Original Research Article

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Clinicopathological evaluation of thyroid incidentaloma: a prospective study

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ABSTRACT

Background: Incidental thyroid nodules are typically non-palpable thyroid nodules found during radiographic evaluation for a non-thyroid related issue (USG neck, CT scan, PET scan, carotid duplex). The prevalence of thyroid incidentalomas ranges from 1.6% to 67% based on radiographic modality of detection. The rate of malignancy in incidental thyroid nodule can again quite variable based on how it was discovered and range from 4% to 50%. (The overall risk is approximately 15%).

Methods: A prospective study was carried out in 100 patients. Discovery of a thyroid nodule by imaging investigations in individuals, who are asymptomatic for thyroid disease, was done in the study. FNAC of the nodule is done to know the pathology.

Results: Incidence of thyroid incidentaloma was found to be 9%. In 40 patients who underwent carotid doppler the incidence was found to be 10%. In 50 patients who underwent USG neck, the incidence was found to be 10%. There was no incidentaloma detected in CT done in the 10 patients observed in this study. 9 patients with thyroid incidentalomas out of which 7 patients diagnosed benign lesion and 2 patients diagnosed with malignancy.

Conclusions: Incidence of thyroid incidentaloma in our study is comparable to worldwide statistics. The incidence of incidentaloma (9%) and malignant pathology (22.2%) picked up in incidentalomas in our study is going in favour of advocating screening programme in our population (>50 years). USG neck appears to be most suitable investigation for screening.

Keywords: Fine needle aspiration biopsy, Incidental thyroid nodule, Thyroid cancer, Ultrasound

INTRODUCTION

Incidental thyroid nodules are typically nonpalpable thyroid nodules found during radiographic evaluation for a non-thyroid related issue (USG neck, CT scan, PET scan, carotid duplex). The prevalence of Thyroid incidentalomas ranges from 1.6% to 67% based on radiographic modality of detection. ¹⁻⁴

The rate of malignancy in incidental thyroid nodule can again be quite variable based on how it was discovered and range from 4% to 50% (the overall risk is approximately 15%).

- Carotid duplex -7%³
- USG neck 2% 15%⁵
- CT scan 4% -11%⁶
- PET Scan 30% 40%. 4.7.8

Solid thyroid nodules more than 1 cm in size should undergo ultrasound-guided fine-needle aspiration biopsy according to American Thyroid Association guidelines. Consideration for biopsy of thyroid nodules less than 1 cm should be restricted to nodules with atypical USG characteristics and potential nodules that are positive on PET scan due to their higher rate of malignancy.

Incidental thyroid nodules are contributing to but are not the sole reason for the rising incidence of thyroid cancer in the Unites States and other developed nations.

METHODS

This is a prospective study done at JSS Hospital, Mysuru, India from September 2014 to September 2016 done. Patient who are being evaluated for conditions other than thyroid swelling are included in our study. Patient who come with thyroid swelling or known thyroid condition are excluded from the study. Discovery of a thyroid nodule by imaging investigations in individuals who are asymptomatic for thyroid disease was done in the study. FNAC of the nodule is done to know the pathology.

RESULTS

Out of 100 individuals 42 were females (42%) and 58 were males (58%). There was a significant difference in the mean age of the individuals with nodules 51.9 ± 16.8 years and without nodules 53.6 ± 10.3 years. Overall frequency of TI was 9% (9 out of 100). TI was insignificantly frequent in females 14.3% as compare to males 5.2%.

Table 1: Incidence of thyroid incidentaloma.

Incidentaloma				
No		Yes		
Count	Row N %	Count	Row N %	
91	91.0%	9	9.0%	

In 40 patients who underwent carotid doppler the incidence was found to be 10%. In 50 patients who underwent USG neck, the incidence was found to be 10%. There was no incidentaloma detected in CT done in the 10 patients observed in this study.

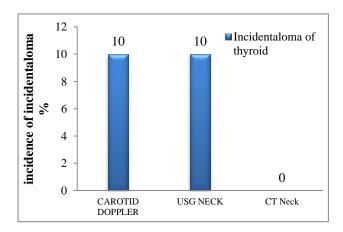


Figure 1: Percentage of incidence of thyroid incidentalomas through various imaging modalities.

USG guided FNAC was performed for the 9 patients with thyroid incidentalomas out of which 1 was diagnosed

with papillary carcinoma, 1 with follicular lesion, 6 were colloid goiter and one cystic lesion.

Table 2: USG guided FNAC.

USG guided FNAC	Count	Column N %	Percent
Cystic lesion	1	1.0%	11.1
Follicular lesion	1	1.0%	11.1
Colloid goitre	6	6.0%	66.6
Papillary carcinoma	1	1.0%	11.1

9 patients with thyroid incidentalomas out of which 7 patients diagnosed benign lesion and 2 patients diagnosed with malignancy.

Table 3: Nature of thyroid incidentaloma.

Nature of incidentaloma	Count	Column N %	Percent
Benign	7	7.0%	77.8
Malignant	2	2.0%	22.2

The thyroid incidentalomas in both lobes was 33.3% (3 out of 9) and involvement of right lobe was 66.7% (6 out of 7).

