

A Study of Histopathology of Solitary Thyroid Nodules

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Abstract

Introduction: The most important consideration in evaluating patients with solitary thyroid nodule is whether the nodule is a thyroid carcinoma or not. Solitary thyroid nodule can be both neoplastic or non neoplastic. Histological examination helps in the final diagnosis and also to know the frequency of occurrence of various histological varieties in solitary thyroid nodules.

Aim: Our study was aimed to evaluate the solitary thyroid nodules histologically and categorise them according to their histomorphology findings.

Materials and Methods: A total of 68 cases of solitary thyroid nodules were studied over a period of 4yrs and histopathology findings were recorded.

Results: 68 cases of solitary thyroid nodules were studied for a period of 4yrs. The sex distribution of solitary thyroid nodules showed female preponderance. Mean age of presentation was 48yrs. Among 68 cases 38 were non neoplastic and 30 were neoplastic. Among non neoplastic, 20 were colloid nodule/colloid cyst, 16 were hyperplastic nodules of nodular goiter and 2 were hashimotothyroiditis. Among 30 neoplastic, 20 were follicular adenoma, 5 were follicular carcinoma, 3 were papillary carcinoma and 2 were follicular variant of papillary carcinoma.

Conclusion: To conclude, the most common lesion of solitary thyroid nodule in our study was non neoplastic lesion. Preoperative evaluation helps us to minimize the extent of surgery and hence morbidity.

Keywords: Colloid nodule of thyroid; Hashimoto thyroiditis; Histopathology; Papillary carcinoma thyroid; Solitary thyroid nodule.

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Introduction

Thyroid disorders are the most common endocrine diseases and most of them are curable. Due to wider use of imaging, the incidence of solitary thyroid nodules has been on rise.¹ Solitary thyroid nodule is defined as discrete swelling in one lobe with no palpable abnormality elsewhere in the gland.² They can be of neoplastic or nonneoplastic. Thorough evaluation is necessary to differentiate them preoperatively. However histological examination was perfect tool for final diagnosis.³ Solitary thyroid nodules were more important to evaluate because of high probability of malignancy, which can range from 5-35% of all solitary thyroid nodules.⁴

Aim

The aim of our study is to evaluate histopathological diagnosis of solitary thyroid nodules.

Materials and Methods

A total of 68 cases were studied for a period of 4yrs in a tertiary health care centre. Cases diagnosed as solitary nodule clinically and on imaging were included in study but were found to be multinodular were excluded from the study. The specimens were received in 10% neutral buffered formalin fixative. The resected specimens were evaluated grossly for size, margins, capsule, consistency, colour, presence or absence of calcification, haemorrhage, necrosis, cystic changes, colloid and papillary projections. Multiple sections were submitted for routine processing and slides were stained with Hematoxylin and Eosin (H&E) stain and then microscopic evaluation of the cases was done on different sections. They were categorized according to their histological features.

Results

The present study was conducted in tertiary health care centre on 68 cases of solitary thyroid nodule. Of the 68 cases, 48 were female and 20 were males (Table 1). Mean age of presentation was 48yrs (Table 2). Out of 68 cases, 38 were found to be nonneoplastic and 30 were neoplastic (Table 3). Among nonneoplastic, 20 were found to be colloid nodule/cyst (Figure 2), (Fig 4), 16 were found to be hyperplastic nodule of nodular goiter and 2 were hashimotothyroiditis (Table 4). Among neoplastic, 20 were benign (Figure 1) and 10 were malignant (Table 5). All 20 cases of benign nodules were diagnosed as follicular adenoma (Figure 3).

Among 10 malignant, 5 were follicular carcinoma, 3 were papillary carcinoma (Figure 5), and 2 were follicular variant of papillary carcinoma (Table 6).

Discussion

Solitary thyroid nodule in our study is more common in females with a ratio of 2.4 : 1, which is similar to the studies done by Yamashita et al⁵, Almaghrabi, J.A. et al⁶, Singh P et al⁷, Goutham, H.K et al⁸, Mandal S et al⁹. The female preponderance might be due to presence of oestrogen receptors in thyroid tissue.^{10,11}

In our study mean age of occurrence of solitary thyroid nodule was 48yrs which comparable to the study done by D. Sailaja et al.¹² Singh P et al⁷, in 2000, reported a mean age incidence of solitary nodules as 47 years in their study which was conducted on 108 cases having patients in the age range of 12-80 years. In a study done by Gupta M. et al.¹³, it was 38.7 years. In a study done by Rangaswamy M et al. on 585 cases of solitary nodules of thyroid the age range noted was 11-70 years and mean age was 40.57 years. All the above studies were comparable to our study.

