Original Article

Histopathological findings of solitary thyroid nodule: An institutional retrospective analysis

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Abstract

Background: Thyroid swellings are commonly encountered in the surgical practice and accurate preoperative evaluation of thyroid disorder becomes mandatory for the proper management of the patients.

Aims and Objectives: The aim of this study was to study the histopathological finding in patients of solitary thyroid nodule at tertiary center of Kanpur region.

Materials and Methods: A total of 100 patients with solitary thyroid nodules were thoroughly examined clinically after taking detail history and fine-needle aspiration cytology. All the patients were subjected to surgery after preoperative preparation and anesthesia checkup. Thyroidectomy specimen was evaluated by histopathological examination.

Results: Majority of the patients were between the age group of 21 and 40 years. Female:male ratio was about 5.6:1. Swelling in front of the neck was the most common presentation. Most common solitary thyroid swelling was the colloid goiter. The most common surgery performed was hemithyroidectomy. On histopathological examination, a total of 98 out of total 100 patients presented with benign lesions which included 66 patients of colloid goiter, 16 with follicular adenoma, 4 with lymphocytic thyroiditis, and 12 with adenomatous goiter. Two out of total 100 patients had malignant lesions. Among malignant lesions, papillary carcinoma was found in one patient and anaplastic carcinoma in one patient.

Conclusion: The most common histopathological findings of solitary thyroid nodule were colloid goiter followed by follicular adenoma, adenomatous goiter and thyroiditis. Thyroid malignancy was very rare histopathological finding.

Keywords: Histopathological examination, thyroid nodule, thyroidectomy

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INTRODUCTION

Thyroid nodule is a common clinical problem. The occurrence of clinically evident thyroid nodules in the common population is 4%–5%.[1] The prevalence of goiter is >40 million in India with >2 billion worldwide.[2] The accurate diagnosis of thyroid nodules is necessary for appropriate clinical management of these patients. Majority of clinically diagnosed thyroid nodules were benign in nature, and those requiring surgical intervention owing to malignant lesions were 5%–20%. These cases of solitary thyroid nodule are evaluated clinically as well as pathologically (fine-needle aspiration cytology [FNAC] and histopathological examination). As compared to histopathological examination, FNAC and clinical

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Figure 1: Preoperative picture of thyroid nodule

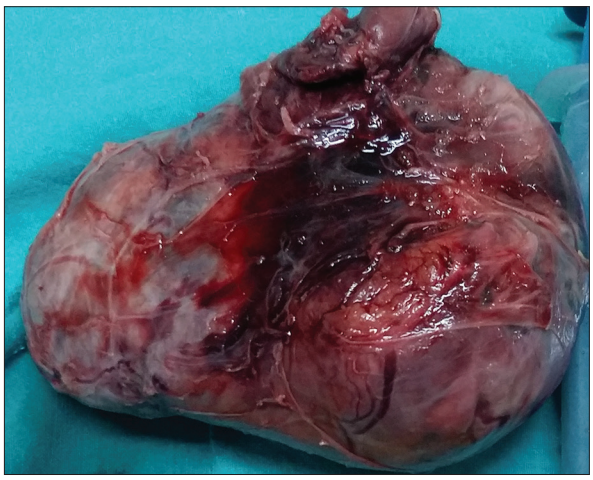

Figure 2: Postoperative specimen of thyroid nodule

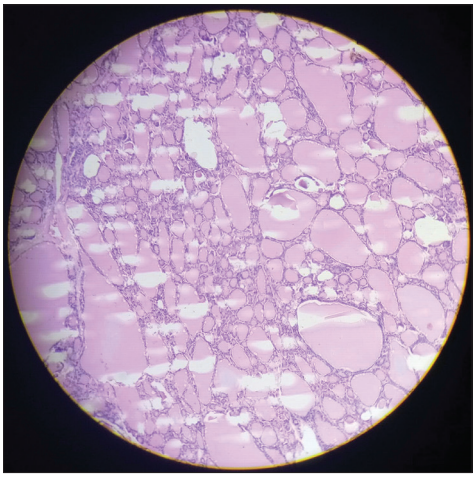

Figure 3: Microscopic picture of colloid goiter

diagnosis have come up as a parallel, but separate discipline for diagnosis of the solitary thyroid nodule. Diagnosis is obtained quickly; complications are almost negligible and diagnostic accuracy is high. The aim of this study was to study the histopathological finding in patients of solitary thyroid nodule in the tertiary center of Kanpur region.

