

ORIGINAL ARTICLE

Evidence based Approach to A Clinically Palpable Solitary Thyroid Nodule

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ABSTRACT

Introduction: For most patients with solitary thyroid nodules no decisive clinical finding can distinguish malignant from benign nodules. Even laboratory tests are not of help in identifying malignancy in the nodules. FNAC is one of the important screening methods for patients with thyroid nodules before deciding the type of surgery, but even FNAC is not hundred percent accurate in differentiating benign from malignant nodules.

Materials & Methods: A prospective study of patients of clinically palpable solitary thyroid nodule was done to chalk out evidence based algorithm for management of solitary thyroid nodule.

Results: The sensitivity of FNAC in this study was 79% and the specificity was 90%. The clinical accuracy of FNAC correlating with histopathological diagnosis was 88%.

Conclusion: There are multiple parameters like age, sex, size, consistency, ultrasonography findings, radioiodine scan interpretation & clinical accuracy of FNAC; which should be considered while managing solitary thyroid nodule. In spite of all possible investigations, some patients may require a completion thyroidectomy. It is therefore hard to chalk out a definite algorithm for management of solitary thyroid nodule & hence the treatment should be individualized.

Keywords: Solitary Thyroid Nodule, F.N.A.C., Thyroid Malignancy, thyroid Nodule, Thyroid swelling

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INTRODUCTION

A Solitary thyroid nodule is a palpable discrete swelling

within an otherwise apparently normal thyroid gland.¹ The solitary thyroid nodule is rather a common disease having an incidence 1–3 % reported in general population, the diagnosis of which has long been a controversial problem. The incidence of malignancy in patients with solitary thyroid nodules varies between 5% and 30% which is a major concern for the patient and the surgeons. Thyroid surgery even in experienced hands is associated with definite morbidity. Due to the fact that total thyroidectomy of all patients presenting with clinically palpable solitary thyroid nodule is not practical, an effective screening technique was essential to select those nodules that require radical surgical excision.² For most patients with solitary thyroid nodules no decisive clinical finding can distinguish malignant from benign nodules. Even laboratory tests are not of help in identifying malignancy in the nodules. Thyroid ultrasonography can distinguish solid from cystic nodules and single from multiple nodules in clinically diagnosed solitary thyroid nodule. However, even ultrasonography cannot definitely indicate malignancy. There is an increasing tendency for using FNAC as a screening method for patients with thyroid nodules before deciding the type of surgery.³ But even FNAC is not hundred percent accurate in differentiating benign from malignant nodules. There is therefore a need for a definite algorithm for managing solitary thyroid nodules and adopting a safe selective surgical policy in dealing with them. A prospective study of patients of clinically palpable solitary thyroid nodule was done to chalk out evidence based algorithm for the comprehensive management of solitary thyroid nodule.

MATERIAL AND METHOD

A prospective study of 90 euthyroid patients presenting with clinically palpable solitary thyroid nodule was done after Institutional Ethical Committee clearance in our charitable Tertiary Health Care Centre. All patients were examined clinically after taking a detailed history in terms of the high Risk criteria for malignancy in Solitary Thyroid Nodule like Size > 4cm, extremes of age (<15yr or >45yr), Male, rapid growth with recent onset, prior history of radiation, family history of thyroid cancer and associated features s/o malignancy (neck nodes, adjacent structure involvement, cord fixity). Ultrasonography of the thyroid gland was done to rule out multinodularity & to define size and consistency in terms of benign/cystic and solid suspicious/malignant features of the solitary thyroid nodule. Patients having multinodularity

on ultrasonography were excluded from our study. A satisfactory aspiration specimen with a cytological diagnosis was obtained for all our patients in this study. The cytological findings were classified according to The Bethesda system for reporting thyroid cytopathology of Thyroid nodule.⁴ All other necessary routine laboratory investigations were performed. All patients were managed surgically as indicated. The least procedure done for thyroid was hemithyroidectomy. Near total thyroidectomy, total thyroidectomy, modified radical neck dissection and central compartment dissection were done as indicated. Completion thyroidectomy was performed in patients who had malignancy reported on histopathology after previous less than total thyroidectomy surgeries. The histopathological examination and its correlation with F.N.A.C. were done in all cases. Statistical analysis was done of the collected data in terms of age, sex, incidence of the underlying pathology, sensitivity and specificity and clinical accuracy of FNAC,USG to diagnose Thyroid Malignancy in Solitary Thyroid Nodule.

STATISTICAL ANALYSIS

The data was analyzed by using Statistical Package for Social Sciences (SPSS) version 11. Descriptive statistics was used to generate the results.

