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Evaluation and Management of Solitary Thyroid Nodules

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Abstract

Background: *Solitary thyroid nodules are commonly found by otorhinolaryngologists in their practice. The prevalence tends to increase in the 3rd and 4th decades of life. The clinical presentations may be varied. The diagnosis and optimum management are still a matter of debate. The current study tried to evaluate and manage solitary thyroid nodules in the cases presenting to our tertiary care Hospital.* ***Methods:*** *This prospective study was done in the Department of ENT, Prathima Institute of Medical Science, Naganoor, Karimnagar. All the selected candidates underwent thorough history taking and a clinical examination was performed. Fine needle aspiration cytology (FNAC) was performed on all the cases. Biochemical investigations included thyroid profile, FBS, PPBS, serum creatinine, urea, and Liver function tests. ECG and Screening chest were done routinely in all cases.* ***Results:*** *Out of n=60 cases, n=12(20%) were males and the n=48(80%) were females. In the current study. We found benign lesions in n=48(80%) cases out of which follicular adenoma was found in n=42(70%) cases and types of follicular adenoma. Papillary adenoma in n=6(10%) cases. Malignant lesions were found in n=12(20%) cases out of which n=10(16.67%) were papillary carcinoma and medullary carcinoma was found in n=2(3.33%) cases.* ***Conclusion:*** *In this study of solitary thyroid nodules, we found benign lesions emerged as the single largest group with nodular goiter having the highest incidence of nearly 46.66%. This was followed by follicular adenomas which constituted 83.33%. Malignancy in 6.67% of cases of which papillary carcinoma was common. Total thyroidectomy was done for Ten cases, total thyroidectomy with lymph node excision for two cases, and Forty-eight hemithyroidectomies. There was no mortality in any of the cases.*

Keywords*: Solitary Thyroid Nodules, Follicular Adenoma, Papillary Carcinoma, Medullary Carcinoma*

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Introduction

Thyroid nodules present a challenge in their diagnosis, evaluation, and management. Solitary Thyroid Nodule is a clinical term, denoting the presence of a single palpable nodule in an otherwise normal thyroid gland. [1] The solitary nodule in the thyroid gland has aroused the interest of general surgeons because of its malignant potential and because of the possibility of toxicity in the nodule and complications like pressure effects and hemorrhage. [2] The prevalence of these nodules in each population depends on several factors like age, sex, diet, iodine deficiency, and even therapeutic and environmental radiation exposure. The optimal management of a thyroid nodule continues to be a source of controversy and the operative intervention recommended by most surgeons is not always considered appropriate by some physicians recommending thyroid suppression. [3] A solitary thyroid nodule is quite common in incidence in the present day in and around the district of Karimnagar. As the clinical diagnosis may not correlate with the diagnosis during the time of management, this

study is undertaken as it generates curiosity among the operating surgeons. The patients who fit into the clinical definition of solitary nodule were included in this study. Evaluation of Solitary thyroid nodule (STN) includes a history of the thyroid mass, past medical history, family and social history, a thorough review of all systems including a careful, complete head and neck examination. [4] History of radiation exposure to the neck is very important. Symptoms such as neck pain, dyspnoea, hoarseness of voice, stridor, and dysphagia usually suggest thyroid malignancy but are not diagnostic. Patients were subjected to surgery, postoperative complications, and its management were analyzed and finally arrived at a logical conclusion. With this background, we in the current study tried to evaluate and manage solitary thyroid nodules in the cases presenting to our tertiary care hospital.

Materials and Methods

This prospective study was done in the Department of ENT, Prathima Institute of Medical Science, Naganoor, Karimnagar. Institutional Ethical Committee approval was obtained for the study. Written consent was obtained from all the participants of the study after explaining the nature of the study in the local language. During the study period, a total of n=100 patients were screened out of which n=60 cases were selected for the present study as they were fitting well with the definition of solitary thyroid nodule based on the inclusion and exclusion criteria.

Inclusion criteria

- Patients were found to have a solitary thyroid nodule on clinical examination.
- Patients above 18 years and below 70 years.
- Patients giving consent for participation in the study.