MATERIALS AND METHODS

This was a retrospective study of 100 patients of clinically diagnosed thyroid nodules. The study was carried out at the Department of ENT of a tertiary care Medical College and Hospital during the period of 5 years from August 2013 to July 2018. All patients with thyroid nodules underwent provisional diagnoses on the basis of history, physical examination of the neck, ultrasound for the thyroid gland, serum thyroid-stimulating hormone level, FNAC, and biopsy whenever it was required. After clinical diagnosis, thyroid nodule was confirmed by high-resolution ultrasonography. The main focus was to see the histopathological finding in solitary thyroid nodule. Data were statistically analyzed using the Chi-square test.

RESULTS

This study includes 100 cases of solitary thyroid nodules. Various factors regarding clinical presentation, findings of various investigations, histopathological characteristics, and operative treatment had been analyzed. Most of the cases were in the age group of 21–40 years (67%). The minimum age was 11 years, and the maximum age was 60 years. Female preponderance was more than males with the ratio of 5.6:1 [Table 1]. All patients (100%) had swelling over the anterior aspect of the neck [Figure 1], therefore presented with swelling as the chief complaint. Other complaints were dysphagia (18%) dyspnea (4%), pain over swelling (4%), and hyperthyroidism (2%) [Table 2]. Routine thyroid function test was done in all patients, and all were found to be in the normal thyroid function. On FNAC, 61% of patients had colloid nodule, 17% of patients were follicular neoplasm, 10% of patients were adenomatous hyperplasia, 6% of patients were hyperplastic multinodular goiter, and 4% had lymphocytic thyroiditis. Two had malignant lesions which included 1% papillary carcinoma and 1% anaplastic carcinoma [Table 3]. The most common surgical procedure was hemithyroidectomy (94%) [Figure 2]. On final diagnosis on histopathological evaluation (HPE), a total of 98 out of total 100 patients with benign lesions which included 66 patients of colloid goiter [Figure 3], 16 with follicular adenoma, 4 with lymphocytic thyroiditis, and 12 with adenomatous goiter. Two out of total 100 patients had malignant lesions. Among malignant lesions, papillary carcinoma was found in one patient and anaplastic carcinoma in one patient [Table 4].

Finally, the diagnosis provided by histopathological examination and FNAC was correlated. Most of the solitary nodules in this study were benign and 2% were malignant in this study.

DISCUSSION

Thyroid enlargement are whether diffuse or nodular require lots of investigations to rule out the possibility of a neoplastic or noneoplastic lesions. Timely intervention in nodular lesions of thyroid can significantly reduce morbidity and mortality.[3] In the present study, the highest incidence of solitary thyroid nodule was found in the age group of 21–40 years. This result is comparable to the results obtained by Venkatachalapathy and Sreeramulu[4] observed female-to-male ratio was 5.6:1. This female preponderance is reflected in all studies including the present. A similar observation was made by Vyas and Vijayvargiya on 100 patients with thyroid nodule where the ratio was 7:1.[5] In this study, all patients (100%) had swelling over the anterior aspect of the neck. A similar observation was done by Huque *et al*. on 118 patients with solitary thyroid nodules and found that thyroid swelling was the most common presentation in all cases (100%).[6] After swelling, other complaints were dyspnea (4%), dysphagia (18%), pain over the swelling (4%). Dyspnea, dysphagia is the pressure symptoms, usually present in malignancy, but it may be found in the very large nodule. Pain associated with nodule indicates hemorrhage into an adenoma. This is in accordance with Mamun *et al*., where some patients also presented with symptoms such as cervical lymphadenopathy in 6 (5.08%) cases, and dysphagia in 2 (1.69%) cases.[7]

