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Evaluation and management of solitary thyroid nodule in a tertiary care institute

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Abstract

Solitary thyroid nodule can be defined as a goitre which on clinical examination appears to be a single nodule in a normal thyroid gland. Solitary thyroid nodule remains a common clinical problem. Virtually any disease of the thyroid can present as a solitary thyroid nodule. A solitary nodule has a high risk of being malignant (10-20%) than the multiple palpable nodules of a multinodular goitre (5%). This is a study of randomly selected patients with clinically palpable, solitary thyroid nodule diagnosed and treated at IMS and SUM hospital, Bhubaneswar. Total duration of study was two years, from 2016 July to 2018 July. In our study 40% of solitary nodule in males proved to be malignant whereas in females only about 6% of the solitary nodules harboured malignancy, the malignant potential of a nodule in a man is approximately three times that for women of comparable age and in our study, the risk has been almost six times. Hemi thyroidectomy is the minimum, surgical procedure for single nodule. Cancer risk in follicular neoplasm is 12%. Patient being submitted to Thyroidectomy should be counselled pre operatively with regard to the risk of recurrent Laryngeal nerve paralysis.

Keywords: solitary thyroid, nodule, goitre, thyroidectomy

1. Introduction

Solitary thyroid nodule can be defined as a goitre which on clinical examination appears to be a single nodule in a normal thyroid gland [1]. Solitary thyroid nodule remains a common clinical problem. Virtually any disease of the thyroid can present as a solitary thyroid nodule. A solitary nodule has a high risk of being malignant (10-20%) than the multiple palpable nodules of a multinodular goitre (5%). A solitary nodule may become cosmetically distressing to a patient and occasionally causes pressure symptoms. Less frequently, an autonomously hyperfunctioning single nodule may cause hyperthyroidism [2]. However, in the greater proportion of patients the major concern relates to the potential of malignancy with in such a nodule. Until recently, many clinicians have advised and practiced the routine surgical resection of all solitary thyroid nodules for definitive histological assessment. Thyroid surgery, even in experienced hands is associated with definite morbidity and should not be undertaken lightly. It is logical to propose a more selective surgical policy for a patient with a solitary thyroid nodule, advising operation only for those individuals in whom cancer has been diagnosed or suspected or who are otherwise at risk of their goitre. The incidence of carcinoma thyroid in patients with solitary thyroid nodule ranges from 11 to 20% (Kendall & Condon, 1969) [3]. The vast Most thyroid nodules are benign and do not need to be removed The physician or surgeon should be able to perform an accurate clinical assessment of any thyroid nodule, appreciate the risk factors for thyroid cancer, and be able to evaluate which patient would benefit from surgery. Here in this study we review the data regarding the prevalence of solitary thyroid nodule and analyse its distribution with respect to age, sex, etc. Discussion of the clinical presentation and the significance of solitary thyroid nodule and find out the percentage of malignancy in solitary nodule [4]. Study to provide a clinically applicable and cost-effective approach to evaluate and manage STN.

2. Material and Methods

This is a prospective study of randomly selected patients with clinically palpable, solitary thyroid nodule diagnosed and treated at IMS and SUM hospital, Bhubaneswar.

Total duration of study was two years, from 2016 July to 2018 July. Each patients Symptoms and signs were entered in a Performa (given at the end of this dissertation) with detailed clinical examination in relation to the thyroid swelling and lymph node involvement and a routine systemic and general examination was done. All patients were subjected to basic investigations like complete hemogram, Blood sugar, Blood urea, serum cholesterol, urine analysis, chest radiogram and radiogram of neck. Tissue diagnosis was obtained by fine needle aspiration cytology in all the patients. Thyroid profile was done in selected patients with features of hyper or hypofunctioning of the gland. Radio isotope scan was not done since the facility was not available at our hospital. Ultrasound of neck

and Computed Tomogram scan of skull and chest were done in selected cases. All operated specimens were subjected to Histopathological examination. Preoperative and postoperative complications were analyzed. Most cases were regularly followed up throughout the study period. All the observations were analyzed and compared with other studies.

3. Result

Solitary thyroid nodule represents thyroid pathology in about 19.2% of case. Out of 75 patients, 65 were females and 10 were males. This gives a Male: Female ratio = 1:5. Solitary thyroid nodule is 5 times more common in women. In C.F.Nagori22 22 series the male female ratio was 1:3.5.

Table 1: Prevalence of solitary thyroid nodule

No. of Thyroid Cases Admitted	Solitary Thyroid Nodules	Percentage
390	75	19.2

Table 2: Sex distribution

Sex	No. of Patients	Percentage
Female	65	86.7%
Male	10	13.3%

All the patients had only single palpable nodule. Toxic symptoms were present in 2 patients. Clinical evidence of obstruction to airway or of the great veins of neck by a solitary thyroid nodule is rare. The presence of stridor, respiratory wheeze; engorgement of neck veins should be interpreted with caution and the possible existence of a second pathology with in the mediastinum or lungs should be considered.

