



Analysis of Histopathological pattern of Thyroid lesions in a Tertiary Care Hospital of Central India.

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ABSTRACT

Background: The thyroid gland plays a key physiological role in the body and is responsible for maintaining homeostasis and body integrity. Thyroid gland lesions vary in their incidence and histopathological patterns, they may be developmental, inflammatory, hyperplastic, and neoplastic.

Objective: To analyze histopathological patterns of thyroid lesions in a tertiary care hospital in central India.

Methodology: In this Retrospective observational study, 93 thyroid tissue specimens were examined in the Department of Pathology in a tertiary care hospital in central India from the period January 2018 to September 2023. All the biopsy reports were reviewed and different lesions were categorized according to age and gender distribution.

Results: The mean age of the patient was 41.22 years. The majority of patients were female 81(87%) compared to male 12 (13%). Non-neoplastic lesions accounted for 68 cases (73%) and neoplastic lesions constituted 25 (27%). The most common non-neoplastic lesion was colloid goiter 52(76%), followed by Hashimoto's thyroiditis 7(10%). The most common neoplastic lesion was follicular adenoma 16 (64%) followed by papillary carcinoma 4 (16%).

Conclusion: In our study, thyroid diseases showed definite female predominance. Follicular adenoma was the most common benign neoplastic disease

Keywords:

Histopathology, Thyroid lesions, Neoplastic, Non-neoplastic.

derangements to neoplastic lesions. The etiology of thyroid nodules is multifactorial; iodine deficiency, radiation exposure, and dietary goitrogenic factors all play an important role in the pathogenesis of thyroid nodules.³

The general population has an enormous burden of thyroid diseases. Among all the endocrine disorders, thyroid disorders are the most common in India.⁴ In India, about 42 million people are affected by thyroid diseases.⁵ 4%–5% of the population present with clinically visible thyroid nodules.⁶ Majority of the thyroid lesions are non-neoplastic and <5% are malignant.⁷ Coastal states like Gujarat, Goa, and Kerala and hilly areas like Himalayan regions are endemic for thyroid lesions in India.⁸

There has been increased evaluation of thyroid lesions in the country by using imaging techniques, especially ultrasound which has found that 60%-70% of the population has small-sized thyroid nodules.⁹ When found incidentally during these processes, they are referred to as thyroid incidentalomas.¹⁰ Majority of the thyroid lesions have a similar and high risk of developing thyroid cancer.⁹ It is difficult to diagnose thyroid tumor by just palpating or clinical evaluation alone. A definitive investigation such as histopathology is crucial to enabling the practitioner to affirm the diagnosis. Histopathological evaluation is essential in the diagnosis of thyroid lesions. In Pakistan, it is mainly done in tertiary hospitals. For a country with a high prevalence and mortality rate from thyroid-associated illnesses, histopathological evaluation could be the way to curb the menace. This study was conducted to analyze histopathological patterns of thyroid lesions in a tertiary care hospital in central India.

II. MATERIALS AND METHODS

A retrospective cross-sectional study of thyroidectomy specimens was conducted in the Department of Pathology, of a tertiary care center in central India.

A total of 93 thyroid tissue specimens were examined from January 2018 to September 2023. All relevant clinical information such as patient age, gender, and clinical presentation and other information such as FNAC, ultrasound, and

I. INTRODUCTION

The thyroid gland plays a key physiological role in the body and is responsible for maintaining homeostasis and body integrity.¹ This endocrine gland can be affected by a variety of diseases that range from functional and immunological-mediated enlargement to neoplastic lesions. Thyroid gland lesions vary in their incidence and histopathological patterns. They may also differ in terms of geographical area, age, sex, dietary, and environmental factors.² Thyroid disorders range from functional, immunological



surgical findings were obtained from the histopathology request form register. The study was approved by the Institutional Ethics Committee.

