

A prospective study of histopathological spectrum of thyroid lesion- A two year study**Sujeet Kumar¹, Tripurari², Imtiaz Ahmad^{3*}**¹*Tutor, Department of Pathology, Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India*²*Tutor, Department of Pathology, Jannayak Karpoori Thakur Medical College and Hospital, Madhepura, Bihar, India*³*Associate Professor, Department of Pathology, Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India***Received: 02-06-2021 / Revised: 10-07-2021 / Accepted: 19-09-2021****Abstract**

Introduction: Thyroid gland is important organ which plays vital physiological roles in the body. Thyroid gland is responsible for the maintenance of homeostasis and body integrity. Diseases of the thyroid gland are common endocrine disorders encountered globally and the incidence varies from one geographical region to another. Thyroid diseases manifest as hyperplastic, inflammatory, neoplastic or alterations in its hormonal levels or both. Among all the endocrine disorders thyroid disorders are the most common in India. **Materials and Methods:** This is a prospective study of all patients with thyroid lesions received in Department of Pathology, Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar. The duration of study was 2 years from August 2019 to August 2021 were carried out. Information obtained included age, sex, clinical diagnosis were available. The data were presented in frequency tables. A Sample Size 264 of subjects was studied. Sample size was taken based on the convenience of the study. **Results:** In the present study, a total of 264 patients with thyroid swellings were taken for the study for a period of two years from August 2019 to August 2021. The age of the patients ranged from 10 years to 80 years with a mean age of 37 years. Maximum number of lesions were seen in patients in the age group of 41-50 years (n=89, 34%) followed by 31-40 years (n=58, 20%) and 21-30 years (n=36, 12%). Out of 36 neoplastic lesions 13 cases (36.1%) were benign tumours and 23 cases (63.9%) were malignant tumours. In the present study, among 36 cases of neoplastic lesions, papillary carcinoma which comprises of 18 cases-(6.9%), was found to be the most common followed by follicular adenoma 13 cases, follicular variant of papillary carcinoma, 3 cases, follicular carcinoma and non-Hodgkin's lymphoma one case each. In the present study, out of 18 cases of papillary carcinoma, classic variant was seen in 10 cases, followed by micro papillary carcinoma 8 cases. **Conclusion:** In our study, majority of thyroid diseases showed a female predominance with most of them occurring in the age group of 41-50 years and most common thyroid lesions were non-neoplastic. Proper diagnostic tools, including clinical history, ultrasonography and proper pathological examination are required for the identification of thyroid malignancy. Diagnosis by histopathological examination is important for the prompt diagnosis and treatment of neoplastic lesions.

Key Words: Thyroid hyperplastic, thyroid swellings, thyroid lesions, thyroid malignancy.

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Introduction

Fine needle aspiration cytology (FNAC) of thyroid is an easy diagnostic procedure to classify thyroid lesions according to Bethesda system. According to this system categorization into definite types is not possible since capsular, vascular and neuronal invasion cannot be demonstrated on FNAC to diagnose malignant lesions. Hence histopathological examination remains gold standard for diagnosis of thyroid lesions.

Study was carried for the period of two years i.e from August 2019 to August 2021. 264 thyroid specimens were received which were formalin fixed, paraffin embedded and 4 microns sections were stained with hematoxylin and eosin. The slides were analysed taking into account all clinical details, gross and microscopic features.

Thyroid gland is one of the important organ which plays vital physiological roles in the body.

Thyroid gland is responsible for the maintenance of homeostasis and body integrity[1]. Diseases of the thyroid gland are common endocrine disorders encountered globally and the incidence varies from one geographical region to another. Thyroid diseases manifest as enlargement of thyroid gland (goiters) or alterations in its hormonal levels or both[2]. Among all the endocrine disorders thyroid disorders are the most common in India[3].

In India, 42 million people are affected by thyroid diseases[4] clinically apparent thyroid nodules are seen in 4-5% of population. Majority of the thyroid swellings are non neoplastic. Only less than 5% are malignant. The initial screening procedures in the evaluation of thyroid lesions include ultra sonogram, thyroid function test, FNAC, radio nucleotide scan among which FNAC is considered to be the best initial diagnostic procedure. In clinical practice developmental, inflammatory, hyper plastic and neoplastic diseases of thyroid are common worldwide. Biosynthetic defects, autoimmune diseases and nodular diseases can lead to goiter[5].

This study was undertaken to describe the spectrum, frequency, age, sex distribution and various histopathological patterns of thyroid lesions.