In our study, maximum incidence of solitary thyroid lesions occurred during age intervals of 35-40yrs for non neoplastic and 45-50yrs in neoplastic cases which is comparable to the study done by Singh P et al.⁷ The age of occurrence of nonneoplastic lesions is less when compared to the occurrence of neoplastic lesions.

In the present study, out of 68 cases 38 were nonneoplastic which is comparable to the study done by D Sailaja et al.¹² Among 38 nonneoplastic, 20 were colloid nodule/cyst which is comparable to the study done by D Sailaja et al¹² and higher incidence was seen in the study done by Md Iqbal karim et al.¹⁴

Out of 38 nonneoplastic, 16 were hyperplastic nodules of nodular goiter correlating with the study done by D. Sailaja et al.¹²

In our study 2 cases were of hashimotothyroiditis which is comparable to the study done by RabiaBasharat et al.¹⁵ The incidence of hashimotothyroiditis is less than the incidence of colloid/hyperplastic nodule which is similar to study done by Manojgupta et al¹³, Amitabh jena et al¹⁶ and RabiaBasharat et al.¹⁵

In the present study, out of 30 neoplastic, 20 were benign and 10 were malignant. Our study show correlation with the study done by Manoj gupta

et al¹³ and Rabia Basharat et al¹⁵ in which benign lesions were outnumbered the malignant ones. This is in contradiction to study done by D Sailaja et al¹², Amitabh jena et al¹⁶ and Khadikae et al¹⁷ in which malignant lesions outnumbered the benign lesions.

In our study among 10 malignant cases, 5 cases were follicular carcinoma, 3 were papillary carcinoma and 2 cases were follicular variant of papillary carcinoma. Sometimes it is difficult to differentiate hyperplastic nodule, follicular adenoma and follicular carcinoma, in such cases we have to do thorough sampling of specimens and we should use immunohistochemistry markers when in need to come to a final diagnosis.

Conclusion

The mean age of presentation of solitary thyroid nodule in this study was 48yrs. The incidence was more common in females (70%) compared to males (30%). Nonneoplastic lesions were common than neoplastic lesions. The most common non neoplastic lesion was colloid nodule and most common benign neoplastic lesion was follicular adenoma. Most common malignant lesions were follicular carcinoma and papillary carcinoma. This study helps us to know the frequency of occurrence of various histological varieties in solitary thyroid nodules.

Table 1: Sex wise distribution of cases.

Gender	No. of Cases
Male	48
Female	20

Table 2: Age wise distribution of cases.

Age	No. of Cases
0-10 yrs	00
11-20yrs	01
21-30yrs	20
31-40yrs	14
41-50yrs	32
51-60yrs	01
>60yrs	00

Table 3: Distribution of Non neoplastic and Neoplastic Lesions.

Lesion	No. of Cases
Non Neoplastic	38
Neoplastic	30

Table 4: Distribution of Nonneoplastic lesions.

Lesion	No. of Cases
Colloid nodule/cyst	20
Hyperplastic nodule	16
Hashimotos thyroiditis	02

Table 5: Distribution of Neoplastic lesions.

Category	No. of Cases
Benign	20
Malignant	10

Table 6: Categorisation of neoplastic lesions.

Type of Lesion	No. of Cases
Follicular adenoma	20
Follicular carcinoma	05
Papillary carcinoma	03
Follicular carcinoma	02



Fig. 1: Gross photograph of follicular adenoma.

