



## ANALYSIS OF THYROID SWELLINGS BY ASPIRATION CYTOLOGY, OUR EXPERIENCE IN TERTIARY CARE HOSPITAL, SOUTH TAMIL NADU

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### ABSTRACT BACKGROUND:

Thyroid disorders are widespread endocrine problems worldwide <sup>(1)</sup>FNAC is a useful diagnostic modality in the evaluation of thyroid lesions. It is a simple, cost effective, readily repeated and easy to perform procedure in the outpatient department with good patient compliance.

**AIMS AND OBJECTIVES:** The aim of present study was to assess the proportion of various thyroid disorders on patients attending a tertiary care centre and the role of FNAC in the diagnosis of thyroid lesions

**MATERIALS AND METHODS:** This is a retrospective study done on the review of the case records of 1181 patients who underwent FNAC in the pathology department for a period of 2 years.

**RESULTS:** We found that out of the 6203 FNAC'S done during the 2 years study 1181 cases were thyroid lesions (19.04%).out of the 1181 cases, 477 cases were auto immune pathology, 633 cases (53.5%) were diagnosed as colloid goitre. Malignant cases were about 32(2.7%) and follicular neoplasm reported to be 32 cases (2.7%) and unsatisfactory smears were 0.6%.

**CONCLUSION:** Our study suggested that the incidence of thyroid lesions in our study population is high. Highest prevalence of thyroid disorders were in the age group of 31-40yrs (28.3%) followed by 21-30yrs (21%).Malignancy more common in the age group of 51-60yrs and FNAC may be considered as a primary line of investigation of thyroid lesions and it's management.

**KEYWORDS :** Fine Needle Aspiration Cytology, malignancy, goitre

### INTRODUCTION:

Diseases of the thyroid gland are among the most abundant endocrine disorders worldwide second only to diabetes<sup>(2)</sup> ;India is not an exception. Recent studies show that 300 million people in the world are suffering from thyroid disorders and among them about 42 million people reside in India<sup>(2)</sup>.

Thyroid disorders are more common in women than in men<sup>(2)</sup>.. One in every eight women during their life time has risk for thyroid disorder. The exact reason is not known. The higher prevalence in female may be associated with oestrogen and progesterone Diverse cytological patterns of thyroid lesions may occur in the thyroid gland for its various diseases.

Thyroid lesions may be non-neoplastic.Non-neoplastic lesions include auto-immune thyroiditis, simple colloid goitre and nodular colloid goitre. Neoplastic lesions include follicular neoplasm and carcinomas.

The primary objective of FNAC of thyroid lesions is to select those patients who require surgeries for neoplastic thyroid disorders from those who have functional or inflammatory abnormalities who can be followed clinically or treated medically. Statistical evidence strongly suggests that use of Fine Needle Aspiration Cytology has markedly reduced the numbers of thyroidectomies whereas the proportion of carcinomas in the surgically treated population has increased significantly.

### AIM:

The aim of the present study was to assess the proportion of various thyroid disorders on patients attending a tertiary care hospital and the role of FNAC in the diagnosis of thyroid lesions.

### MATERIALS AND METHODS:

This is a retrospective study carried out based on review of the case records of patients with thyroid lesion for whom FNAC was done in the pathology department of TVMCH from January 2015 to December 2016 for a period of 2 years.

FNAC was done on the thyroid lesion to collect specimen for

cytological evaluation using 23or 24 gauge needle with strict aseptic precautions. The smears were fixed in iso- propyl alcohol and stained in H&E, Pap and Giemsa staining.

Before aspiration clinical history, physical examination of the thyroid gland was carried out. The cytological diagnosis of the thyroid lesion were done and the results were categorised as inadequate, non-neoplastic and neoplastic.The neoplastic lesion was further divided into benign and malignant and documented .

The study was approved by institutional ethical committee.

### OBSERVATION AND RESULTS:

A total number of 6203 FNAC'S was done in the pathology department of TVMCH during the 2 year study period from January 2015 to December 2016.Of these FNA's done 1181 cases were thyroid lesion(19.04%).1089 cases were female patients(92.2%) and 92 were male patients (7.8%).Female to male ratio is 11.8:1.

The age range from 2-80 years.maximum number of patients were found in the age grou of 31-40 years (334 cases)

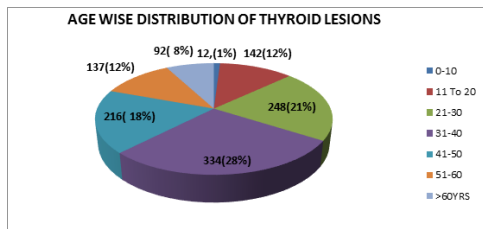
The study cohort was divided in seven age groups to determine the occurrence of various thyroid disorders in different age groups (TAB.1),FIG.1

The maximum (28.3%) number of cases was found in the age group of 31-40yrs, followed by 21-30yrs (248 cases-21%)

**TAB.1 :AGE WISE DISTRIBUTION OF THYROID CASES**

	age	numbers	percentage
1.	0-10	12	1%
2.	11-20	142	12%
3.	21-30	248	21%
4.	31-40	334	28%
5.	41-50	216	18%
6.	51-60	137	12%
7.	>60yrs	92	8%

**FIG.1 :AGE WISE DISTRIBUTION OF THYROID CASES**

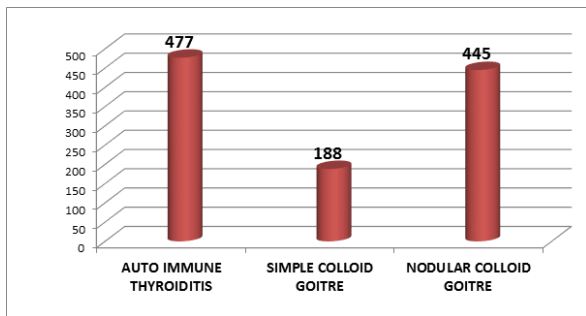


Out of 1181 FNAC's done, 7 smears were inadequate for cytological reporting either due to inadequate aspirated material or haemorrhagic smear.

