



HISTOPATHOLOGICAL SPECTRUM OF THYROID LESIONS IN A TERTIARY CARE HOSPITAL

Pathology

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KEYWORDS

INTRODUCTION:

Thyroid gland is one of the significant organs in our body and the disorders occurring in thyroid are taken as the most common endocrine disorders seen worldwide. Thyroid gland plays extensive and vital physiological roles in our body. The hormones secreted by the thyroid affect all body organs and are responsible for maintenance of homeostasis and the 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] 5% of the thyroid lesions are neoplastic while the rest are due to inflammatory or developmental reasons. The thyroid gland plays a key physiological role in the body and is responsible for maintaining homeostasis and body integrity.[3] Thyroid gland manifests as gland enlargement (goiters) or as alterations in hormone levels or as both.[4] Around 42 million people are affected by thyroid diseases in India.[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]

Thyroid disorders may present as a derangement of thyroid hormone secretion, thyroid enlargement or pain. Thyroid enlargements are more common in females. Data on the prevalence of thyroid malignancy among thyroid enlarged patients were very limited in the study area.

AIMS AND OBJECTIVES:

This study aims to study the spectrum of various lesions of the thyroid and various histopathological patterns of thyroid lesions.

MATERIALS AND METHODS:

The present study is a hospital based retrospective two-year study and was conducted in the Department of Pathology, Rural Medical college, Loni Parvara. Tissue samples for H&E sections were fixed in 10% formalin and subjected to routine paraffin embedded processing after which this was then stained with Haematoxylin and Eosin. Various histopathological spectrum of lesions in the thyroid were observed and classified as benign and malignant on the basis of World Health Organization histological classification of the thyroid tumours. The duration of study was 2 years from 2019 to 2020 were carried out. Information obtained included age, sex, clinical diagnosis, histological diagnosis were available. The data were presented in frequency tables. A Sample Size of 42 subjects was studied. Sample size was taken based on the convenience of the study.

Inclusion Criteria

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

Exclusion Criteria

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

Study Subjects

In this study, a total of 42 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 42 patients with thyroid swellings were taken for the study for a period of two years from 2019-2020. The age of the patients ranged from 20 years to 80 years with a mean age of 44 years. Maximum number of lesions were seen in patients in the age group of 41-55 years (n=20, 48.8%) followed by 26-40 years (n=13, 31%)

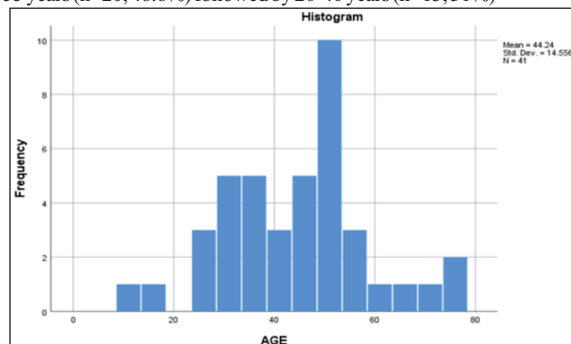


Figure No.1 Demographic profile of study population

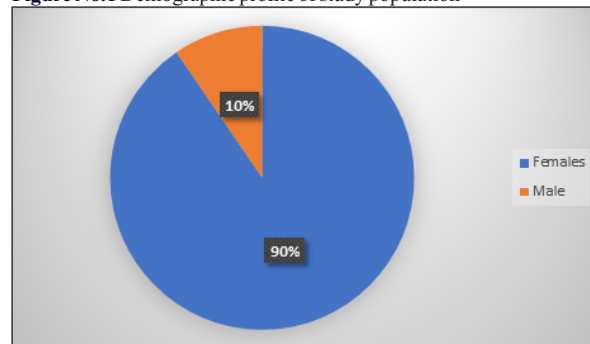
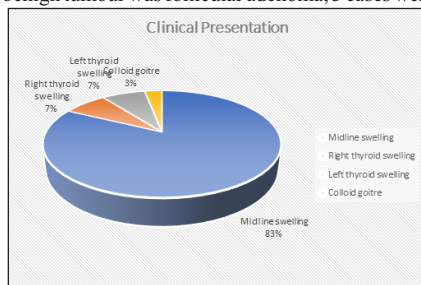
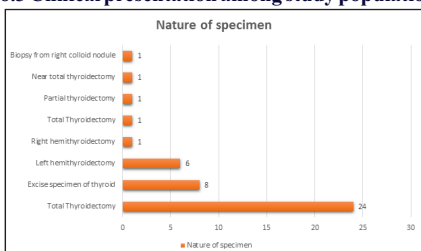
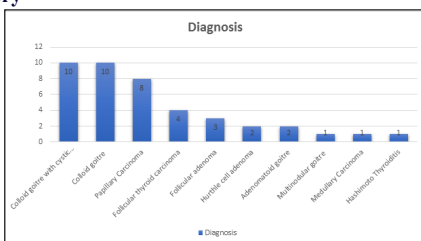


