



## INCIDENCE OF MALIGNANCY IN CASE OF SOLITARY NODULE THYROID - ORIGINAL ARTICLE

### KEY WORDS

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### ABSTRACT

**AIMS & OBJECTIVES:** To study the incidence of malignancy and treatment modalities for solitary nodule thyroid.

**INTRODUCTION:** Nodular goiter is a common endocrine problem in the world today. The primary aim of investigating a thyroid nodule is to look for the possibility of malignant transformation. The objective of the study was to understand the usefulness of FNAC and ultrasound neck in the pre operative evaluation as a diagnostic tools in the management of Solitary nodule of thyroid.

**MATERIALS AND METHODS:** Prospective analysis of 100 cases of solitary nodule of thyroid was done. Clinical features, FNAC and ultrasound neck of the nodule were compared with histopathological examination.

**RESULTS:** The present study is aimed at analyzing the different treatment modalities in the management of thyroid disorders and to know the incidence of malignancy. A total of 100 patients examined, investigated and cyto histological features compared with clinical features. Incidence of solitary nodule is more in females than males (72% : 18%). Incidence of malignancy in case of solitary nodule is 21% is more common in male (38%) than in female (19%). The common age of incidence of malignancy in a case of solitary nodule is between 20 to 50 years. The most common clinical presentation is swelling in front of neck. Most of the swellings are firm in consistency. Involvement of the cervical lymph nodes is rare. Colloid goiter is the most common type of non neoplastic disease entity. Follicular adenoma is the most common benign disease. Most of the malignant swellings are euthyroid. Many clinical features can be correlated with histopathology and comparable with other studies. Male sex is a high risk factor, as they constitute 60 % malignant swellings when compared to 7.14% of benign swellings. A size of > 4cms is a risk factor for malignancy. Hardness of the swelling is associated with malignancy, though this is not comparable with other studies (30% in this study compared to 50% in other studies).

**CONCLUSION:** In centers with the experience of fine needle aspiration, clinical examination, ultrasound neck estimated to reduce the number of thyroidectomies by approximately 50%, to roughly double the surgical correction of carcinoma, and to reduce the overall cost of medical care by 25%.

**Introduction:** A solitary thyroid nodule is a clinically palpable single lesion in an otherwise normal thyroid gland. Nodular goiter is the most common lesion of the thyroid gland. 'SNT is relatively a common problem more so in the endemically iodine deficient areas. SNT is more common in women more so in the middle aged women. This is due to extreme degree of fluctuations in thyroid function associated with varying hormone requirements like in pregnancy. A solitary nodule has a higher risk of malignancy than a multinodular goitre.<sup>2,3</sup> The main aim of evaluating a thyroid nodule is to detect any malignant transformation.

**Materials and Methods:** This is a prospective study conducted in tertiary care hospital. In this study only clinically palpable solitary nodules are studied. The number of cases that studied are 100 during the 3 years of years period from august 2005 - july 2010. Although it is a clinical study, this has been supplemented with pathological study both by FNAC and tissue biopsy after surgery. ultrasound neck and FNAC done for all cases results verified during surgical exploration and histopathological reports.

### RESULTS

Most of the patients fall in the age group 31-40 years. The lowest age is 16 years and the highest is 70 years. Most of the patients presented with neck swelling (96%). Most of the swelling are firm in consistency (72%). Most of the swellings move with deglutition (94%) Most of the patients don't have enlarged lymph nodes (88%)

**TABLE - 1 SHOWING PREOPERATIVE FINE NEEDLE ASPIRATION CYTOLOGY**

	No. of patients	Percentage
Benign	61	61%
Malignant	17	17%
Suspicious	20	20%
Unsatisfactory	02	02%

Most of the patients (61%) reported as benign, where as 17% are reported as malignant.

**TABLE - 2 HISTOPATHOLOGY REPORTS**

	No. of patients	Percentage
Colloid nodule	34	34%
Adenoma	37	37%
Cyst	6	6%
Papillary carcinoma	11	11%
Follicular carcinoma	6	6%
Medullay carcinoma	2	2%
Anaplastic carcinoma	2	2%
Thyroiditis	2	2%

Benign nodules constitute about 79% and malignant nodules 21% of all clinically solitary nodules.

**TABLE - 3 MANAGEMENT OF CASES**

	No. of patients	Percentage
Rt. Hemithyroidectomy	30	30%
Lt. Hemithyroidectomy	36	36%
Subtotal Thyroidectomy	6	6%
Total Thyroidectomy	20	20%
Others	8	8%

**TABLE - 4 ACCURACY OF FNAC**

	No. of patients	Percentage
Sensitivity	93.3	93.3
Specificity	73.5	73.5
Positive predictive value	60.9	60.9
Negative predictive value	96.1	96.1

False positive fraction	39.1	39.1
False negative fraction	3.8	3.8

## DISCUSSION

History and physical examination are essential elements can provide firm clues about the statistical probability of thyroid cancer<sup>4</sup>. According to American association of clinical endocrinologists the following elements in the history and physical examination favour benign disease.

The following elements of history and physical examination increase the suspicion of malignant thyroid disease.