Depending on the cytomorphological features, the remaining thyroid smears are classified in to non-neoplastic and neoplastic. Non-neoplastic lesions were classified as auto-immune thyroiditis, simple colloid goitre and nodular colloid goitre (TAB.2), FIG.2. Neoplastic lesions were again divided into benign and malignant.

**TAB.2:AGE-WISE DISTRIBUTION OF NON-NEOPLASTIC LESIONS**

S.no	Age	Auto immune	Simple Colloid goitre	Nodular colloid goitre
1.	0-10	6	2	4
2.	11-20	80	38	22
3.	21-30	116	43	77
4.	31-40	145	41	134
5.	41-50	81	26	100
6.	51-60	36	19	64
7.	>60	13	19	44
	total	477	188	445



The benign and malignant cases are also classified according to age group. In our study more malignancies occurred in sixth decade (TAB.3)

**TAB.3:AGE-WISE DISTRIBUTION OF BENIGN AND MALIGNANT NEOPLASMS**

S.no	AGE	BENIGN	MALIGNANT
1.	0-10	0	0
2.	11-20	2	0
3.	21-30	6	3
4.	31-40	8	4
5.	41-50	6	3
6.	51-60	6	12
7.	>60	4	10
	total	32	32

The malignancies are further categorised according to cytopathological pattern. In our study papillary carcinoma is most common followed by metastatic cancers.

**CYTOLOGICAL PATTERNS OF MALIGNANT NEOPLASMS**

Age in years	Papillary carcinoma	Medullary carcinoma	Anaplastic carcinoma	others
1. 0-10	0	0	0	0
2. 11-20	0	0	0	0
3. 21-30	1	2	0	0
4. 31-40	3	0	0	1

5.	41-50	2	0	0	1
6.	51-60	6	2	1	2
7.	>60yrs	6	1	3	1
	Total	19	4	4	5
	32 cases				

**DISCUSSION:**

Thyroid lesion are among the most common endocrine diseases in India<sup>(2)</sup> this retrospective study was carried out based on the review of case records of patients with thyroid lesion for whom FNAC was done in the pathology department from January 2015 to December 2016

FNAC is practised worldwide for a rapid and accurate pre-operative diagnosis of thyroid lesions. In our study, the incidence of thyroid lesions was approximately found to be 19.4% which was similar to Deokar et al<sup>(3)</sup> with a percentage of 22.16% and arindham bose et al<sup>(3)</sup> noted a prevalence of 15.34% in a study conducted in central india. Rebecca et al<sup>(4)</sup> reported a prevalence of 15.8% of thyroid cases. The most common occurrence of non-neoplastic thyroid lesion was in the age group of 31-40yrs which is similar to study conducted by sathyamurthy et al<sup>(5)</sup>

The abundance of female cases (92.2%) in our study was consistent with various other studies including Kumbhakar et al<sup>(6)</sup>, Deokar et al<sup>(2)</sup> and Nagarkar et al<sup>(7)</sup>.

The ratio between non-neoplastic and neoplastic lesions of thyroid gland was about 2.41:1 to 12.29:1. In our study ratio was found to be 17.3:1 which correlates with study by Hande et al<sup>(8)</sup> which was about 12.29:1

The incidence of thyroid cancer increases with age, in our study most of the cases neoplasm was reported in the age group of 51-60 years which is similar to study by Nagarkar et al<sup>(7)</sup>

In our study the incidence of malignancy was 5.4%, which is in accordance with many studies.

In our study incidence of thyroiditis is about 40.3% which is very high compared to a population based study by unnikrishnan et al<sup>(1)</sup> which is about 16.7%.

**CONCLUSION:**

Fine Needle Aspiration Cytology (FNAC) is well established technique for pre-operative investigation of thyroid gland enlargements. This technique is almost non-invasive, cost-effective and free of complications in expert hand and efficient method of differentiating benign and malignant lesion thereby reducing unnecessary surgeries.

FNAC has high sensitivity in cytological diagnosis of thyroid lesions and accurate cytological diagnosis may be considered a primary line of investigation of thyroid lesions and management. The limitations of FNAC include its inability to distinguish benign from malignant follicular neoplasm which needs a surgical excision to provide a histological diagnosis and false negative ratio. Presence of six groups of follicular cells on at least 2 slides from different passes recommended by Hamburger et al<sup>(9)</sup> seems to be fairly reasonable criteria for adequacy.

In our studies incidence of auto immune thyroiditis is high indicating a lot of environmental influences which is supplanted by various studies worldwide.

Increasing evidence is accumulating for a steady rise in the frequency of autoimmune diseases (AD), in the last decades<sup>(9)</sup>

It is expected that an improved knowledge of the worldwide distribution of autoimmune disorders will help to understand the role of different genetic factors and different environmental influences involved in autoimmunogenesis.

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