

CLINICOPATHOLOGICAL CHARACTERISTICS OF SOLITARY NODULE OF THYROID- A CROSS-SECTIONAL STUDY IN A TERTIARY CENTER

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ABSTRACT

BACKGROUND

Solitary Thyroid Nodules (STN) occur in 4-7% of the adult population. Owing to increasing incidence of malignancy, it is necessary to differentiate patients with benign STN from malignant ones for early intervention and better patient management.

The aim of the study is to study the clinicopathological characteristics of STN for better diagnosis, evaluation and management; evaluate the efficacy of FNAC in preoperative diagnostics of solitary thyroid nodules.

MATERIALS AND METHODS

The study was conducted over a period of one year at a tertiary healthcare institution in South India. One hundred patients with solitary nodule of thyroid were studied by taking detailed history and conducting clinical examination, thyroid hormone assay, ultrasonogram, FNAC and histopathological examination. The chances of malignancy and age, sex and site distribution were also analysed.

RESULTS

Solitary thyroid nodule cases showed female preponderance (81%), presented mostly as neck swelling followed by dysphagia (11%). Most common FNAC report was of colloid nodule (61%), followed by follicular neoplasm (20%) and papillary carcinoma (9%). Final HPR showed 53% as colloid nodule and 27% as papillary carcinoma.

CONCLUSION

Differentiating between benign and malignant lesions and their comprehensive management are the challenges presented by STN. Fine Needle Aspiration Cytology (FNAC) is the diagnostic tool of choice for the initial evaluation of STN.

KEYWORDS

Solitary Thyroid Nodule, FNAC, Malignancy.

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BACKGROUND

A majority of the thyroid nodules present with a lump in front of the neck seen or felt on self-examination. A discrete swelling (nodule) in one lobe of the gland without any palpable abnormality elsewhere is called a solitary (isolated) nodule. Discrete swelling with evidence of abnormality elsewhere in the gland is called dominant.^{1,2} About 70% of the discrete thyroid swellings are clinically isolated and about 30% are dominant. The prevalence of these nodules in a given population depends on a number of factors like age, sex, diet, iodine deficiency and even therapeutic and environmental radiation exposure. The importance of discrete thyroid swelling lies in the risk of neoplasia

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compared with other thyroid swellings.^{3,4} Some 15% of isolated swellings prove to be malignant and an additional 30-40% are follicular adenomas. The remainder are non-neoplastic consisting of colloid degeneration, thyroiditis or cysts. This study was contemplated taking into consideration the increasing number of patients presenting with thyroid nodules and the fact that such a study had not been conducted in Government Medical College and Hospital, Thrissur. This study was carried out in the Department of General Surgery over a period of one year from April 2014-March 2015. A total 200 patients of STN were included. The clinical presentations, FNAC findings and histopathology of solitary nodule of thyroid were analysed. Risk factors for malignancy (age, sex, history of radiation exposure) were evaluated.

MATERIALS AND METHODS

The present study was conducted after the institutional ethical clearance, which included 100 patients diagnosed with STN after taking informed and written consent. Patients with clinically and ultrasonographically detected MNG were excluded.



Patients with STN were evaluated based on detailed clinical history, clinical examination, thyroid hormone assay, USG, FNAC and histopathological examination and chance of malignancy. Statistical analysis of the data obtained was done.

RESULTS

Distribution of STN cases in this study is shown in (Table/Figure 1). Majority of patients were between 26-45 years with a female preponderance (81%), most common presenting complaint other than neck swelling was dysphagia (11%). Family history of similar disease was seen in only 4% of patients.

About 60% of the nodules were located in the right lobe and 89% of patients were euthyroid.

FNAC findings were reported as colloid nodule (61%), follicular neoplasm (20%) and papillary carcinoma (9%) (Table/Figure 1).

Postoperative histopathological examination showed 72% benign and 28% malignant lesions; most common malignancy being papillary carcinoma (27%).