RESULTS

In our prospective study, the age of the patients was ranging from 20 to 59 years with an average mean age of 36.86 yrs. The majority (70%) of the patients were from 15-45 years age group whereas remaining (30%) were from 46 to 60 yrs group. As expected females(76) outnumbered males(14) with ratio of 5.42:1. In this study, 8 out of 63 patients (13%) below 45 years of age had thyroid malignancy and 6 out of 27 patients (22%) above 45 years of age had thyroid malignancy. Malignancy was more common in males (29%) as compared to females (13%). The Thyroid malignancy was present in 16%, i.e. 14 out of 90 patients with clinically palpable solitary thyroid nodule. One patient had presented with cervical lymphadenopathy on the right side. The duration of swelling noticed was ranging from 1 week to 9 years. The size of the nodule on palpation was less than 4cms in 36 patients and more than 4cms in 54 patients. On palpation 26 patients had soft cystic nodule and 64 patients had firm to hard swelling (Figure 1). Right lobe of thyroid gland was involved in 50 patients, whereas left lobe of thyroid gland was involved in 40 patients.

Benign/cystic features were present in 26 out of 90 patients (29%) and solid/suspicious features were present in 64 patients (71%) (Figure 2). Malignancy was more common in patients who had size of the nodule more than 4 cms (19%) as compared to patients who had size of the nodule less than 4 cms (11%). All patients who had benign/cystic features on USG were non-malignant. The benign category occupies the major group with 68 (76%) cases, followed by suspicious, 11

(12%) cases and malignant 11 (12%) cases. In two patients, sizes of the nodule reduce considerably so that they did not require any surgical management. Out of the remaining 88 patients, 57 patients underwent Hemithyroidectomy, 20 patients underwent Near Total Thyroidectomy and 11 patients required Total Thyroidectomy (Figure 3). The central compartment neck dissection was done in 13 cases & one patient having level II cervical lymphadenopathy underwent modified radical neck dissection. Recurrent laryngeal nerve palsy was found in one patient and parathyroid insufficiency was found in 3 patients who underwent Completion Thyroidectomy .

DISCUSSION

In spite of all possible investigations, three patients required completion thyroidectomy. Thirteen cases were diagnosed as