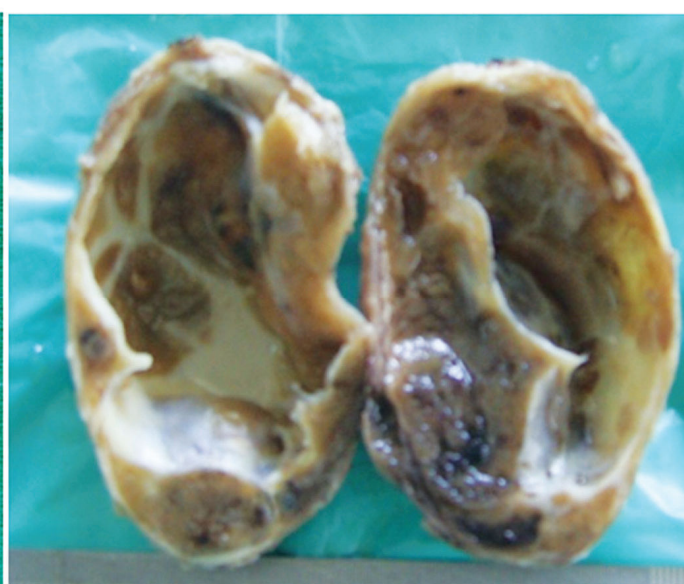


Fig. 2: Gross photograph of colloid nodule/cyst.

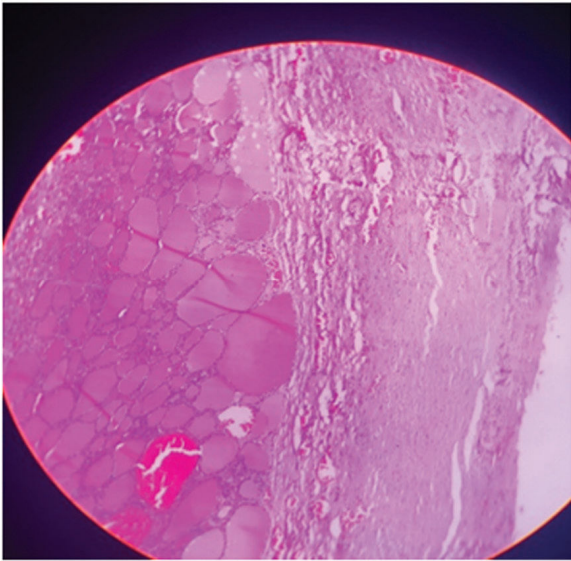


Fig. 3: Microphotograph of follicular adenoma.

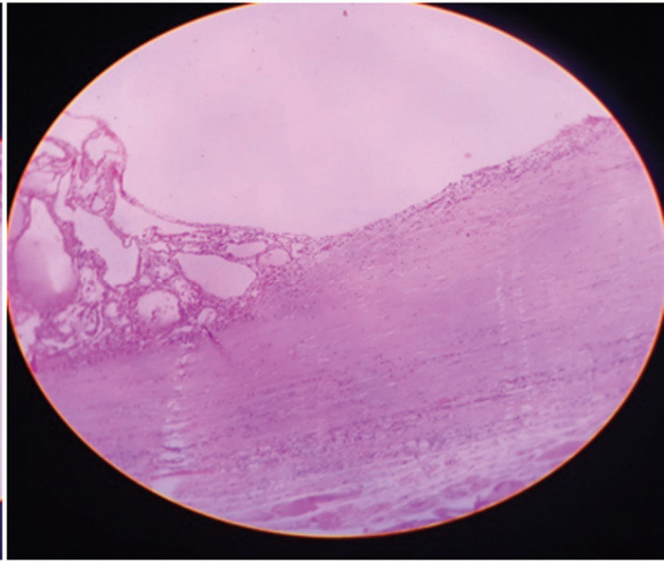


Fig. 4: Microphotograph of colloid nodule/cyst.

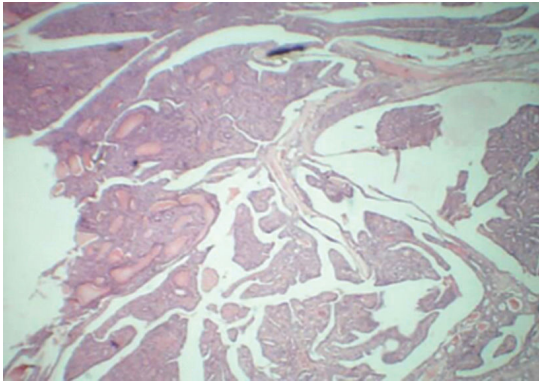


Fig. 5: Microphotograph of papillary carcinoma.

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