGMC,Nanded during the period of Jan 2011 to Dec 2013. All the cases were either admitted in wards or were attending OPD.

3.2 Selection of cases: The patients were evaluated as per the proforma. Complete clinical details were obtained and investigations were carried out where required.

3.3 Aspiration technique: After proper explanation and written consent, patient was subjected to FNAC in supine condition neck moderately extended. The local examination done and with proper aseptic precautions aspiration was done using 10-20 cc syringe and 22 or 23 gauge needle.

3.4 Fixative and staining medium: the smears were fixed in ethyl alcohol (95%) and stained with Papanicolaou stain. Hematoxyline and eosin stain was used for histopathology.Cytological smears were classified as inadequate, benign, suspicious for malignancy and positive for malignancy.

IV OBSERVATIONS

The present study comprised of 300 cases attending the OPD with thyroid enlargement and were subjected to FNAC.

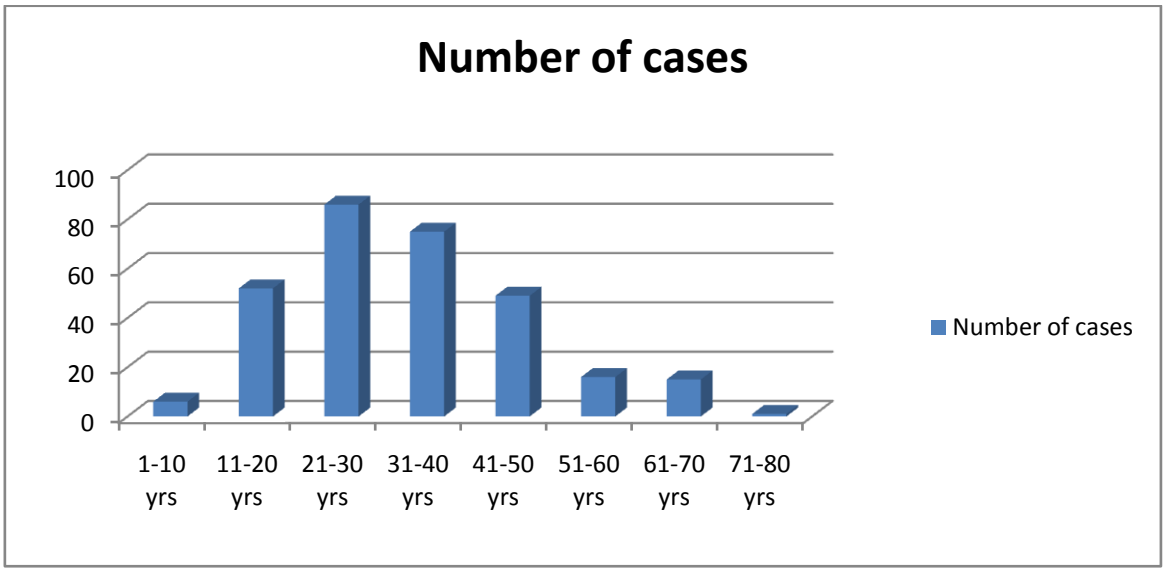

Fig 1:Age wise distribution of cases. Total =300

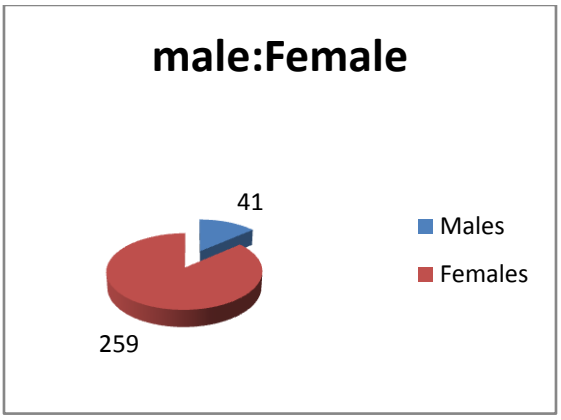

Fig 2: Sex wise distribution of cases. Total=300

Table 1: Cytological diagnosis.

