

Original Research Article**Thyroid Profile Analysis and Cytomorphology of various Thyroid Diseases: A Case Series Study at a Tertiary Care Hospital**Singh Aditya V.^a, H. Prabhu M.^b, Jigjini Sateesh S.^c^aPost Graduate ^bAssociate Professor ^cProfessor, Department of Pathology, S. Nijalingappa Medical College, Navanagar, Bagalkot, Karnataka 587101, India.**Abstract**

Background: Thyroid lesions are most commonly encountered in all age groups. Accurate pre-operative assessment of thyroid diseases leads to improved patient outcome.

Objective: To describe the cytomorphological features of thyroid nodules using FNAC along with assessment of thyroid hormonal status of the patient.

Material & Method: The study was conducted in Department of Pathology, S.Nijalingappa Medical College, Bagalkot; during June 2016 to May 2017. Included 136/151 patients, irrespective of age and sex, with thyroid lesions. Cytological assessment was done using FNAC along with serological evaluation of thyroid hormones.

Results: A total of 151 patients underwent cytomorphological assessment using FNAC. 136 had serological studies. Maximum number of patients were females and lesions were most common in 3rd and 4th decade. Lesions were graded as Neoplastic and Non neoplastic. Non neoplastic lesions were more common, with colloid goitre being the commonest diagnosis, followed by Hashimoto's thyroiditis. Among neoplastic lesions, Follicular neoplasm was the commonest, followed by 4 cases of papillary carcinoma. Same thyroid diseases showed different thyroid status in different patients.

Conclusion: FNAC and thyroid hormone evaluation are highly effective procedures for diagnosis of patients with thyroid lesions. Hence, all types of thyroid lesions must be analysed by history, examination, FNAC and thyroid hormone profiling.

Keywords: FNAC; Cytomorphology; Thyroid; Colloid Goitre.

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(Received on 05.12.2017,**Accepted on** 18.01.2018)**Introduction**

Thyroid follicles are the basic morphological unit of thyroid gland. Thyroid stimulating hormone (TSH) production, regulates T3 and T4.

Lesions of thyroid usually results in either diffuse or nodular growth of the gland. However, the thyroid function can remain undisturbed (euthyroid) or it may show increased (hyperthyroidism) or decreased (hypothyroidism) activity. Although a nodular growth

raises the possibility of cancer, it has been found that only 5% are malignant [1].

Serological investigation is the mainstay for thyroid profiling of the patient. It includes T3, T4 and TSH. A cost effective and reliable method for distinguishing benign from malignant condition, is Fine needle aspiration cytology (FNAC).

A major advance has been achieved in diagnosing thyroid nodules [9].

Clinicians usually send the patient for serological test for thyroid profile before FNAC. But it has been not correlated that whether different thyroid diseases are showing differing hormonal status.

Materials and Methods

The present study was done at out patient section of Department of Pathology, at a tertiary hospital in Bagalkot, from June 2016 to May 2017. A total of 151 cases were analysed. The study included all the patients, of all age and gender, who were referred to cytology section by various departments, for fine needle aspiration cytology of thyroid swelling. A detail history was taken and clinical examination of thyroid was done. Mobility of thyroid with deglutition was checked and presence of any lymphadenopathy was ruled out.

Oral consent was taken for doing the procedure. For minors the consent was given by guardian/parents, accompanying. The patient was asked to lie down with their neck extended by a pillow beneath the chest. Using a 23G needle and 10ml syringe, FNAC was performed, using non aspirated or sometimes aspirated techniques. A direct smear, followed by centrifugation and smearing was done for cystic lesions' aspirate. Prepared smears were either air dried for May Grünwald Giemsa stain or fixed in alcohol (95%) for Hematoxyline and Eosine stain. As directed by

the clinicians, the thyroid profile of the patient, including T3, T4 and TSH, done by Snibe MAGLUMI 1000, was collected from the record at the time of FNAC.

Results

FNAC was done on all 151 cases. The study included 136 patients, for which thyroid profile was available. Out of 136 cases, 121 (88.97%) were females, and 15 (11.0%) were males. No patients were of <10 years and >80 years of age. Hence, age distribution ranges from 11 to 80 years.

