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A Study of Incidence of Malignancy in Clinically Benign Thyroid Swelling

KEYWORDS: thyroid swelling; malignancy; incidence.

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ABSTRACT *Background: Thyroid cancer is the most common endocrine cancer. The objective of this study was to find out the frequency of malignancy in clinically benign thyroid swellings.*

Patients and Methods: In this retrospective study, the records of admitted patients in our hospital were reviewed from January 2012 to December 2013. Patients with benign looking thyroid swellings, who would undergo surgery, were picked up.

Results: Seventy eight patients were studied, of which, 54 were clinically diagnosed to be multinodular goiter and 24 were clinically solitary nodule in thyroid. Total 6 malignancies were reported on final histopathological examination.

Conclusions: The incidence of diagnosis of thyroid malignancy in a clinically benign thyroid swelling is significant. Hence, it is necessary for the patients treated conservatively for benign thyroid diseases to be followed up regularly.

Introduction

Thyroid cancer is the most common endocrine cancer. The Indian Council of Medical Research established the National Cancer Registry Program (NCRP), and the NCRP has collected the data of more than 3,00,000 cancer patients between the periods 1984 and 1993.[1] Among these patients, the NCRP noted 5614 cases of thyroid cancer, and this included 3617 females and 2007 males. The six centers involved in the studies were at Mumbai, Delhi, Thiruvananthapuram, Dibrugarh, Chandigarh, and Chennai. Among them, Thiruvananthapuram had the highest relative frequency of cases of thyroid cancer among all cancer cases enrolled in the hospital registry, 1.99% among males and 5.71% among females.[2] The nationwide relative frequency of thyroid cancer among all the cancer cases was 0.1%–0.2%.[2]

Of the Population Based Cancer Registry (PBCR) under NCRP, Bangalore PBCR has shown the highest annual attributable risk (AAR) of cancer of the thyroid.[3] The PBCR at Thiruvananthapuram has shown a high incidence of cancer of the thyroid where it was the third leading site of cancer in women in that registry. Similarly, the districtwise distribution shows a considerably higher AAR than that of Bangalore. There is a belt of high incidence from the southern tip of the country (Figure 1)- Kanyakumari in Tamil Nadu along the coast of Kerala and Karnataka states extending on to South Goa.[3] The age-adjusted incidence rates of thyroid cancer per 100,000 are about 1 for males and 1.8 for females as per the Mumbai Cancer Registry, which covered a population of 9.81 million subjects. The histological types of thyroid cancer were studied in a Hospital Cancer Registry of 1185 "new cases" of thyroid cancer. The commonest cancer type was papillary, followed by follicular cancer. The objective of this study was to find out the frequency of malignancy in clinically benign thyroid swellings.

Patients and Methods

In this retrospective study, the records of admitted patients in our hospital were reviewed from January 2012 to December 2013. Patients with benign looking thyroid swellings, who would undergo surgery, were picked up. Seventy eight such patients were studied, of which, 54 were clinically diagnosed to be multinodular goiter and 24 were clinically solitary nodule in thyroid. Patients underwent fine needle aspiration cytology (FNAC) for preoperative pathological diagnosis. Appropriate surgery was done. Thyroid specimens subjected to histopathological examination.

Results

The profile of patients diagnosed with malignancy is depicted in Table 1; the youngest patient was 24 years and the oldest patient was 62 years. There was clear female predominance. The size of the thyroid swelling ranged from 3.5 to 7 cm and the duration of symptoms ranged from 2 months to 6 years. Of the six patients, who were confirmed to have malignancy on histopathological evaluation, three were confirmed and the other three were found suspicious on FNAC.

S. No.	Age (years)	Gender	Size (cm)	Type of Swelling	Duration (months)	FNAC	Final HPE
1.	24	Female	3.5 X 4	MNG	6	Papillary Ca	Papillary Ca
2.	32	Female	4 X 6	STN	12	Follicular Neoplasia	Follicular Ca
3.	38	Male	4 X 6.5	MNG	8	Indeterminate	Papillary Ca
4.	42	Female	5 X 6	MNG	18	Suspicious of Papillary Ca	Follicular variant of Papillary Ca
5.	54	Female	5 X 7	STN	72	Papillary Tumor with cystic changes	Papillary Ca
6.	62	Female	4.5 X 5.5	MNG	36	Papillary Ca	Papillary Ca

FNAC=Fine Needle Aspiration Cytology, MNG=Multi Nodular Goitre, STN= Solitary Thyroid Nodule, Ca=Carcinoma

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Discussion

The diagnosis of thyroid swelling usually requires Fine Needle Aspiration Cytology (FNAC). Successful diagnosis by the cytologist depends on accurate sampling of the nodule and specimen cellularity.[4] For this reason, performing at least 3 aspirations is recommended to ensure adequacy of the specimen and to minimize false-negative results. Ultrasonographic guidance is usually recommended to increase the accuracy of FNAC.