- Rapidly enlarging
- Inherited tumor syndromes i.e., MEN type 2
- Cold nodule or cyst >4 cms or complex cyst
- Vascular or capsular invasion
- Age <20 and >70
- Male gender
- New onset of swallowing difficulties & hoarseness
- History of external neck irradiation during childhood
- Firm, irregular and fixed nodule
- Presence of cervical lymphadenopathy
- Previous history of thyroid cancer
- Nodule that is "cold" on scan<sup>5</sup>
- Solid or complex on ultrasound<sup>6,7</sup>

Present study includes some clinical features. They are age, sex, fixity, enlarged lymph nodes, history of irradiation, consistency<sup>2</sup>

### Age of the patient:

Few patients are there outside the age group between 20 yrs and 60 yrs, 1 patient is under 20 yrs and 16 patients above 60 yrs. 6 of these patients had cancer thyroid. So in this study cancer in patients outside this group is 6%, where in Caruso D, Mazzaferri EL study there was incidence of 14% & 20% below and above that age group respectively.

### Gender of the patient:

The present study includes 72 females and 18 males. 14 females are out of 65 and 7 male out of 18 had cancer thyroid. This is 21.5% in females and 38.8% in males. There is a considerable increased risk with male gender.

### Size of the swelling:

A size of > 4 cms is considered to be associated with increased risk of malignancy. Caruso D, Mazzaferri EL. Shows no data associated with the size of the swelling. The present study has 8 patients with swelling of size > 4cms. 1 out of 14 has benign swellings, 16 out of 61 have non-neoplastic swellings and 4 out of 5 malignant swellings are > 4cms. This shows most of the malignant swellings grow large in size, and of all the large swellings ( $\geq 4$ cms) 12 % are malignant, which makes it a factor of moderate suspicion.

### Fixity to adjacent structures:

Only 1 case of anaplastic carcinoma thyroid had features of fixity. This is 100% malignancy in fixed swellings. Caruso D, Mazzaferri et al had 71% of cases with malignancy among all fixed swellings. This is a feature of high suspicion and as there is only 1 case of fixity the findings could not be correlated with other studies.

### Cervical lymph node enlargement:

Commonly seen in papillary carcinoma thyroid and anaplastic carcinoma. The present study shows 61% of malignancy with enlarged lymph nodes. Other studies show a 71% of malignant disease out of all cervical lymph node enlargements. Now a day's lateral aberrant thyroid is considered as secondary deposits in cervical lymph node from an occult carcinoma in thyroid gland.

### Consistency of swelling:

Benign swellings are firm while malignant are hard. The colloid goiter

is usually soft but it can also have firm areas. Very firm swellings are a matter of high suspicion in many studies. In present study 80% of malignant swellings, 14% of benign swellings and 11% of non-neoplastic swellings are hard. Hardness in non-neoplastic swellings are seen in chronic lymphocytic thyroiditis, due to chronic inflammatory changes. Hardness and very firm consistency is a factor of high suspicion and in the present study 30 % of incidence of cancer is seen in very firm nodules, compared to 50% in other studies.

### History of exposure to irradiation:

No cases in this study have history of exposure to irradiation, but other studies show incidence of 6 % in such exposure. Usually a long term of 15 to 20 yrs is required for the mutation to express and transform into malignancy. So childhood history of exposure is important than the recent history.

### CYTO - HISTOPATHOLGY:<sup>8,9,10</sup>

A major advance in the evaluation thyroid nodule is achieved with the perfection and common use of Thyroid Nodule Guidelines of FNA cytology AACE advocates FNACytology of all thyroid nodules when the possibility of malignancy is appreciable and when the patient is a candidate for surgical or non surgical cancer treatment.

In the present study FNA cytology results were benign in 61%, malignant in 17%, suspicious in 20% and unsatisfactory in 2% of cases. Several FNA cytology series and reviews have been performed to establish the efficacy of this procedure. Members of this committee for these guide lines have reviewed these series. Mazzaferri et al reported on 10 series with 9119 patients; results of FNA cytology were benign in 74%, inadequate in 2%, suspicious in 20% and malignant in 4% of those series. Gharib et al evaluated 7 series with a total of 18183 FNA: 69% were benign, 27% were suspicious or non diagnostic and only 4% were malignant. The suspicious and non diagnostic groups were equally divided; of the suspicious group of nodules, 10 to 30% were ultimately malignant.

In the present study in 3 cases FNAC differed with Histopathology findings.

In one patient a 40 yr old female, who was euthyroid has a FNAC finding of colloid goiter, after thyroidectomy and HPE it was found to be follicular adenoma with cystic changes. This difference did not change the prognosis of the patient.

Another patient of age 55 yrs male had a FNAC finding of lymphocytic thyroiditis and as the case is highly suspicious of malignancy thyroidectomy was done and HPE showed papillary carcinoma of thyroid. This particular case highlights the importance of clinical features to come to a conclusion about diagnosis.

Another male patient of 29 yrs had a FNAC finding of Follicular adenoma and turned to be a papillary carcinoma with Follicular variance on Histo pathological examination.

In centers with the experience of fine needle aspiration, the use of this technique is estimated to reduce the number of thyroidectomies 11,12 by approximately 50%, to roughly double the surgical correction of carcinoma, and to reduce the overall cost of medical care by 25%

### CONCLUSION:

Incidence of solitary nodule is more in females than males (72% : 18%). Incidence of malignancy in case of solitary nodule is 21% is more common in male (38%) than in female (19%). The common age of incidence of malignancy in a case of solitary nodule is between 20 to 50 years. Male sex is a high risk factor, as they constitute 60 % malignant swellings when compared to 7.14% of benign swellings. A size of  $\geq 4$ cms is a risk factor for malignancy. Hardness of the swelling is associated with malignancy, though this is not comparable with other studies (30% in this study compared to 50% in other studies)

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