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A cross sectional study on cytomorphological diagnosis and clinical presentation of various thyroid diseases in Tribal areas of Odisha

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***Abstract*---**Introduction: Thyroid is an endocrine gland which is affected by various types of pathology including non-neoplastic and neoplastic conditions. The disease burden is very high in costal areas of India and Himalaya areas. Fine needle aspiration cytology (FNAC) is an important mode of initial diagnosis of various diseases of the gland. The study was conducted in various tribal areas of Odisha to find various clinical features and cytomorphological (FNAC) finding of various pathology of thyroid. Methodology: The study included total 210 cases of thyroid disorder over a period of 1 year from October 2019 to September 2020 in the department of pathology. Cytomorphological diagnosis by FNAC and brief clinical data were taken into consideration for statistical analysis. Result: This study revealed that female cases were 86.2 % and male 13.8 % and highest percentage (44.28 %) of patients were in age group 21 to 40 years. Other than gland enlargement three most common presentations were heat intolerance, cold intolerance and tachycardia. Total non

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neoplastic conditions were 66.2 %, neoplastic conditions were 26.2 % and suspicious malignant cases were only 7.6 %. Out of total cases nodular colloid goitre were 39.05 %, Hashimoto thyroiditis were 18.09 % and papillary carcinoma were 15.23 %. Conclusion: In this part of India similar to other parts, thyroid disorders have female predominance with major age group of involvement is 21 to 40 years. Nodular colloid goitre and papillary carcinoma are most common non neoplastic and neoplastic condition respectively.

***Keywords*---**FNAC, Thyroid gland disorders, Nodular colloid goitre, Hashimoto thyroiditis, Papillary carcinoma thyroid

Introduction

Thyroid gland is an important endocrine organ with various important physiological roles in the body. Thyroid diseases are one of the common endocrine disorder and in comparison to other endocrinal disorder these can be easily noticed due to slight enlargement of the gland and easy diagnostic approach like FNAC and sonography etc. [1,2]. The diseases can be clinically asymptomatic or may present as thyroid enlargement with or without associated features of hypo or hyperthyroidism depending on hormonal status of patient. Studies in various part of India have shown that under non neoplastic lesion colloid goitre is most common, follicular adenoma is most common benign neoplasm and papillary carcinoma is most common malignant neoplastic lesion of thyroid gland [3,4]. The burden of disease can be estimated from the data that in India approximately 70 million people are affected by the disease of the organ and costal states of India and hilly areas like Himalayan regions are predominant affected areas for thyroid disorders [1,5].

So our study was intended to find out the various pathology of thyroid gland detected on cytomorphological study (Fine needle aspiration cytology- FNAC) and common clinical presentation by the patients coming to tertiary care teaching hospitals in 2 tribal areas (Mayurbhanj and Sambalpur Districts) of Odisha, a costal state of India, where no such kind of studies have been conducted in last decade.

Materials and Method

Study was conducted after ethical clearance was obtained from the institutional ethical committee. This was a 1 year cross-sectional study consisting of thyroid patients of all age group and sex coming to Pathology department of PRM Medical college, Baripada and VIMSAR, Burla for FNAC study between time period October 2019 to September 2020.

Symptomatic and patients presenting with enlargement of thyroid gland were included in the study. Cases which were undiagnosed cytologically due to insufficient material and cases without any enlarged gland were excluded from the study. So a total of 210 cases were included in the study. Ultrasound guided

FNAC was also done where indicated. For each case the cytology finding, brief clinical history and demographic data like age and sex were recorded.
Appropriate statistical analysis was done after entry of the data in Microsoft excel spread sheet.

Results

Table: 1 Percentage of cases according to gender

Gender	No. of Cases	Percentage
Male	29	13.80
Female	181	86.20
Total	210	100

In present study out of total 210 cases female patient constituted 86.20 % (181 cases) and male constituted 13.80 % (29 cases). So in our study female to male ratio was 6.24 : 1. [Table 1]

Table: 2 Distribution of cases according to Age groups

Age group in years	No. of Cases	Percentage
0 - 20	7	3.33
21 - 40	93	44.28
41 - 60	71	33.80
61 - 80	34	16.19
> 80	5	2.40
Total	210	100

In our study the range of age was from 7 years to 89 years with mean age of 43.9 years. Out of total 210 cases the most prevalent age group was 21 – 40 years comprising of 93 cases (44.28 %) followed by age group 41 – 60 years comprising of 71 cases (33.80 %). [Table 2]

Table 3: Various clinical presentation

Sign & Symptoms	Frequency	Percentage
Heat intolerance	51	24.28
Cold intolerance	61	29.04
Weight gain	29	13.80
Weight loss	24	11.42
Tremor	39	18.57
Tachycardia/Irregular Pulse	57	27.12
Edema	46	21.9
Exopthalmus	30	14.28
Dysphagia & Hoarseness Voice	13	6.2
Menstrual Irregularity	32	15.23
Asymptomatic	26	12.38

Coming to clinical features presented by patients in our study, out of 210 cases three most common features were cold intolerance 61 cases (29.04%),

tachycardia/ irregular pulse 57 cases (27.12%) and heat intolerance presented in 51 cases (24.28%). Next three common clinical features were edema, tremor and menstrual irregularities which each were more than 15%. Exopthalmus, weight gain and weight loss each were more than 10 %. Asymptomatic cases were those with enlarged gland but no other clinical features which constituted 12.38 %. Dysphagia and hoarseness of voice combinedly were 6.2 % only.[Table 3]