*Correspondence

Dr. Imtiaz Ahmad

Associate Professor, Department of Pathology, Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India.

E-mail: sujeetnmc2k8@gmail.com

Materials and methods

This is a prospective study of all patients with thyroid lesions received in Department of Pathology, Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar. The duration of study was 2 years from August 2019 to August 2021 were carried out. Information obtained included age, sex, clinical diagnosis were available. The data were presented in frequency tables. A Sample Size of 264 subjects was studied. Sample size was taken based on the convenience of the study.

Inclusion Criteria

Lobectomy, Hemithyroidectomy, subtotal thyroidectomy and total thyroidectomy specimens received for histopathological examination which were suspected for inflammatory, non neoplastic and neoplastic lesions of thyroid.

Exclusion Criteria

- History of any genetic/ congenital thyroid disease.
- Antenatal cases having thyroid abnormalities.
- Thyroid disorders caused due to drug intake/side effects.

Study Subjects

In this study, a total of 264 patients who presented with swelling in thyroid were taken. The detailed clinical details regarding age, gender along with ultra-sonographic (USG) findings, thyroid scan, related

investigations (euthyroid, hyperthyroid, and hypothyroid), and operative findings were recorded from the histopathology Performa and were taken into consideration. Fine needle aspiration was the most commonly used pre-operative assessment method for most thyroid swellings information. Gross features of the specimen received were recorded. Representative tissue was taken and after processing the tissue, routine staining was carried out with haematoxylin and eosin (H&E) stain. The disorders of thyroid were classified on histological basis into non-neoplastic and neoplastic lesions which were further sub-classified as benign and malignant as per the World Health Organization (WHO) classification of tumours of endocrine organs (fourth edition).

Statistical Analysis

Data was analyzed using Microsoft Excel and chi-square test. Statistical package for social sciences (SPSS) software was used.

Results

In the present study, a total of 264 patients with thyroid swellings were taken for the study for a period of two years from August 2019 to August 2021. The age of the patients ranged from 10 years to 80 years with a mean age of 37 years. Maximum number of lesions were seen in patients in the age group of 41-50 years (n=89, 34%) followed by 31-40 years (n=58, 20%) and 21-30 years (n=36, 12%).

Table 1: Sex Distribution of thyroid lesions

S.No	Gender	Number of cases	Percentage
1	Male	43	16.3%
2	Female	221	83.7%
3	Total	264	100

Table 2: Age distribution

S.No	Age	Number of cases	Percentage
1	21-30 years	36	12%
2	31-40 years	58	20%
3	41-50 years	89	34%

Table 3: Lesions of Thyroid

S.No	lesions	Number of cases	Percentage
1	Non- neoplastic	228	86.36%
2	Neoplastic	36	13.63%
3	Total	264	100

Table 4: Histopathological types of Non-Neoplastic lesions

S.No	Non- neoplastic lesions	Number of cases	Percentage
1	Multinodular goitre	136	51.5
2	Lymphocytic thyroiditis	47	17.8
3	Hashimoto thyroiditis	26	9.8
4	Adenomatous goitre	19	7.2

Table 5: Histopathological types of Neoplastic lesions

S.No	Neoplastic lesions	Number of cases	Percentage
1	Papillary carcinoma	18	6.9
2	Follicular adenoma	13	4.9
3	Follicular variant of papillary carcinoma	3	1.0
4	Follicular carcinoma	1	0.4
5	Non-Hodgkin's lymphoma	1	0.4
6	Total	36	13.6

In the present study, females were most commonly affected. It was observed that 221 (83.7%) cases were females and 43 (16.3%) cases were male. (Table 1) Male to female ratio was noted to be 5.1:1. In the present study, most common clinical symptom was swelling in front of the neck seen in almost all cases followed by menstrual irregularity and dyspnoea. In the present study, total thyroidectomies were most common, followed by hemi thyroidectomy specimens, subtotal thyroidectomies and lobectomies. In the present study, out of total 264 cases, 228 cases (86.36%) were diagnosed as non-neoplastic and remaining 36 cases (13.63%) as neoplastic.

In the present study, among 228 cases of non-neoplastic lesions, multi nodular goiter (MNG) 136 cases (51.5%) was found to be the most

common followed by lymphocytic thyroiditis 47 cases (17.8%), Hashimoto's thyroiditis 26 cases (9.8%) and adenomatous goiter 19 cases (7.2%). In the present study, benign tumours were more common than malignant tumours.