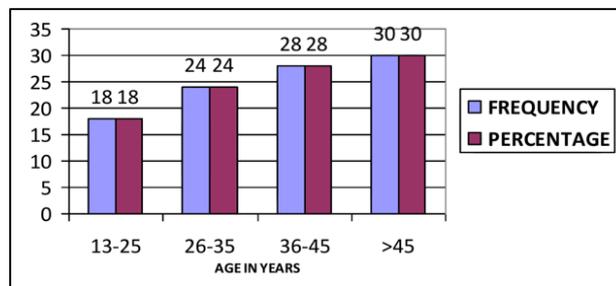


Figure 3. Age in Years

DISCUSSION

Thyroid nodules could be adenomas or neoplasms. Most thyroid nodules are benign hyperplastic lesions, but 5-20% of these nodules are true neoplasms in nature. The evaluation of STN is done by taking a detailed medical history, general physical examination, metabolic profile (thyroid function tests), imaging and invasive procedures including FNAC.

In this study, 82% patients were above 26 years with highest frequency between 26-45 years compared to Islam et al, 2009, majority were between 21-40 years. The youngest (13 years) and the oldest (58 years) both having malignant thyroid disease suggesting less incidence of thyroid disease, but more chance of malignancy. Childhood thyroid nodules need special attention due to higher incidence of malignancy, i.e. 15-25% as compared to adults.⁵

In this study, male:female is 1:4.2 whereas in a prospective study by Venkatachalapathy et al 2012 showed 1:2.2, which is reflected in all studies due to oestrogen receptors in female thyroid tissue.⁶ In this study, 60% had nodules in right lobe, 38% in left lobe similar to study by Messaris G et al 1974.⁷

FNAC, a minimally-invasive preoperative diagnostic tool is the gold standard for preoperative assessment of thyroid nodules. Accuracy of FNAC is closely related to the histologic type of thyroid carcinoma, which is being evaluated. Diagnosis is correct for papillary thyroid carcinoma in about 90-100% of FNAC specimens when correlated with the histology of the final surgical specimen.^{8,9} In this study, among the 61% cases reported as colloid nodule by FNAC, 10% turned out to be papillary carcinoma and 1% follicular carcinoma in the final histopathological report. Among 20% of cases reported as follicular neoplasm by FNAC, 7% were follicular adenoma and 6% were papillary carcinoma in the final HPR. 9% of the papillary carcinoma and 1% medullary carcinoma reported by FNAC were papillary carcinoma in HPR.

In a study by Tarrar AM et al, 2010, 13.33% of STN were malignant, whereas in this study, 28% were malignant.¹¹

CONCLUSION

The ultimate aim in the evaluation of Solitary Thyroid Nodule (STN) is to differentiate benign hyperplasia from true neoplasms. Although, a thorough history and clinical examination are indispensable, FNAC is of high value in determining the nature of lesion and its appropriate management. A definitive diagnosis is possible only by

Diagnosis	Number	Percentage
Colloid nodule	61	61
Lymphocytic thyroiditis	7	7
Follicular neoplasm	20	20
Papillary carcinoma	9	9
Medullary carcinoma	1	1
Hurthle cell neoplasm	2	2
Total	100	100

Table 1. FNAC Variations in Solitary Nodule

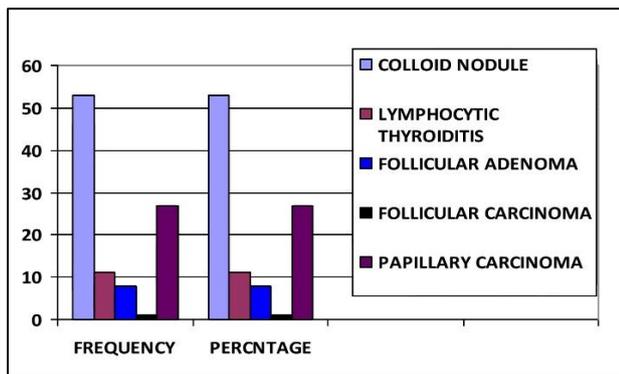


Figure 1. FNAC Variations in Solitary Nodule

Male	19
Female	81

Table 2. Sex Distribution

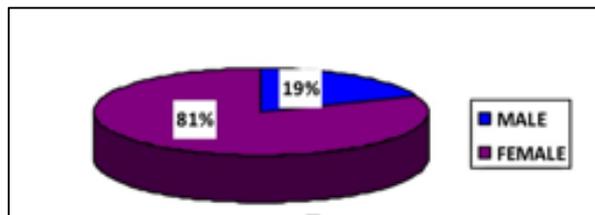


Figure 2. Sex Distribution

surgery and postoperative histopathological examination of the nodule.

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