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Incidences of differentiated thyroid cancer in goitre cases with special reference to clinicopathological study and management

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Abstract

Disease of the thyroid organ particularly Multinodular Goiter because of inadequacy of iodine is pervasive in India. Greatest goiter belt on the planet lies in the sub Himalayan areas and slopes of Maharashtra (Satpuda) and Vindya ranges. Multinodular goiter (MNG) just as solitary thyroid nodule (STN) are the basic types of thyroid swelling. This forthcoming study was completed to discover the Incidence of separated thyroid malignant growth among patients with goiter and to contemplate the statistic and clinical profile of separated thyroid disease. Results signified that dominant part of the malignancies happened in the 41-50 yrs. The extent of thyroid swelling forming into malignancies is higher in females when contrasted with males. The frequency of harm was observed to be higher among male when contrasted with females, being 38.47% and 17.29% individually. Among 120 licenses incorporated into this examination, 15 (12.5%) were found to have raised TSH levels. 7 patients created hypocalcaemia includes in prompt post-operative period. every one of the 29 malignant patients had experienced radioiodine scan postoperatively and an improved result of patients had been seen amid rehashed subsequent meet-ups. Increasingly over it might presume that progresses in cytological identification and imaging modalities, FNAC and USG have turned out to be basic diagnostic tools in diagnosing just as arranging a legitimate therapeutic surgical intervention.

Keywords: Multinodular goitre, solitary thyroid nodule, TSH

Introduction

Diseases of the thyroid gland are common and comprise a spectrum of entities causing systemic disease (Grave's disease) or a localized abnormality in the thyroid gland such as nodular enlargement (goiter) or a tumor mass [1]. After diabetes mellitus, the thyroid gland is the most common organ to cause endocrine disorders 2. Thyroid disorders are the most common endocrine diseases particularly in countries where iodine intake through diet is low. Thyroid carcinoma closely resembles its benign counterpart in physical characteristics, measurable physiological parameters such as serum T3/T4 levels and ultrasonic characteristics [2]. Therefore, the surgical excision of the nodule and its histological examination is the only way to differentiate between the more frequent benign and much less frequent malignant nodules. Since most of the thyroid nodule are benign, symptomless and small in size, they do not require surgical excision.

The optimal outcome of management of thyroid cancer is achieved only via coordinated multimodal therapy, which includes thyroidectomy, radio-iodine (RAI) ablation and thyroid stimulating hormone (TSH) suppression therapy [3]. Of these treatments, surgery is the cornerstone of initial management. Most patients should undergo thyroidectomy with concomitant central neck (level VI) lymph node dissection. On the other hand, thyroidectomy alone may be appropriate for patients with smaller tumors (T1 or T2) with no evidence of suspicious lymphadenopathy. Surgery is also indicated in cases of cervical lymph node metastases and locoregional recurrence [4-7]. The principal adjuvant therapy is radioactive iodine, which should be considered in patients with a high risk of locoregional recurrence or with metastatic disease. Similarly, suppression of endogenous thyroid-stimulating hormone is recommended in patients with an elevated risk of recurrence.

External-beam radiotherapy is indicated in patients with gross extrathyroidal extension or residual disease not amenable to surgery. Finally, molecular therapies, especially those targeting key tyrosine kinases and/or inhibiting angiogenesis, are emerging treatment modalities that could replace the limited efficacy of conventional chemotherapy.

In cancer care, multidisciplinary team approach is always needed. For thyroid cancer, this team consists of surgeon, medical oncologist, nuclear medicine specialist and endocrinologist^[9]. The cancer care teams may also include health care professionals from other varieties, including physician assistants, oncology nurses, social workers, pharmacists, counsellors, dieticians, and others. Treatment options and recommendations depend on several factors, including the type of thyroid cancer, staging, possible side effects, associated co-morbidities, patient's preferences and patient's overall health.

Materials and methods

It was a prospective study of 24 months (July 2016 to June 2018). All patients who presented with thyroid swelling in surgical OPD of IMS and SUM hospital were included for this study i.e around 120 patients attending General Surgery OPD of IMS and SUM hospital. The study was conducted in the department of general surgery at IMS and SUM hospital, in collaboration with the department of Radio diagnosis and department of Pathology. The inclusion criteria was thyroid swelling and patient giving consent. The exclusion was based in Patient not giving consent, hospice patient and patients with neck swellings other than thyroid.