Paraffin-embedded blocks and the histopathology slides of all the thyroidectomy specimens received in the histopathology department were analyzed. The histopathology slides were retrieved from the archive and reviewed. The slides were prepared from the thyroidectomy specimens which were fixed in 10% formalin. Routine processing of representative areas was done after thorough grossing of the specimens. Paraffin-embedded blocks were sectioned using a microtome. The 5µm thick sections were stained with Haematoxylin and Eosin and special stains (PAS, Reticulin, Masson's Trichrome) wherever required. The lesions were classified mainly into non-neoplastic and neoplastic. Age and sex-wise variations of the lesions were noted.¹¹ Statistical analysis was done using the frequency distribution table in Microsoft Excel Office. The gross and microscopic

photographs of relevant lesions were taken. (if any photos are available)

III. RESULTS

Among 93 thyroid lesion patients, the majority of cases 30 (32.25%) belonged to patients of the age group 31-40 years, followed by 23(24.73%) belonging to 41-50years. The mean age of study subjects was 41.22 ± 12.95 years. (Figure.1). Female preponderance with 81 (87%). (Figure 2). Non-neoplastic lesions accounted for 68 cases (73.12%) and neoplastic lesions constituted 25cases (26.88%).(Figure3). The most common non-neoplastic lesion was colloid goiter 52 (76.47%), followed by Hashimoto's thyroid it is 7 (10.29%), Multinodular Goitre 5(7.36%) and chronic lymphocytic thyroid it is 4(5.88%) respectively. The most common neoplastic lesion was follicular adenoma 16 (64%) followed by papillary carcinoma 4 (16%), Hurthle cell Adenoma 3(12%), and Medullary carcinoma 2(8%) respectively. (Table 1)