Exclusion criteria

- Patients with previous thyroid Surgeries.
- Patients with Thyroid enlargement except for solitary nodule Thyroid.
- Patients not giving consent for participation.
- Patients presenting with multinodular goiter clinically.

All the selected candidates underwent thorough history taking and a clinical examination was performed. Fine needle aspiration cytology (FNAC) was performed on all the cases. Biochemical investigations included thyroid profile, FBS, PPBS, serum creatinine, urea, and Liver function tests. ECG and Screening chest were done routinely in all cases. USG was done to detect any impalpable nodules and assess the vascularity size of the nodules and any suspicious areas. The patients were managed by hemithyroidectomy, total thyroidectomy with lymph node excision, and subtotal thyroidectomy with lymph node sampling. All the excised material was sent for Histopathology examination and final diagnosis. The collected data was uploaded on an MS Excel spreadsheet and descriptive statistics were analyzed using SPSS version 19 on windows format.

Results

A total of n=5382 were screened for thyroid-related disorders in which n=104 were sorted out with thyroid nodules. Based on the inclusion and exclusion criteria n=60 was selected for those diagnosed with solitary thyroid nodules on radiological examination. The mean age of the cases was 35.56 years, and the youngest patient was 18 yrs old and the oldest being 65 years. The incidence of solitary thyroid nodules was common in the 3rd and 4th decades of life depicted in Table 1.

Table 1: Demographic profile of the cases included in the study.

Age in years	*Frequency*	*Percentage*
11 – 20	8	13.33
21 – 30	10	16.67
31 – 40	16	26.67
41 – 50	14	23.33
51 – 60	6	10.00
61 – 70	6	10.00
Total	60	100.00

Out of n=60 cases, n=12(20%) were males and the n=48(80%) were females. The male to female ratio was 1:4. Based on the laterality of involvement of lobes right lobe was involved in n=42(70%) cases and the left lobe in n=18(30%) of cases. The common symptom of all the cases was swelling in the neck region with pain and other symptoms of dysphagia change of voice shown in table 2. Based on the physical signs encountered during clinical examination unilateral enlargement of thyroid glands was

found in 100% of cases, movement of swelling with deglutition was also found in 100% of cases. Enlargement of lymph nodes was found in n=2 cases.

Table 2: Signs and symptoms of cases included in the study

Signs/symptoms	*frequency*	*Percentage*
Swelling in the neck	60	100.00
Pain in neck	12	20.00
Dysphagia	2	3.33
Dyspnoea	0	0.00
Change of voice	4	6.66
Thyrotoxic symptoms	0	0.00
Symptoms of metastasis	2	3.33

The consistency in the present series varied from soft (3.33%), firm (80%), hard (6.66%) and cystic in 10.0% of cases. The soft lesions turned out to be papillary thyroid carcinoma. Out of the n=6 lesions which were cystic, two turned out to be follicular adenoma without any cystic change. All the hard swelling turned out to be malignant. Out of the n=48 swellings which were firm, n=6 was malignant.

Table 3: Consistency of thyroid nodule on palpation

Consistency of nodule	*frequency*	*Percentage*
Soft	2	3.33
Firm	48	80.0
Hard	4	6.66
cystic	6	10.0

Hemithyroidectomy was the commonest surgery done for n=48 cases. Total thyroidectomy with lymph node Excision was done in two cases of papillary carcinoma who had regional palpable lymph nodes clinically. In other cases of suspected malignancy along with thyroidectomy, Lymph node sampling was done and sent for histopathology.

Table 4: Histopathological examination report of thyroid nodules.