Table 4: Lobe involvement.

		n	Percent	Percent
Lobe	Both	3	3	33.3
	Right	6	7	66.7

Size of the incidentaloma was more than 2 cm in 33.3% (3 out of 9) and less than 2cm in 66.7% (6 out of 9).

Table 5: Size of incidentaloma.

Width of incidentaloma	Count	Column N %
<2cm	6	66.7
2cm	3	33.3

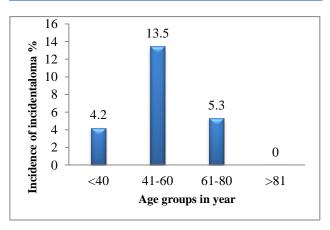


Figure 2: Age-wise distribution of incidence of thyroid incidentaloma.

The incidence of thyroid incidentaloma was 4.2% among the 24 patients under 41 years, 13.5% among 45 patients between the age of 41 to 60, 5.3% among 19 patients between 61 to 80 years and no incidence in the 5 patients studied above 80 years.

DISCUSSION

Examination of thyroid gland by palpation has been the most common method for detection of thyroid nodules. However, it overlooks small and deeply situated nodules. Remarkable innovation in medical technology has led to considerable increase in the detection of thyroid nodules. Thyroid ultrasound when compared to other modalities is a more accurate, non-invasive and economical. Characteristics of nodule like echogenicity (hypoechoic or hyperechoic), composition (solid, cystic and mixed), presence or absence of calcification, margins (regular or irregular) and blood flow (increased or decreased, central or peripheral) can also be identified by ultrasound. Wiest et al suggested that examination through high resolution Ultrasound guarantees great sensitivity, high specificity and good scanning speed.

Frequency of thyroid incidentaloma varies in different regions of the world. Many factors have been reported for these variations of which most common are age, gender, and iodine intake. Frequency of thyroid incidentaloma in Iran is 13.6%, in U.S.A is 9.4% and is 13.4% in California, in Korea is 36.67%, in Poland is 14.8% and in Finland is 27.35%. Poland is 14.8% and in Finland is 27.35%.

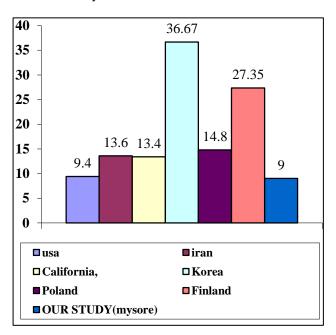


Figure 3: Frequency of thyroid incidentaloma.

In our study mean age of the individuals with thyroid incidentaloma was 51.9 ± 16.8 years and without thyroid nodules was 53.6 ± 10.3 years. In the study by Taheri et al in Iran mean age of people with nodule and without

nodule was 63.3 ± 12.9 years and 61.7 ± 13.6 years respectively. 16

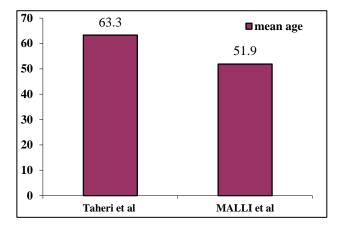


Figure 4: Mean age.

Previous studies has suggested that frequency of thyroid incidentaloma is greater in females. Barbara et al reported 7.9% of males and 20.6% of female in USA. 13

In our study frequency of thyroid incidentaloma was higher in females (14.3%) when compared to males (5.2%).

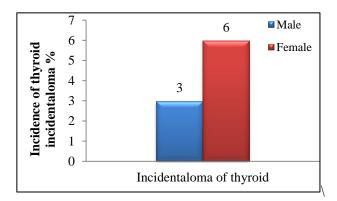


Figure 5: Sex-wise distribution

Taheri et al reported that 51.9% of Iranian population had thyroid incidentaloma in one lobe (right, left or isthmus) and 48% individuals had thyroid incidentaloma in more than one locations. However, Steel et al reported 49.4% individuals with thyroid incidentalomas in both lobes and 50.6% individuals with Thyroid incidentaloma in one lobe.³

Results of our study were similar to both the studies Thyroid incidentaloma in one lobe (66.7%) were much more prevalent than thyroid incidentalomas in both lobes (33.3%).

Liebeskind and colleagues was found that incidental thyroid nodules (regardless of mechanism of discovery) referred for evaluation harbored a risk of cancer of 15%.⁵ In our study risk of malignancy is 22.2%.

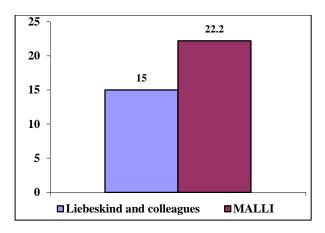


Figure 6: Risk of malignancy.

One patient underwent right hemithyroidectomy and the other patient refused to undergo surgery.

CONCLUSION

Incidence of thyroid incidentaloma in our study is comparable to worldwide statistics. The incidence of incidentaloma (9%) and malignant pathology (22.2%) picked up in incidentalomas in our study is going in favour of advocating screening programme in our population (>50 years). USG neck appears to be most suitable investigation for screening.

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Ethical approval: The study was approved by the

institutional ethics committee

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