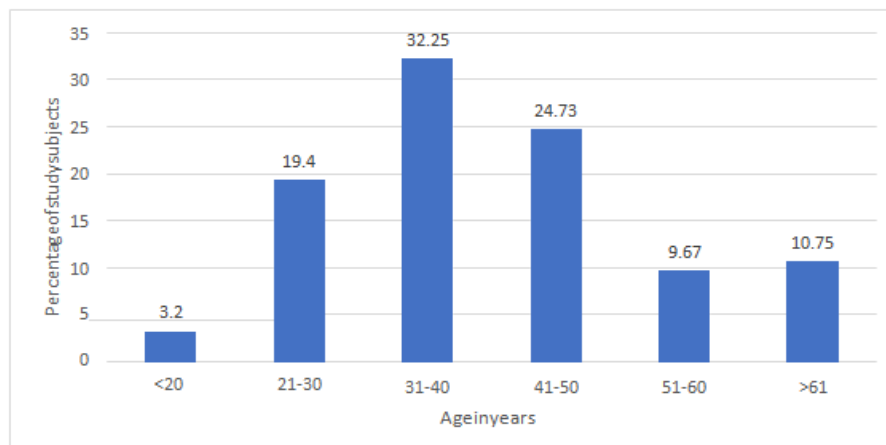


Figure1. Distribution of study subjects according to age

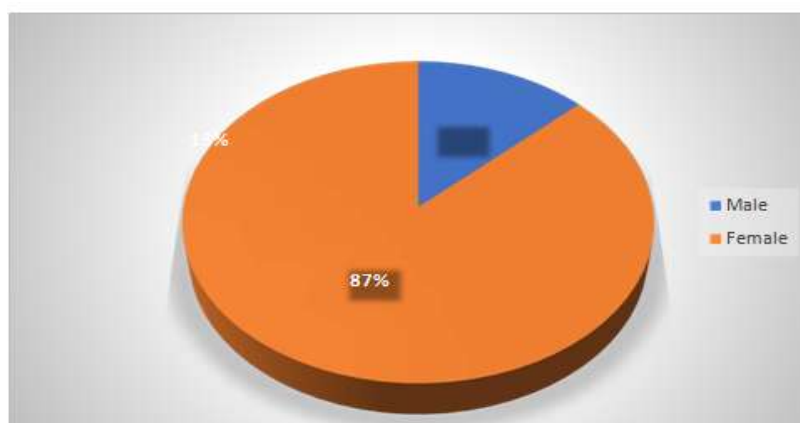


Figure2. Gender-wise distribution of study subjects

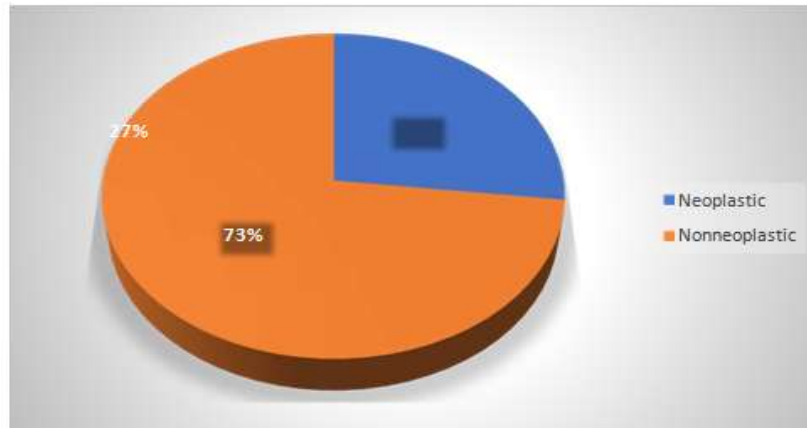


Figure3. Morphologic classification of thyroid lesions.

Table1. Distribution of non-neoplastic and neoplastic thyroid lesions.

Thyroid Lesions	Number of cases	Percentage
Non-neoplastic lesions		
Colloid Goitre	52	76.47%
Hashimoto's Thyroiditis	7	10.29%
Multinodular Goitre	5	7.36%
Chronic Lymphocytic Thyroiditis	4	5.88%
Total	68	100
Neoplastic lesions		
Follicular Adenoma	16	64%
Papillary Carcinoma	4	16%
Hurthle Cell Adenoma	3	12%
Medullary Carcinoma	2	8%
Total	25	100

IV. DISCUSSION

According to the WHO classification 2016, 7% of the world population is suffering from clinically apparent goiter. The majority of these patients are from developing countries where the disease is attributed to iodine deficiency.¹² Thyroid enlargement may be in the form of multinodular, solitary, or diffuse goiter.¹³ Thyroid diseases are generally more prevalent in females.¹⁴ Benign neoplasms outnumber thyroid carcinomas by a ratio of nearly 10:1.¹⁵

In the present study, the mean age of study subjects was 41.22±12.95 years, with female preponderance with 81 (87%). Non-neoplastic lesions accounted for 68 cases (73.12%) and neoplastic lesions constituted 25 cases (26.88%). The most common non-neoplastic lesion was colloid goiter 52 (76.47%), followed by Hashimoto's

thyroiditis 7 (10.29%), Multinodular Goiter 5 (7.36%) and chronic lymphocytic thyroiditis 4 (5.88%) respectively. The most common neoplastic lesion was follicular adenoma 16 (64%) followed by papillary carcinoma 4 (16%), Hurthle cell Adenoma 3 (12%), and Medullary carcinoma 2 (8%) respectively.

Similar to the present study findings, V Prabha, M G Bhuvaneshwari¹⁶ reported that 33% (highest) belonged to the 31–40 years age group, non-neoplastic lesions accounted for 84 cases (84%) and neoplastic lesions constituted 16%. The most common non-neoplastic lesion was multinodular goiter (MNG) (43%), followed by colloid goiter (29%), Hashimoto thyroiditis (9%), and thyroglossal duct cyst (3%).

Joseph Eetal¹⁷ found a total of 801 specimens, of which 716 were females and 85 were



males. Maximum number of thyroid lesions were seen in the age group 41-50yrs. Multinodular goiter was the most common non-neoplastic thyroid lesion (71.5%) followed by thyroiditis. Among the 801 thyroid lesions, there were 151 carcinomas (18.8%).

Aslam et al.¹⁸ observed that the ages of the patients ranged from 31 to 74 years, with a mean age of 48.3 ± 3.8 years. Females were 74 (59.2%) while the males were 51 (40.8%). Goitrous or thyroid enlargement was higher in patients aged between 31 to 39 years, and thyroid carcinoma was most prevalent in the geriatrics age of 57 to 74 years. Overall analysis showed that females dominated all the disorders from goiter, thyroid nodules, and thyroid carcinoma. An assessment of the types of thyroid carcinoma was done which showed that papillary carcinoma was the most prevalent at 29 (83%) followed by medullary and follicular thyroid carcinoma at 5.7% and 2.95% respectively.