Thyroid lesions	*Frequency*	*Percentage*
Benign lesions (n=48)		
Follicular Adenoma	42	70.00
Fetal type	15	25.00
Colloid type	08	13.33
Hurthle cell type	10	16.67
Hyalinizing trabecular type	09	15.00
Papillary Adenoma	06	10.00
Malignant Lesions (n=12)		
Papillary carcinoma	10	16.67
Medullary carcinoma	02	3.33

Discussion

In the current study, we found the mean age of the cases was 35.56 years and 26.67% cases from age group 31 – 40 years and 23.33% between 21 – 30 years. The male to female ratio was 1:4. Ananthakrishnan et al., [5] in their study on a single thyroid nodule reported 2/3rd of the patients in the 3rd and 4th decades of life agreeing with the observations of the present study. Kurshid Alam et al., [6] in their study found the male to female ratio was 1: 3 and Anitha et al., [7] found the male to female ratio of 1: 6. In the current study, we found 70% of cases with right side involvement and 30% of cases with left side involvement. Kurshid Alam et al., [6] in their study found 50% of cases with right side involvement and 27.7% with left side involvement of solitary thyroid nodule, and 22.3% of cases with isthmus involvement. The frequent involvement of the right lobe is attributed to the fact that the right lobe is slightly larger than the left in 80% of cases. The consistency of the nodule is observer dependent. By and large, in a solitary thyroid nodule, consistency does not give any clue for the presence of malignancy. A firm to soft nodule can harbor malignancy. Papillary carcinomas are known to undergo cystic change. A hard nodule as a rule need not be present in malignant lesions only and can be presenting in Riedel's thyroiditis, calcified adenomatous nodule, and tensely cystic swellings. In the present study on FNAC, n=46 cases were benign n=12 cases were malignant, and Opinion was not possible in N=2 cases on FNAC. On histopathology correlation n=12, were found to be malignant and n=48, were confirmed to be benign. Fine Needle Aspiration cytology is a very precious diagnostic tool, which is also easy, minimally invasive, inexpensive, and simple can be done on OPD basis. By using FNAC, diagnosis of colloid goiter, thyroiditis, papillary carcinoma, medullary carcinoma, and anaplastic carcinoma is possible. Follicular carcinoma cannot be differentiated from benign follicular neoplasm by FNAC, as differentiation depends on histological and not on cytological criteria capsular and vascular invasion. Davoudi MM et al., [8] reported that fine-needle aspiration cytology has a high sensitivity for the diagnosis of solitary thyroid nodules. Certain diagnoses

involving follicular histology often cannot be made with needle diagnosis alone. The utility of frozen section examination of thyroid nodules, about those lesions with follicular histology, is also limited. They examined the correlation of fine-needle aspiration cytology and frozen–section examination in solitary thyroid nodules to determine the contribution of frozen–section examination to the operation. In the current study, we found benign lesions in n=48(80%) cases out of which follicular adenoma was found in n=42(70%) cases and types of follicular adenoma given in table 4. Malignant lesions were found in n=12(20%) cases out of which n=10(16.67%) were papillary carcinoma and medullary carcinoma was found in n=2(3.33%) cases. Kamaljit Kaur, et al., [9] reported in cases of solitary thyroid nodules, the benign nodule was detected in n=31 cases. Histopathology found n=8 cases (89.9%) of papillary carcinoma of the thyroid, FNAC revealed papillary carcinoma in n=5 cases suspicious in n=2 cases (25%) and benign in n=1 case (12.5%). In the current study, the postoperative complications were found in n=2 cases which were wound infections that were adequately managed, and no major complication was reported. N Priyadarshi et al., [10] in their study of solitary thyroid nodules also reported n=2 cases of complications which were wound infections. Kurshid Alam et al., [6] in their study reported recurrent laryngeal nerve injury in 9.25% of cases with high papillary carcinoma cases where total thyroidectomy was performed.

Conclusion

In this study of solitary thyroid nodules, we found benign lesions emerged as the single largest group with nodular goiter having the highest incidence of nearly 46.66% of all thyroid cases. The follicular adenomas which constituted 70% of benign cases. Malignancy in 16.67% of cases of which papillary carcinoma was common. Total thyroidectomy was done for Ten cases, total thyroidectomy with lymph node excision for two cases, and Forty-eight hemithyroidectomies. There was no mortality in any of the cases. Only two patients had developed wound infection, who recovered during the follow-up after about six weeks.

Conflict of Interest: None
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