Figure no.2 Gender distribution of study population

Table 1. Gender distribution of thyroid lesions

Gender	No of cases	Percentage%
Male	04	9.52
Female	38	90.47
Total	42	

In the present study, females were mostly commonly affected. It was observed that 38 (90%) cases were females and 4 (10%) cases were male. (Table 1) Male to female ratio was noted to be 9:1. (Figure no.2) 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. (Figure no.3) In the present study, total thyroidectomies were most common, followed by hemi thyroidectomy specimens, subtotal thyroidectomies and lobectomies. (Figure no.4) In the present study, out of total 42 cases, 26 cases (60%) were diagnosed as non-neoplastic and remaining 16 cases (40%) as neoplastic. (Figure no.6) (Table 2) In the present study, 26 cases of non-neoplastic lesions were observed, 10 cases each of colloid goitre and colloid goitre with cystic changes were found. 1 case of Hashimoto's thyroiditis cases, 2 case of adenomatous goiter, 1 case of multinodular goiter with chronic inflammation and 2 case of Hurthle cell adenoma was observed. (Figure no.5) In the present study, malignant tumours were more common than benign tumours. Out of 16 neoplastic lesions 13 cases (81%) were malignant tumours and 3 cases (18.7%) were benign tumours. In the present study, among 16 cases of neoplastic lesions, papillary carcinoma comprised of 8 cases (50%) was found to be the most common followed by follicular carcinoma which comprises of 4 cases (25%) and 1 case of medullary carcinoma was seen. Most common benign tumour was follicular adenoma, 3 cases were found.

**Figure no.3 Clinical presentation among study population****Figure no.4 Different thyroid specimens received in the pathology laboratory****Figure no.5 Clinical diagnosis among study population****Figure no.6 Type of lesions****Table 2 Type of lesions**

Lesions	No.of cases	Percentage%
Non neoplastic	26	60%
Neoplastic	16	40%
Total	42	

DISCUSSION:

The thyroid gland is located in the neck which is bounded by the pretracheal fascia which is a portion of the deep cervical fascia. It is seen in front of the 2nd, 3rd, and 4th tracheal rings and weighs around 20–25 gm.(8) The incidence of the thyroid diseases differs according to gender, age groups, and racial differences.(9) Of all the endocrine disorders, thyroid disorders are the most common in India.(10) Thyroid lesions may be categorized into developmental, inflammatory, hyperplastic and neoplastic. The thyroid gland diseases are common and composed of an array of entities causing systemic disease (grave's disease) or a localized abnormality in the thyroid gland such as nodular enlargement (goiter) or a tumour mass(11). Both the neoplastic and non-neoplastic diseases of thyroid are common all over the world, with diversity in frequency and incidences depending upon iodine deficiency status.(12)

In our present study, the age of the patients ranged from 20 years to 80 years with a mean age of 44 years which was similar with the study of Arvintham, (13) Urmila devi et al,(14) Silverman(15) et al and which were lower when compared with study conducted by Sathiyamurthy (16) et al with 36.5 years, et al with mean ages of 44.8 and 46 years respectively. 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 sreedevis(2) et al while study carried out by Jagadale K et al(17) and Ramesh V L et al (18) was found to be 4th to 6th decades and 3rd to 5th decade respectively. In the present study, it was observed that 38 (90%) cases were females and 4 (10%) cases were male. The female to male ratio found in this study was 9:1, which on comparison with the studies by Nzegwu et al,(19) Abdulkareem et al,(20) Sudha et al,(21) and Nggada et al(22) 6:1, 5.7:1, 7:1 and 6.2:1 respectively and was favouring with our study. 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 25 cases (60%) of the cases. This observed significance of non-neoplastic lesions in our study is in accord with findings from sravani et al,(14) Chung et al (23) and Hill et al (24) which was 62.5%, 84.1% and 60.5% respectively. In our study the most predominant thyroid lesion encountered is colloid goiter and was commonly seen in the 4th decade. It constituted 50 % of all lesions similar to a study by Illorin (25) and Sreedevis et al (2) 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.24 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.(26)

In our study the lymphocytic thyroiditis constituted 1 case (2.38%) and it was seen in the 3rd decade. 1 case of Hashimoto thyroiditis (2.3%) was seen 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.(27)

In our study, malignant lesions 13 cases (81.2%) predominated over benign 3 cases (18.7%) within the neoplastic category. Our findings in this regard are similar to the study of Beigh et al(1) and Abdulkader et al (28) who reported, among which 81% and 88.8% were malignant respectively.

Among the 16 cases of the neoplastic thyroid lesions in this study, 3 cases (18.7%) are follicular adenomas which was correlating with Prabha e al(32) 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. Papillary carcinoma was the most common malignant thyroid lesion and constituted 50% of the malignant lesions in our study. This observation was similar with the study of Gupta A et al (29) Chukudebelu et al (30) and Abdulkader et al.(28) Papillary microcarcinoma constituted 8 cases (19.04 %) and was correlating with study by Sreedevi et al(2) Histopathologically papillary carcinoma appears as colloid-filled follicles with papillary projections along with psammoma bodies which may be present in calcified lesions. Young females are commonly affected in the age group of 20–40 years. Frequently lymph nodes in the lower deep cervical region may be involved(31) Thus, the present study gives beneficial knowledge about the epidemiological and demographic variables in regard with the about various thyroid disorders on the basis of histopathology.

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