V. CONCLUSION

The present study concludes that in our study population, non-neoplastic lesions of the thyroid are the more common compared to neoplastic lesions with female preponderance on histopathology.

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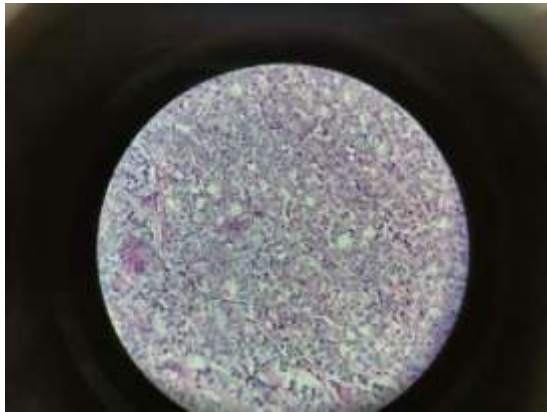


FIG. Non-invasive thyroid neoplasm with papillary like nuclear feature.

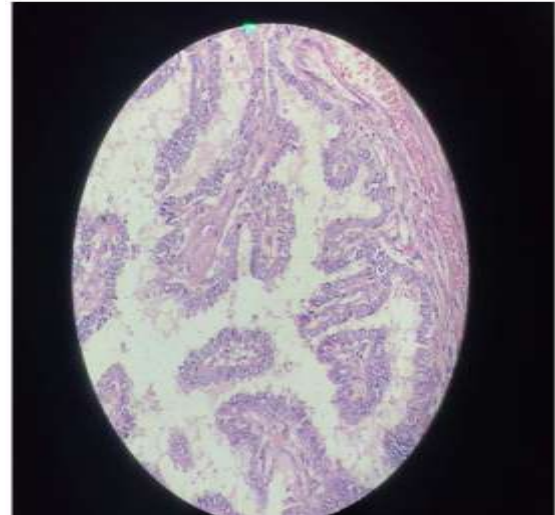


FIG Papillary Carcinoma Thyroid

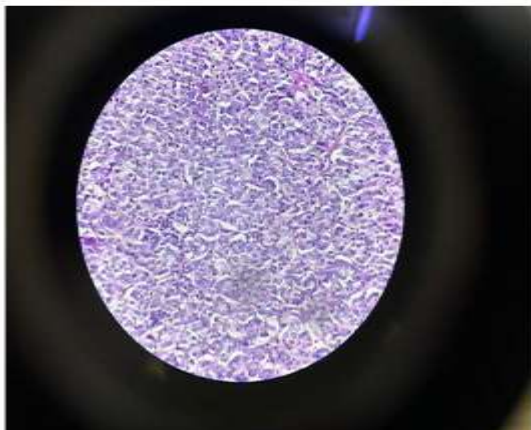


FIG. Follicular Adenoma

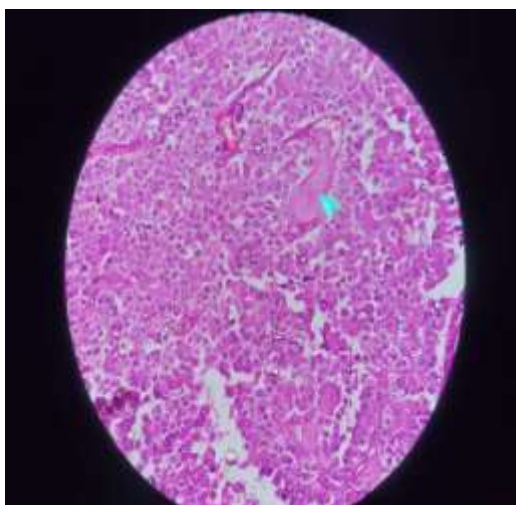


FIG Medullary Carcinoma Thyroid