Out of the 136 cases, maximum number of cases (50.27%) were seen in 31-50 years age group. The diseases were divided as Non Neoplastic and Neoplastic. Among all, Non neoplastic diseases (125/136, 91.91%) were most common. In non neoplastic lesions, colloid goitre was the most common condition (88/136, 64.70%). Follicular neoplasm was the most common condition in neoplastic lesions (7/136, 5.14%).

Thyroid hormone profile was done in 136/151 cases. Maximum number of cases were Euthyroid (85/136, 62.5%), followed by Hyperthyroid (32/136, 23.52%) and Hypothyroid (19/136, 13.97%).

Of the 88 Colloid goitre cases, 75 were euthyroid, 7 were hypothyroid and 6 were hyperthyroid. 3 cases of Follicular neoplasm were hyperthyroid while 4 cases were euthyroid. All 4 Papillary carcinoma were euthyroid.

Table 1: Age and gender wise distribution of cases

Age Group (in Years)	Male	Female
11-20	2	1
21-30	2	22
31-40	3	47
41-50	4	33
51-60	1	15
61-70	1	2
71-80	2	1
Total	15	121

Table 2: Non neoplastic and Neoplastic distribution of cases

Thyroid Lesions	Cases
Colloid Goitre	88
Hashimoto's Thyroiditis	27
Benign Cyst	6
Lymphocytic Thyroiditis	4
Follicular Neoplasm	7
Papillary Carcinoma	4
Total	136

Table 3: Thyroid hormone status of cases

Thyroid Status	Non Neoplastic	Neoplastic
Euthyroid	77	8
Hyperthyroid	32	3
Hypothyroid	16	0
TOTAL	125	11

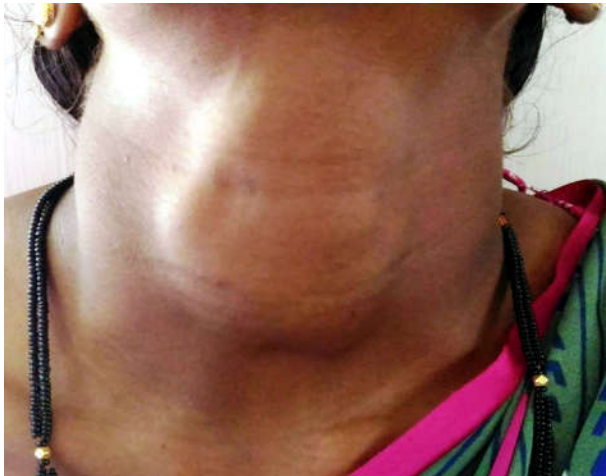


Fig. 1: 37 years, female, with diffuse thyroid swelling

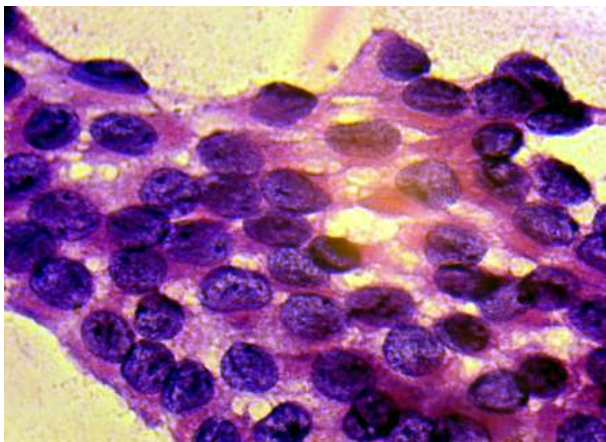


Fig. 2: H&E, 100X, Papillary carcinoma- cells in sheets with powdery chromatin and prominent nucleoli; some are showing nuclear grooves and vacuolated cytoplasm