Table 4: Various diseases of thyroid diagnosed on FNAC (cytomorphological finding)

Cytological finding (Diseases)	No of cases	Percentage of cases
Nodular colloid goitre*	82	39.05
Hashimoto Thyroiditis*	38	18.09
Lymphocytic Thyroiditis*	6	2.86
Hyperplastic Goitre*	10	4.77
Colloid cyst*	3	1.43
Atypia of undetermined significance/ Folicular neoplasm of undetermined significance**	6	2.86
Follicular neoplasm	14	6.66
Hurthle cell neoplasm	4	1.90
Suspicious malignancy**	7	3.33
Papillary carcinoma	32	15.23
Medullary carcinoma	3	1.43
Anaplastic carcinoma	2	0.96
Suspiciuos Lymphoma**	3	1.43
Total	210	100

In table 4 : diseases marked * are non neoplastic conditions, cases marked ** are suspicious neoplastic conditions and rest cases are neoplastic conditions.
Now considering various pathological entities diagnosed by FNAC we found (out of 210 cases) total cases of benign conditions were 139 (66.2 %). Suspicious for neoplastic conditions were 16 (7.61 %) and neoplastic conditions were 55 (26.2 %). So maximum percentage of cases in our study were non- neoplastic conditions followed by neoplastic conditions including both benign and malignant cases (Benign neoplastic conditions could not be considered separately as cytomorphology study has limitation to confirm these cases). [Table 4]

Out of total 210 cases if we consider non neoplastic conditions, most occurring lesions were colloid nodular goitre constituting 82 cases (39.05 %) which were also most common lesions among all total cases including non-neoplastic and neoplastic cases. This condition was followed by Hashimoto thyroiditis consisting of 38 cases (18.09 %) and other less common conditions we found were lymphocytic thyroiditis, hyperplastic goitre and colloid cyst which were each less than 5 %. [Table 4]

Among the neoplastic conditions, (out of total 210 cases) papillary carcinoma was encountered with highest number i.e. 32 cases (15.23 %) followed by follicular neoplasm excluding Hurthle cell neoplasm consisting of 14 cases (6.66 %). Other

less frequent cases were Hurthle cell neoplasm, Medullary carcinoma, anaplastic carcinoma and suspicious lymphoma which were each less than 2 %. [Table 4]

Discussion

Varieties of non neoplastic and neoplastic diseases affect the thyroid gland which may be asymptomatic or present with different symptoms and gland may be normal in size to variously enlarged sizes. FNAC is one of the preferable test which has surpassed many other tests to diagnose various pathology affecting the organ [6]. Our present study included cytological findings and brief clinical features of total 210 cases in 1 year duration.

While considering the age affected in this study, the maximum patients were in age group 21 – 40 years with 93 patients (44.28 %) which is similar to a study conducted in Saudi Arabia which had around 50 to 56 % cases in combined age group 21 – 30 years and 31-40 years for neoplastic and non neoplastic diseases [7]. The mean age for our study was 43.9 years which is in accordance to one study in Turkey and a study in India with mean age 42 years and 45 years respectively [4, 8]. Gender data analysis showed female predominance over male patients with female cases 181 (82.20 %) and male cases 29 (13.80%) with female to male ratio 6.24 : 1. This is almost same to study finding of K.F. Magdalene et al. of India and Shifa Toyib et al. of Africa [4, 9].

Analysis for clinical features of this study showed different sign and symptoms with three predominant clinical features being heat intolerance (24%), cold intolerance (29%) and tachycardia/ irregular pulse (27 %) which is in accordance to Shifa Toyib et al. study of Ethiopia. Other commonly encountered features were edema, weight abnormalities, menstrual irregularities, tremor, exophthalmos and voice abnormality. Studies in different parts of Africa and Europe revealed similar kind of finding. [9, 10, 11]

Now considering the various cytomorphological finding we found non neoplastic conditions were predominate constituting 139 cases (66.2 %) and neoplastic conditions (including benign and malignant) were 55 cases (26.2 %). Rest 16 cases (7.6 %) were suspicious cases for malignancies. This is in accordance to study by. K.F. Magdalene et al. which revealed non neoplastic conditions 66.7 % and neoplastic conditions 33.3 % and similar findings were also seen in two other Indian studies (Indhuja Bharathidhasan et al. and Ahmed Z et al.) and study in neighbour country Pakistan, Fahim et al. [4, 12, 13, 14]

Among non neoplastic conditions and over all the cases most common pathology was nodular colloid goitre having 82 cases (39.05 %) followed by second most common condition being Hashimoto thyroiditis having 38 cases (18.09 %) which are similar to studies in other parts of India and out side India [4, 7, 15]. Other less common conditions were lymphocytic thyroiditis, hyperplastic goitre and colloid cyst.

Papillary carcinoma of thyroid was most common neoplastic condition consisting of 32 cases (15.23 %) and second most common neoplastic condition was follicular neoplasm consisting of 14 cases (6.66 %). K.F. Magdalene et al. in India,

Albasri A et al of Saudi Arabia and Yang L et al of China revealed similar finding comparable to our study. [4, 7, 16]

Conclusion

In these tribal areas of Odisha, a costal state of India the predominant age group affected by thyroid disorder is 21 to 40 years with female predominance over male. Among various clinical features apart from enlargement of gland the common are cold and heat intolerance, tachycardia, tremor and menstrual irregularities. Like other parts of India and world non neoplastic conditions are more than neoplastic conditions. Colloid Goitre are most common non neoplastic condition and among neoplastic condition papillary carcinoma is most common.

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