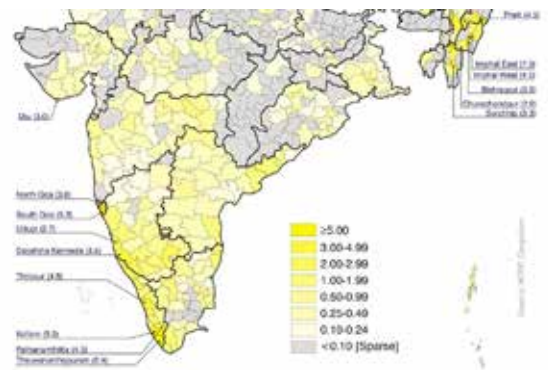
The 4 results from FNAC are benign disease, malignant disease, indeterminate for diagnosis, and nondiagnostic. Results of FNAC determine the next step in managing the thyroid nodule. A definitive diagnosis is obtained in as many as 50% of repeated biopsies. Patients whose findings are nondiagnostic despite repeat biopsy can undergo surgery for lobectomy for tissue diagnosis, or they can be monitored clinically. In these circumstances, radioiodine scans can be useful for determining the functional status of the nodule, as most hyperfunctioning nodules are benign.

Indeterminate biopsy findings are labeled suspicious at some institutions. When cellular material is adequate for evaluation but when malignant and benign disease cannot be differentiated, biopsy results can be labeled suspicious. Patients with a suspicious diagnosis should undergo lobectomy for definitive diagnosis. Malignant diagnoses require surgical intervention. Papillary thyroid carcinoma and MTC are often positively identified on the basis of FNAC results alone. In patients with these carcinomas, definitive surgical planning can be undertaken at the outset. However, it is nearly impossible to distinguish a follicular adenoma from a follicular carcinoma on the basis of FNAC findings. Patients with follicular neoplasm, as determined with FNAC results, should undergo surgery for thyroid lobectomy for tissue diagnosis. These patients require complete thyroidectomy if a malignancy is discovered on review of the pathology. Some controversy exists regarding the extent of thyroidectomy (total thyroidectomy, subtotal thyroidectomy, or lobectomy) for a particular pathologic diagnosis. Each pathologic diagnosis and its corresponding extent of thyroidectomy are discussed below. The complications of FNAC are few and generally minor. The most common complications are minor hematoma, ecchymosis, and local discomfort. Clinically significant hematoma and swelling is exceedingly rare. Inadvertent puncture of the trachea, carotid artery, or jugular vein usually does not cause clinically significant problems and is managed with the application of local pressure.

Huge variations in the age group, size, and duration of presentation were not analyzed statistically because of the smaller number of malignant cases. Nanjappa *et al*.[4] reported 12% malignancy among SNT and 8% among MNG. Both the above groups reported papillary cancer among the common presentation followed by FC as in the present study. Hanumanthappa *et al*.[5] reported malignant incidence of 10%. Matesa *et al*.[6] compared thyroid malignancy in SNT and MNG and found 5% malignancy rate among both SNT and MNG and all the patients detected to have malignancy were females. In our study, one male patient of MNG was found to have papillary cancer. Anwar *et al*.[7] found incidence of malignancy among MNG to be 14.37%. In their review of several large series,[8] Gharib and Goellner (1993) found that 69% of FNAC results were benign, 4% were malignant, 10% were indeterminate, and 17% were non-diagnostic. Their false-positive rate was 2.9%, and their false-negative rate was 5.2%. Sensitivity and specificity were 83% and 92%, respectively. Ur Rehman *et al*.[9] reported 3.87% incidence of malignancy among MNG patients and 11.5% among SNT.

Conclusions

It is not unusual to have a diagnosis of thyroid malignancy in a clinically benign thyroid swelling. Incidence of such malignancies is significant. Hence, the patients being treated conservatively for benign thyroid diseases should be followed up regularly. Patients who opt out of surgery should be put on diligent screening of the swelling and any suspicious change in the swelling has to be tackled aggressively.



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