Out of 36 neoplastic lesions 13 cases (36.1%) were benign tumours and 23 cases (63.9%) were malignant tumours. In the present study, among 36 cases of neoplastic lesions, papillary carcinoma which comprises of 18 cases-(6.9%), was found to be the most common followed by follicular adenoma 13 cases, follicular variant of papillary carcinoma, 3 cases, follicular carcinoma and non-Hodgkin's lymphoma one case each. In the present study, out of 18 cases of

papillary carcinoma, classic variant was seen in 10 cases, followed by micro papillary carcinoma 8 cases.

Discussion

In our present study the commonest age group presenting with thyroid disorders was in the 4th to 5th decade which was correlating with the study by sreedeve et al while study carried out by Jagadale K et al and Ramesh V L et al was found to be 4th to 6th decades and 3rd to 5th decade respectively. In the present study, it was observed that 221 (83.7%) cases were females and 43 (16.3%) cases were male. The female to male ratio found in this study was 5.1:1, which on comparison with the studies by Nzegwu et al, Abdulkareem et al, Sudha et al, and Nggada et al 6:1, 5.7:1, 7:1 and 6.2:1 respectively and was favouring with our study[6].

In women the high frequency of developing thyroid disorders is considered to be due to the physiological demands of puberty, menstruation, pregnancy and lactation. A considerable number of the cases in this study were non-neoplastic thyroid lesions constituting 228 cases (86.1%) of the cases. This observed significance of non-neoplastic lesions in our study is in accord with findings from sravani et al, Chung et al and Hill et al which was 62.5%, 84.1% and 60.5% respectively[7].

In our study the most predominant thyroid lesion encountered is nodular colloid goiter and was commonly seen in the 4th decade. It constituted 51.5% of all lesions similar to a study by Illorin and Sreedeve et al. Multi nodular goiter (MNG) is the end-stage result of diffuse hyperplastic goiter. Excessive metabolic demands in this condition will lead to the increased enlargement of the thyroid gland and this is one of the important reason for the thyroid enlargement in women during puberty and pregnancy which is considerably common. Constant stimulation by the TSH released from the anterior pituitary results in multi-nodular goiter (MNG). Main reason for colloid goiter is iodine deficiency. The daily iodine requirement is about 100–125 µg. It is treated by iodized salt used for food and also iodine-containing preparations. If the iodine deficiency state sustains for a long period of time, it results in the accumulation of colloid material in the gland and lead to colloid goiter. The puberty goiter, pregnancy goiter, and colloid goiter if left untreated will change to MNG[8].

In our study the lymphocytic thyroiditis constituted 47 cases (17.8%) and it was seen most common in the 3rd decade. Which was in correspondence with Illorin et al. Hashimoto thyroiditis constituted 26 cases (9.8%) was seen most common in the 4th decade. Hashimoto thyroiditis is an auto immune disease characterized by widespread lymphocytic infiltration, fibrosis and parenchymal atrophy with oxyphilic changes. It is a painless goiter and there are no early symptoms. In our study, malignant lesions 23 cases (63.9%) predominated over benign 13 cases (36.1%) within the neoplastic category. Our findings in this regard are similar to the study of Beigh et al and Abdulkader et al who reported, among which 81% and 88.8% were malignant respectively[9].

Among the 36 cases of the neoplastic thyroid lesions in this study, 13 case (36.1%) are follicular adenomas which was correlating with Prabha et al. Follicular adenomas may be inactive or active. Depending on their level of function follicular adenomas can be described as cold, warm, or hot. A thyroid adenoma is differentiated from an MNG in that an adenoma is solitary, encapsulated and arises from a genetic mutation in a single precursor cell. To differentiate a follicular adenoma from follicular carcinoma cautious histopathological examination is necessary[10].

Conclusion

In our study, thyroid diseases showed definite female predominance, with most of them occurring in an age group of 41-50 years. Multi nodular goiter is the most common thyroid condition which was seen occurring clinically, radiologically, and cytologically. In our study follicular adenoma was the most common benign neoplastic disease and papillary carcinoma was the most common malignant lesion. Fine-needle aspiration findings and ultra-sonogram findings was in consonance with histopathological findings as far as papillary

carcinoma was concerned. From this study two important observations that has been noticed were that the non-neoplastic lesions are much more common over the neoplastic lesions and the other is that the malignant lesions are seen predominating the benign lesions and of the malignant lesions papillary carcinoma of thyroid is the major constituent.

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Conflict of Interest: Nil Source of support: Nil