Cytological diagnosis	Number of cases	Percentage
Colloid goiter	195	65
Thyroid cyst	46	15.34
Colloid goiter with cystic change	18	6
Hemorrhagic cyst with goiter	5	1.67
Acute thyroiditis	3	1
Granulomatous thyroiditis	2	0.67
Lymphocytic thyroiditis	10	3.33
Thyroid adenoma	12	4
Hurthle cell adenoma	2	0.67
Follicular neoplasm	3	1
Papillary Carcinoma	2	0.67
Anaplastic carcinoma	1	0.33
Suspicious smear	1	0.33
Total	300	100

The most common lesion found was colloid goiter comprising 65% of total cases, followed by 46 cases of thyroid cyst. There were 3 cases of follicular neoplasm, 2 cases of papillary carcinoma, 1 of anaplastic carcinoma and 1 suspicious smear.

Table 2: Cytological and Histopathological co-relation

Diagnosis	Cytological Diagnosis	Histopathological Diagnosis
Colloid goiter	25	25
Thyroid cyst	3	2
Colloid goiter with cystic change	2	2
Hemorrhagic cyst with goiter	1	1
Follicular neoplasm	3	3
Papillary Carcinoma	1	1
Suspicious smear	1	1

Total 36 cases were followed up for histopathology. Out of which 35 cases were correctly correlated with histopathology.

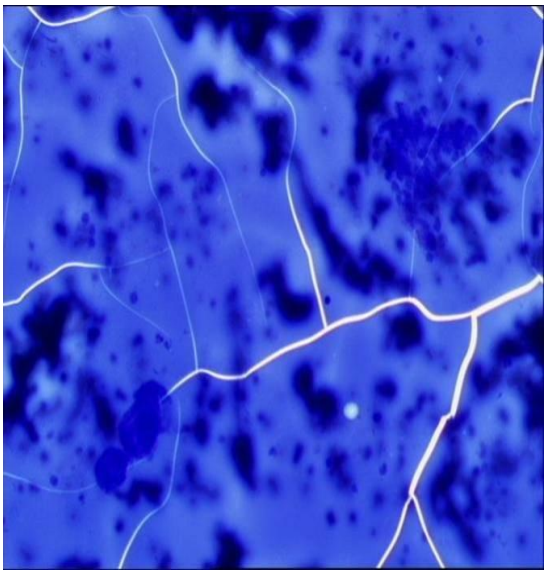

Fig.3: Colloid goiter cytology showing typical cracking of thick colloid along with a background of follicular cells. (cytology, Pap. 40x)

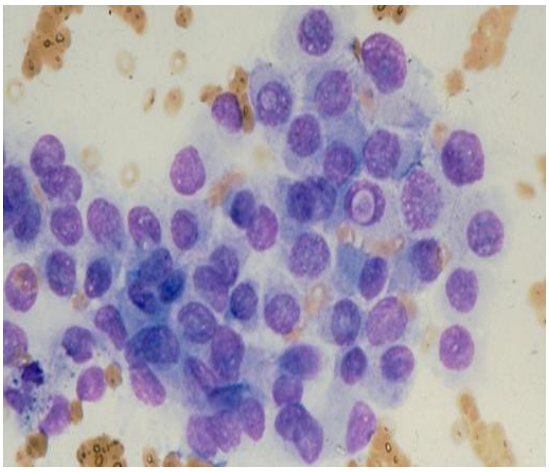

Fig.4: papillary carcinoma cytology showing intra nuclear cytoplasmic inclusions and ground glass appearance. (cytology, Pap 40x)

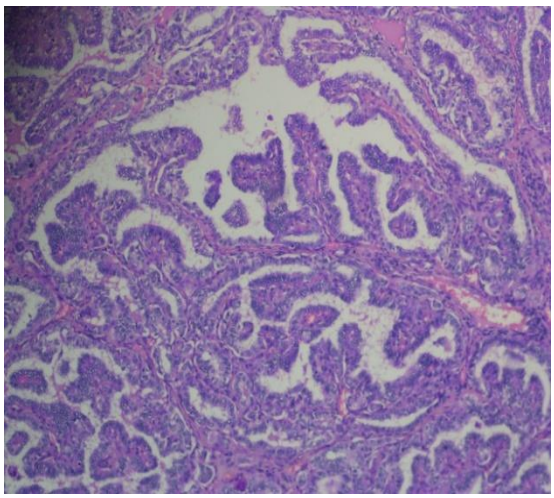

Fig.5: Papillary carcinoma thyroid histopathology showing papillae composed of tumor cells having orphan Annie eyed nuclei.(histopathology, H and E,10x)

