

# Frequency of Malignancy in Solitary Thyroid Nodule

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## ABSTRACT

**Aim:** To determine the frequency of malignancy in solitary thyroid nodule.

**Methods:** This study was carried out in the Outpatients and inpatient department of Surgery Ibn-e-Siena Hospital, Multan from July 2013 to June 2014. A total of 124 patients were included in the study.

**Results:** Majority of the patients i.e. 53(42.7%) were between 31-40 years, mean and SD was  $33.45 \pm 6.32$ , 95 (76.6%) were female and 39(23.4%) were male. Malignancy in solitary thyroid nodule (on histopathology) shows 19(15.3%) were malignant and 105(84.7%) were benign. Stratification of malignant solitary thyroid nodule shows out of 19 malignant cases 6(31.9%) were between 13-20 years 2(10.5%) were between 21-30 years, 4(21.1%) between 31-40 years.

**Conclusion:** It is concluded from the study that a remarkable proportion of solitary thyroid nodule (15.3%) was malignant, which emphasizes on the early diagnosis and adequate treatment.

**Key words:** Solitary thyroid nodule, frequency, malignancy.

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## INTRODUCTION

Thyroid swellings are common problem throughout the world. Most of thyroid swellings are multi-nodular, but a good percentage are solitary nodule. About 70% of the discrete thyroid swellings are clinically isolated. Incidence of malignancy within a clinically apparent solitary nodule is approximately 10%<sup>1</sup>. Thyroid nodules are a common diagnostic challenge mainly because of the need to exclude thyroid malignancy. Thyroid nodules occur 4-7% of the adult population. A discrete swellings in one lobe with no palpable abnormality elsewhere is termed as isolated or solitary thyroid nodule<sup>2</sup>. Carcinoma of the thyroid gland is an uncommon cancer but none the less is the most common malignancy of the endocrine system. Thyroid neoplasia can present either as discrete nodules or diffusely enlarged gland, although the former is most likely to be malignant<sup>2</sup>.

The importance of solitary thyroid nodule lies in the significant risk of malignancy compared with other thyroid swellings. Incidence of malignancy within a clinically apparent solitary thyroid nodule varies from 4.7-18.3%. Thyroid nodules can be found in up to 90% of women over the age of 60 years. They are 3-4 times more frequent in women than men<sup>4</sup>. A nodule may be benign (86.7%) or malignant (13.3%). Investigations are essential to establish preoperative physical, functional status and cytopathological nature of solitary nodule of thyroid. Fine needle aspiration cytology is very important, highly sensitive and minimally invasive preoperatively diagnostic tool<sup>5</sup>.

Radionuclide imaging has been the mainstay in the evaluation of solitary thyroid nodule since 1939 when Hamilton and Soley demonstrated that malignant thyroid tissue concentrates less radioactive iodine than normal thyroid tissue. Thyroid nodules are further classified into cold, warm and hot according to their ability to accumulate the radioactive isotope. Cold nodules are considered hypofunctional, whereas warm nodules are normal and hot nodules are hyperfunctional<sup>6</sup>. Majority of the malignant cases showed cold nodule on thyroid scan, thus emphasizing the need for more thorough follow up of the patients presenting with cold nodule. The incidence of malignancy in cold nodules approximates 15.2%<sup>3</sup>. The incidence of malignancy in solitary nodule is approximately 13.3%, so people should be educated to attend thyroid clinics for early diagnosis and adequate treatment.

The objective of the study was to determine the frequency of malignancy in solitary thyroid nodule.

## MATERIAL AND METHODS

This study was carried out in the Outpatients and inpatient department of Surgery, Ibn-e-Siena Hospital, Multan from July 2013 to June 2014. A total of 124 patients were included in the study. Patients of both sexes, age between 11 and 63 years, clinically detected solitary thyroid nodule and hot, warm and cold nodules on radio isotope (TC99) scan were included in the study. Data were entered and analyzed by using computer programme SPSS-10. Quantitative variable was applied to calculate mean and  $\pm$  SD for age of the patients. Qualitative variables were calculated by taking frequencies and percentages of gender and histopathology finding (benign, malignant). Effect modifiers like age, gender

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and type of nodule (hot, warm, cold) were controlled by stratification.