Table 3: Symptoms and signs

Symptoms & Signs	No. of Patients	Percentage
Swelling Thyroid region	75	100
Pain	6	8
Toxic Symptoms	2	2.6
Dyspnoea	3	4
Dysphagia	14	18.6
Sudden Increase in size	7	9.3
Regional Palpable Lymphnode	2	3
Hoarseness of voice	1	1.3
Hard consistency	4	5.3

Table 4: Management given

S. No.	Management Given	No. of Patients
1	Hemithyroidectomy.	62
4	Total Thyroidectomy with neck dissection	7
5	Total Thyroidectomy without neck dissection	1
6	Conservative & follow up	3
7	Not willing for Surgery	2
	Total	75

Out of 75 patients, 70 were submitted for surgery with below mentioned indications. 2 patients were given conservative line of management because of Ischaemic heart disease. One another patient with Hashimoto’s thyroiditis also was put on conservative treatment. 2 patients were not

willing for surgery. These patients were advised regular follow up, on a half yearly basis for re-examinations and repeat FNAC. Repeat FNAC was done in 2 of these patients and were reported as benign.

Table 5: Age and sex distribution of benign and malignant nodule

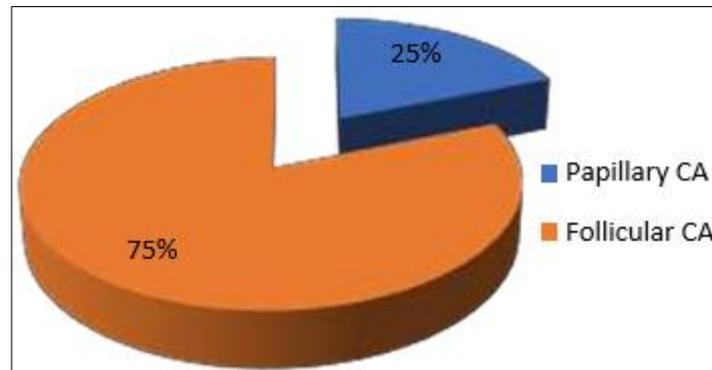
Age in Years	Males			Females		
	Benign	Malignant	Total	Benign	Malignant	Total
Upto 20	1	1	2	10	2	12
21-30	1	0	1	22	0	22
31-40	1	0	1	15	1	16
41-50	2	2	4	6	0	6
51-60	1	1	2	2	0	2
61 and above	0	0	0	1	1	2
Total	6	4	10	56	4	60

In our study 40% of solitary nodule in males proved to be malignant whereas in females only about 6% of the solitary

nodules harbored, malignancy. In males 75% of cancer occurred in more than 40 years age group.

Table 6: Histologically proven malignancy

Type	No. Of Patients	Percentage
Papillary Carcinoma	6	75
Follicularcarcinoma	2	25
Medullarycarcinoma	0	0

**Fig 1:** No medullary carcinoma, anaplastic carcinoma and lymphoma was reported in our series.

4. Discussion

The incidence of thyroid cancer in patients with a solitary thyroid nodule is studied by Kendall & Condon 1969¹⁷ Pnarras *et al* 1972. 11-20% Study by Cohn F J Russel at Royal Victoria} Hospital, Belfast., U.K. }13%. Study at IMS and Sum Hospital 2016-2018^{11.4%}. This compares well with the other international studies. In our study 40% of solitary nodule in males proved to be malignant whereas in females only about 6% of the solitary nodules harboured malignancy According to Matheson 1986, the malignant potential of a nodule in a man is approximately three times that for a women of comparable age and in our study, the risk has been almost six times. In males 75% of cancer occurred in more than 40 years age group. Malignancy is more likely in a nodule in a child or a teenager or when a goitre develops in a patient aged 60 years or above (Hamming *et al* 1990, Caruso and Mazzaferri⁹ 1991) 50% of thyroid cancers occurred in individuals under 40 years of age and of them 75% is papillary carcinoma. Fravenhofer³⁷ *et al* 1970 in his study of 125 cases of thyroid cancer found that 80% of thyroid cancers in individuals less than 40 years of age were papillary carcinoma. No medullary carcinoma, anaplastic carcinoma and lymphoma were reported in our series. The relative incidence of primary malignant tumours in our series is almost in accordance with most of the reported series (Dunhill¹⁶).

Out of 70 cases operated 5 had different histopathology reports as compared to FNAC. If both FNAC & histopathology are benign or malignant they are considered truepositive. cytologically benign lesions were reported as malignant on histopathological examination. So FNAC was false negative in these cases in comparison on overall accuracy rate greater than 94% was achieved in the cytological diagnosis of a solitary nodule. Out of 70 cases operated 22 had different histopathology reports as compared to USG. If both USG & histopathology are benign or malignant they are considered truepositive. In comparison on overall accuracy rate greater than 83% was achieved in the cytological diagnosis of a solitary nodule.

5. Conclusion

FNAC is the gold standard for evaluation of Solitary Thyroid Nodule with an accuracy of 94% in our study compared to USG with a accuracy of 83%. 11.4 percentage

of Solitary Thyroid Nodule were Malignant Solitary Thyroid Nodule in males have more malignancy risk than female. Suspect malignancy at extremes of age. Malignancy potential of Solitary Thyroid Nodule after 6th decade is 50%. 50 percentage of thyroid cancer occurred in patients under 40 years of age, of them 75% were papillary carcinoma. A selective surgical policy should be practiced to resect Solitary Thyroid Nodule Hemi thyroidectomy is the minimum, surgical procedure for single nodule. Cancer risk in follicular neoplasm is 12% Patient being submitted to Thyroidectomy should be counselled pre operatively with regard to the risk of recurrent Laryngeal nerve paralysis.

6. References

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