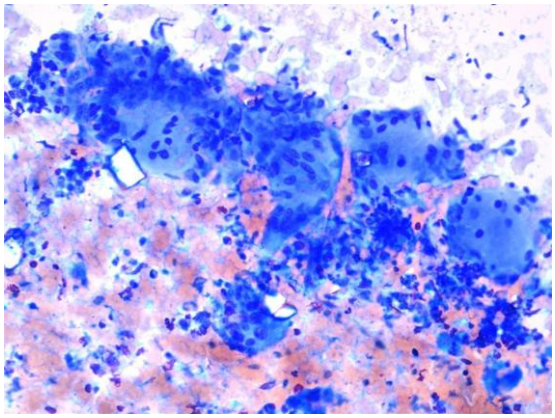

Fig.6: Granulomatous thyroiditis (Cytology, Pap 40x)

V.DISCUSSION

Out of 300 cases, 195 (65%) cases were diagnosed as colloid goiter, which is comparable to the study conducted by Shirish Chandanwale et al (65.3%)[3] in 2012 and Joel F. Hamburger et al (62.5%) in 1989[4] and Aguilar Dlosdado et al (60%) in 2001[5] In present study 46 (15.34%) cases were diagnosed as thyroid cyst which is comparable to the study carried by Hamburger et al (13.5%) in 1989. In our study 18 (6%) cases were found to be colloid goiter with cystic change , 5(1,67%) as hemorrhagic cyst with goiter, 3(1%) as acute thyroiditis, 2(0.66%) as granulomatous thyroiditis. 10(3.33%) cases were labeled as lymphocytic thyroiditis which is similar to the study conducted by Erin Ellison et al (3.12%) in 1998[6]. 12 (4%) cases were diagnosed as thyroid adenoma which is consistent with the study conducted by Hamburger et al (62.5%) in 1989, 2(0.66%) as hurthle cell adenoma was comparable to that seen in Hamburger et al (62.5%) in 1989. 3 (1%) cases were found to be follicular neoplasm which is in co-ordination with that conducted by Hamburger et al (0.85%) in 1989 and Aguilar Dlosdado et al (1.23%). In present study 2(0.66%) cases were diagnosed as papillary carcinoma which is similar to that conducetd by Erin Ellison et al (3.12%) in 1998. 1 (0.33%) cases was labeled as anaplastic carcinoma and 1(0.33%) as suspicious smear.

VI. SUMMARY AND CONCLUSION

The present study was undertaken to evaluate the utility of FNAC as a rapid diagnostic method in various thyroid lesions. The commonest age group affected was 21-30 years. Male to female ratio was 1:6.3. the maximum number of cases 133 (44.33%)had 1 to 6 months duration of swelling. Midline swelling was seen in 224 (74.6%) cases, followed by right lobe in 16 (5.33%), left lobe in 20 (6.6%) and bilateral in 40(13.33%). The aspirate was brownish in 68 (22.67%) cases, brown fluid in 58 (19.33%), followed by hemorrhagic aspirate in 154(51.33%) cases. On cytology, most common diagnosis was given as colloid goiter in 195 (65%)cases, thyroid cyst in 46(15.34%) followed by colloid goiter with cystic change in 18 (6%). Histopathological examination was possible in 36 cases of which colloid goiter was the most common diagnosis in 25 (56.81%) cases, followed by thyroid cyst in 2 (4.54%) and colloid goiter with cystic change in 2 (4.54%). Out of 36 cases 35 cases were co related correctly. The overall sensitivity was 100%, specificity was 97.61% and accuracy was 97.72%.Therefore FNAC is a safe, simple, quick reliable and inexpensive method that can be carried out in outpatient department. Multiple sites can be attempted or repeated. It is a good diagnostic aid prior to application of radiation in inoperable cases or where surgery is contraindicated. If combined with ultrasound, high accuracy rate can be obtained in detection of malignancy.

Thus FNAC is now the most commonly done procedure for the diagnosis of thyroid lesions.

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