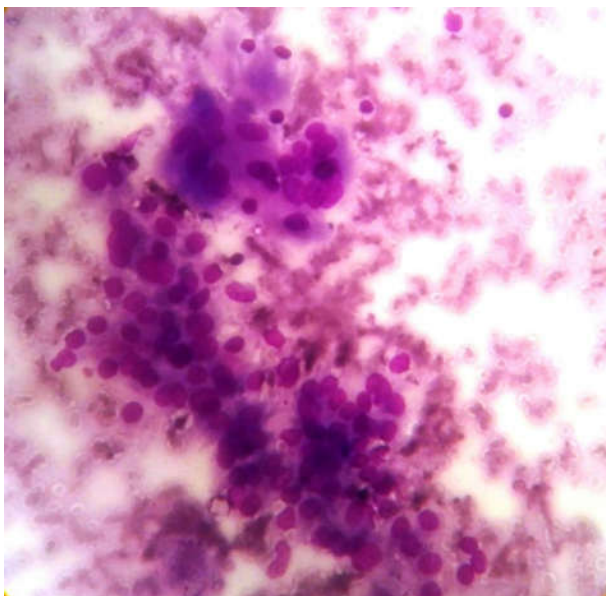


Fig. 3: Giemsa, 40X, Hashimoto's Thyroiditis with Hurthle Cell change

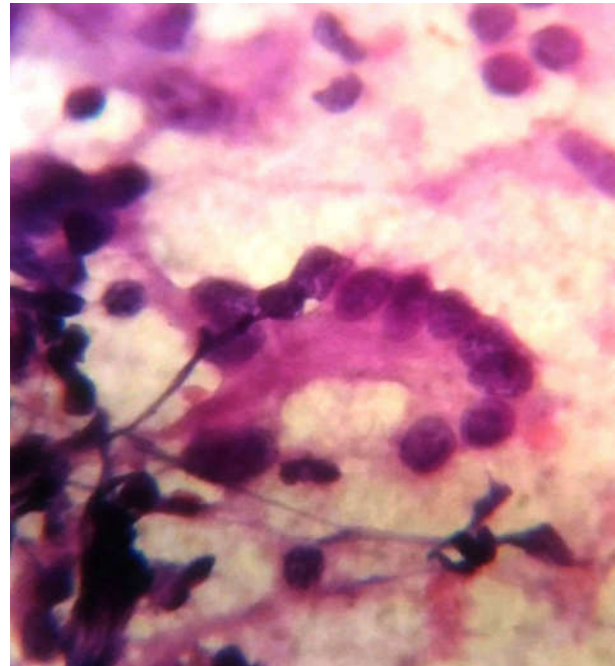


Fig. 4: Giemsa, 100X, Microfollicular pattern- enlarged crowded follicular cells



Fig. 5: H&E, 100X, Colloid Goitre with Cyst macrophage

Discussion

Thyroid lesions, especially nodules, are the main indication for FNAC. Palpable nodules are found in 4% to 7% of adults. Although a thyroid nodule raises a suspicion of cancer, less than 5% are malignant [1].

Of the 136 patients, most lesions were observed in females (88.97%) which correlates with similar studies done by M.S.Siddegaowda et al. [2], Junu Devi et al. [3], Gupta Ret al. [5], and Sheela et al. [6]. The age group under study was 11 to 80 years. Most of the patients were of 31 to 50 years of age group which are also reported by Manoj Gupta

et al. [4] and Junu Devi et al [3] In the present study distribution of cases as Non neoplastic and Neoplastic were 91.91% and 8.08% respectively. This was similar to Ritica Choudhary et al. [7]. Among non neoplastic conditions, Colloid goitre was the most commonest diagnosis, which was also found by Junu Devi et al [3], and other authors[7,8]. Follicular neoplasm was the most common neoplasm encountered in our study.

The cytological analysis was accompanied by serological evaluation of thyroid profile. Among both non neoplastic and neoplastic, 62.5% cases were euthyroid. The results are similar to other studies[7,8]. Lymphocytic thyroiditis patients were euthyroid. 87.5% cases of colloid goitre were euthyroid, showing similar results to that of Ritica Chaudhary et al [7].

Conclusion

FNAC is the procedure which is best suitable for diagnosing thyroid diseases. In addition to Thyroid profiling, along with detailed history and clinical examination, can lead to accurate diagnosis. This thereby reduces the surgical intervention and helps clinicians determine the further line of management of patients with thyroid disease.

Conflict of Interest: Nil

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