**RESULTS**

Age distribution of the patients is calculated and presented in table-1. Sex distribution shows majority of the patients were female i.e., 95(76.6%) and 29(23.9%) were male (Table 2). Frequency of malignancy in solitary thyroid nodule on histopathology shows 19(15.3%) were malignant and 105(84.7%) were benign (Table 3). Stratification of malignant solitary thyroid nodule was done. Out of 19 malignant cases (6 (31.6%) were between 13-20 years, 2(10.5%) were between 21-30 years, and 4(21%) were between 31-40 years of age (Table 4).

Table 1: Age distribution (n=124)

Age (years)	No. of cases	Percentage
31-20	08	06.4
21-30	27	21.8
31-40	53	42.7
41-50	24	19.4
51-63	12	09.7
Total	124	100.0
<b>Mean and SD</b>	<b>33.45 ± 6.32</b>	

Table 2: Sex distribution (n=124)

Sex	No. of cases	Percentage
Male	29	23.4
Female	95	76.6
Total	124	100.0

Table 3: Frequency of malignancy (n=124)

Frequency	No. of cases	Percentage
Malignant	19	15.3
Benign	105	84.7

Table 4 Stratification of malignant solitary thyroid nodule (n=19)

Age (yrs)	Cases (%)	Sex	Cases (%)	Type	Cases (%)
13-20	06 (31.6)	Male	05 (26.3)	Hot	01 (05.3)
21-30	02 (10.5)	Female	14 (73.7)	Warm	03 (15.8)
31-40	04 (21.0)	-	-	Cold	15 (78.9)
41-50	03 (15.8)				
51-63	04 (21.0)				

**DISCUSSION**

Thyroid swellings are common clinical problem throughout the world. These are also common clinical problem in South Asia. Most of thyroid swellings are multi-nodular, but a good percentage is solitary

thyroid nodule. The solitary or isolated thyroid nodule may be defined as a discrete swelling in a otherwise impalpable gland. About 70% discrete thyroid swellings are clinically isolated. Thyroid nodules are common and are present 3-4 of the adult population in the UK and USA. They are 3-4 times more frequent in women than men. With ultrasonogram nodule may be found upto 50% of population over 60 years of age. A nodule may be adenoma, cyst, multi-nodular goiter, thyroiditis and thyroid cancer. We planned this study to determine the frequency of malignancy in solitary thyroid nodule so that people should be educated to attend thyroid clinics for early diagnosis and adequate treatment.

The age distribution of the current study reveals that most of the patients are between 21-40 years of age i.e., 64.5%. Sex distribution shows majority of the patients were female i.e., 76.6%, while frequency of malignancy in solitary thyroid nodule (on histopathology) shows 15.3% were malignant and 84.7% were benign. Our findings are in agreement with other studies in which it is pointed out that third and fourth decade of life is more common for thyroid nodules. Similarly, another local study shows 65% of the patients were between 21-40 years.

Browse et al show about 68% of patients were female and 32% male. It is due to fact that thyroid disorder is female prone<sup>64</sup>, this finding is also in agreement with the current study where 76.6% were female and 23.4% were male. The incidence of malignancy in solitary thyroid nodules reported was 4.7-18.3%<sup>65</sup>, which is in agreement with the result of the current study, as we recorded 15.3% of the nodules were malignant in thyroid solitary nodules.

Though the most common age group of thyroid nodules is 3<sup>rd</sup> and 4<sup>th</sup> decade of life, but interestingly the malignancy is more common in 2<sup>nd</sup> decade of life, as we recorded 31.6% with malignant thyroid nodule, while only 10.5% were between 21-30 years, 15.8% between 41-50 years and 21.1% between 51-63 years of age, 51-63 years of age is also showing an increased risk of malignancy.

Rains et al recorded that the extreme of ages shows less incidence of thyroid disease but more chance to be malignant, they concluded that the youngest and oldest patients have been suffering from malignant disease. Our findings are more or less in accordance with their findings, as most of the patients in our study were recorded between 21-30 years with malignant thyroid nodules while 51-63 years also shows a higher risk of malignancy i.e., 21.1%.

In our study, most of the malignant cases (78.9%) were cold, 15.8% were warm and 5.3% were hot. A study conducted in Bangladesh to determine frequency and pattern of malignancy in solitary

thyroid nodule recorded that most of the nodules were cold<sup>1</sup>, followed by warm and hot thyroid nodules, our results regarding majority of the malignant cases as cold, warm and then hot is similar with the above study.

## CONCLUSION

It is concluded from the study that a remarkable proportion of solitary thyroid nodule (15.3%) was malignant, which emphasizes on the early diagnosis and adequate treatment.

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