Table 1: Distribution of cases according to age and gender

Age group (years)	Male	Female	Total
11-20	2	5	7
21-30	7	30	37
31-40	4	26	30
41-50	2	21	23
51-60	0	3	3
>60	0	0	0
Total	15	85	100

Table 2: Presenting complaints of patients

Presenting complaints	Number of patients (%)
Swelling in front of neck	100 (100)
Difficulty in swallowing	18 (18)
Difficulty in breathing	4 (4)
Pain in swelling	4 (4)
Change of voice	0
Hypo/hyperthyroidism features	2 (2)
Total	-

Table 3: Distribution of various conditions by routine cytological diagnosis among cases#

Cytological reporting	Number of cases (%)
Colloid goiter	61 (61)
Follicular neoplasm	17 (17)
Adenomatous hyperplasia	10 (10)
Hyperplastic multinodular goiter	6 (7)
Lymphocytic thyroiditis	4 (4)
Papillary carcinoma	1 (1)
Anaplastic carcinoma	1 (1)
Total	100 (100)

#The association among groups of cytological findings is good at $\chi^2=21.95$, $P<0.001$ highly significant

Routine thyroid profiles were done in each patient to find out the functional status of the thyroid. In this study, all cases were in the euthyroid state. Majority of FNAC showed colloid goiter (61%), 17 (17%) showed follicular neoplasm, 10 (10%) showed adenomatous hyperplasia, 6 (6%) showed hyperplastic multinodular goiter, whereas 4 (4%) showed lymphocytic thyroiditis. Among malignant lesions, 1 (1%) patient showed anaplastic carcinoma, whereas 1 (1%) patient showed papillary carcinoma on FNAC. In a study done by Avinash *et al*., after cytological evaluation/HPE, 6 (8.57%) of the 70 nodules were found to be malignant and 59 (91.43%) were benign.[8] Seventeen nodules which were given as follicular neoplasms on FNAC were diagnosed with follicular adenomas at histopathology. All the malignant nodules on FNAC were found to be papillary carcinoma and anaplastic carcinoma.

In this study, the most common procedure was hemithyroidectomy (94%) which is almost consistent with the observation of Satihal and Palled where hemithyroidectomy (84%) was the most common procedure followed by total thyroidectomy (16%).[9] Histopathological findings of the lesions of this study were compared with Chetan *et al*. and the results displayed that there is a higher incidence of colloid goiter (43.8%) among all the 73 solitary nodules of thyroid cases.[10] In the present study, a total of 98 out of total 100 patients with benign lesions which included 66 patients of colloid goiter, 16 with

Table 4: Correlation between sex and final histopathological findings among operated cases#

Sex	Colloid, *n* (%)	Follicular adenoma, *n* (%)	Lymphocytic thyroiditis, *n* (%)	Adenomatous goiter, *n* (%)	Malignant papillary carcinoma *n* (%)	Anaplastic carcinoma, *n* (%)	Total
Male	8	3	1	2	1	0	15
Female	58	13	3	10	0	1	85
Total	66 (66)	16 (16)	4 (4)	12 (12)	1 (1)	1 (1)	100

#The association among groups of histopathological findings is poor at $\chi^2=34.55$, $P>0.001$ significant

follicular adenoma, 4 with lymphocytic thyroiditis, and 12 with adenomatous goiter. Two out of total 100 patients had malignant lesions.

CONCLUSION

The most common histopathological findings of solitary thyroid nodule were colloid goiter followed by follicular adenoma, adenomatous goiter, and thyroiditis. Thyroid malignancy was very rare histopathological finding.

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Conflicts of interest
There are no conflicts of interest.

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