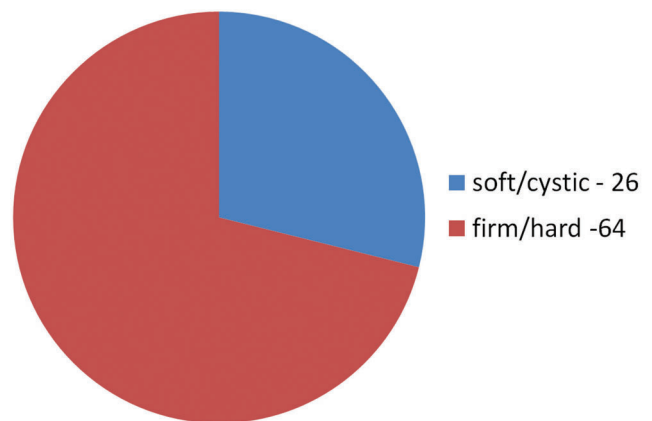


Figure-1: Consistency of palpable solitary thyroid nodule

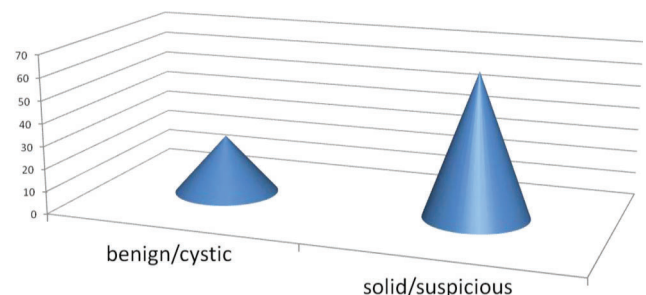


Figure-2: Ultrasonographic findings solitary thyroid nodule

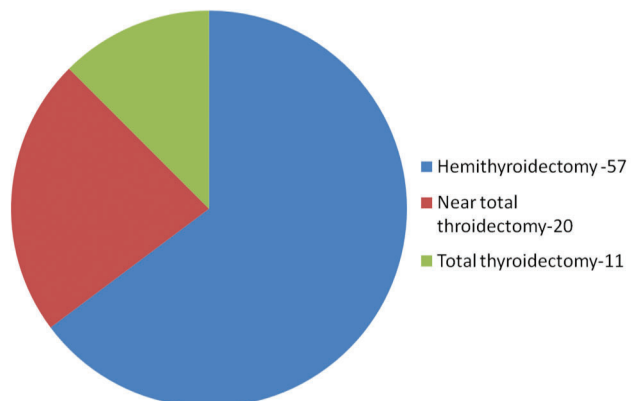


Figure-3: Surgical interventions performed

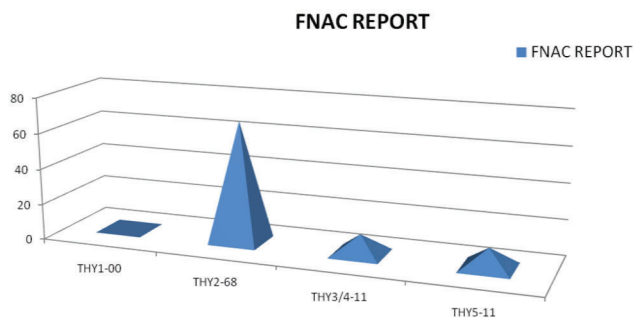


Figure-4: FNAC interpretation according to the Bethesda system

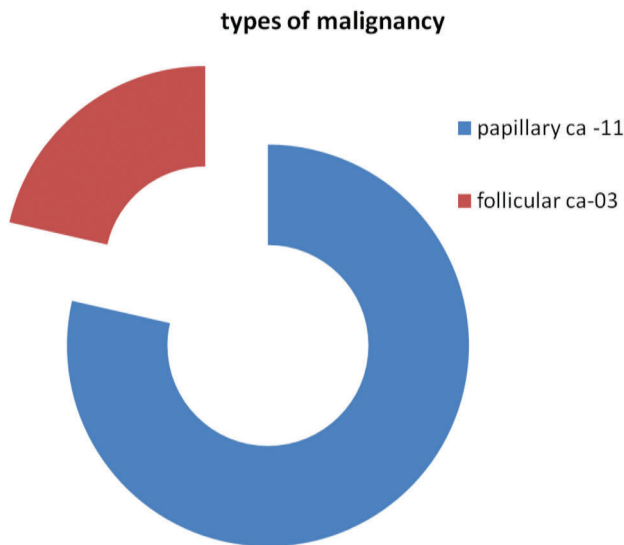


Figure-5: Histopathological type of malignancy

'suspicious' lesions on FNAC (Figure 4), due to the inability to unequivocally detect cytological features of either benign or malignant neoplasms and were subjected to surgery and correlated with histopathology. Ten cases were found to be benign and 3 cases to be malignant.

In a similar study by Morgan JL, the overall sensitivity of FNAC detecting thyroid neoplasia was 55.0%, specificity 73.7% and accuracy 67.2%.⁵ According to Chetna Sharmathe sensitivity and specificity were 89.5% and 98% respectively and accuracy of FNAC in differentiating benign from malignant thyroid lesion was 97%.⁶ In our study, FNAC diagnosed 11 (79%) of 14 malignant cases, and 68 (90%) of 76 benign cases. Therefore, the sensitivity of FNAC in this study was 79% and the specificity was 90%. The accuracy of FNAC correlating with histopathological diagnosis was 88%, which was in tandem with previous study by Agrawal S. which demonstrated a sensitivity of 76.5%, a specificity of 95.9% and an accuracy of 90.9%.⁷

There are multiple parameters like age, sex, size, consistency, ultrasonography findings, radioiodine scan interpretation & clinical accuracy of FNAC; which should be considered while managing solitary thyroid nodule. Out of 14 malignant cases, histopathological diagnosis in eleven cases were of papillary carcinoma & three cases were of follicular carcinoma (Figure 5). In our study we did not encounter medul-

lary carcinoma or anaplastic carcinoma. The most common pitfalls for false-negative diagnoses in FNAC are inadequate material and underdiagnosis of papillary carcinoma due to cystic degeneration.⁸

CONCLUSION

Solitary Thyroid nodules are common in the females of age group 31-40 years. There is increased incidence with age, however most of the lesions in the females are benign, on the contrary most of the lesions in males are malignant. Ultrasonography proved to be a more sensitive modality to evaluate the nodularity of the thyroid than clinical evaluation. In our study, the sensitivity and specificity of FNAC was 79% and 90% respectively. FNAC with Bethesda system for reporting thyroid cytopathology is by far the best choice of investigation to rule out malignancy in a solitary thyroid nodule. In spite of taking into consideration the high risk factors & all possible investigations, some patients may require completion thyroidectomy. It is therefore easier said than done to chalk out a definite algorithm for managing solitary thyroid nodules and adopting a safe selective surgical policy in dealing with thyroid malignancy. The treatment of solitary thyroid nodule should be evidence based, individualized, comprehensive as well as sequential in order to obtain the best treatment outcome.

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