The individual data was collected from patients who presented to OPD or emergency of IMS and SUM hospital with thyroid swellings. Data was collected through a Proforma questionnaire. Categorical variables are expressed as Number of patients and percentage of patients and compared across the groups using Pearson's Chi Square test for Independence of Attributes/ Fisher's Exact Test as appropriate. Continuous variables are expressed as Mean \pm Standard Deviation and compared across the 2 groups using unpaired 't' test. The statistical software has been used for the analysis. An alpha level of 5% has been taken, i.e. if any p value is less than 0.05 it has been considered as significant.

Results

We Included 120 patients in our study from various age ranging from 18 years to 67 years. All the patients were admitted through the Surgical department of IMS and SUM Hospital, a multi-speciality 1000 bedded hospital. The provisional diagnosis was made that of Multinodular Goitre or Solitary Nodular goitre. A proper history taking, clinical evaluation and thorough physical examination was done. The patients were subjected to initial radiological investigation and image guided FNAC before a provisional diagnosis was made. The following statistics were compiled after the patients were operated and a confirmatory histopathological diagnosis was obtained.

Amongst the 120 patients included, 81 (68%) were females and 33 (32%) individuals were males.

Table 1: Gender participated in the study

HPE	Male	Female
Benign	24 (20%)	67 (55.83%)
Malignant	15 (12.5%)	14 (11.67%)
Total	39	81

A total of 29 participants i.e. 24% were eventually found to have thyroid malignancy. The remaining 91 patients i.e. 76% of the study group had benign thyroid disorders.

The incidence of malignancy was found to be higher amongst males as compared to females, being 38.47% and 17.29% respectively. However, 20% of the malignancies occurred in females, i.e. 24 patients out of 120 patients.

Table 2: Malignant cells in male and female

	Male	Female
Malignant	14 (48%)	15 (52%)

The complete age wise distribution of malignant cases is shown in the below table:

Table 3: Number of cases with respect to age

Age (yrs)	PTC	FTC	MTC	Anaplastic
11-20	00	00	01	00
21-30	04	00	00	00
31-40	07	01	00	00
41-50	09	02	00	00
51-60	03	00	00	00
61-70	00	00	00	02
71-80	00	00	00	00
Total	23	03	01	02

Most of the cases of papillary thyroid carcinoma which were diagnosed had a duration of signs and symptoms <1 year owing to the increased awareness among patients and better modality of diagnosis.

Table 4: Number of cases with respect to duration

Duration	PTC	FTC	MTC	Anaplastic
< 1yr	14	01	01	00
1-5yrs	05	01	00	02
5-10yrs	04	01	00	00
> 10yrs	00	00	00	00
Total	23	03	01	02

Table 5: Number of cases with respect to benign and malignant

	Euthyroid	Hypothyroid	Hyperthyroid
Benign	79 (65.8%)	07 (5.8%)	05 (4.16%)
Malignant	21 (17.5%)	08 (6.7%)	00
Total	96 (83.3%)	15 (12.5%)	05 (4.16%)

It was observed during surgical intervention that among the malignant cases where initially only a single lobe involvement was detected (clinically) the other lobe was also involved in form of nodularity or change in lobular texture or consistency; vascularity and capsular adhesions.

Table 6: Types of tumour with respect to side

Side of swelling	Benign	Malignant
Right	28 (23.34%)	09 (7.5%)
Left	20 (16.67%)	10 (8.34%)
B/L	43(35.84%)	10 (8.34%)
Total	91	29

Multinodular goitre was noted to have higher incidence of cases in both benign (46.67%) and malignant groups (18.83%).

Table:7 Presence of neck nodes

Neck nodes	PTC	FTC	MTC	ANAPLASTIC
Y	02	00	00	00
N	21	03	01	02

In this study, out of 3 Follicular Carcinoma detected in HPE results, no case was diagnosed with malignancy preoperatively from FNAC report. FNAC of the 3 patients in our study had shown follicular adenoma, whereas HPE report revealed follicular carcinoma in all. This predicts that FNAC as a pre-operative diagnostic tool is unreliable in follicular variety.

Discussion

The study tends to highlight the fact that a significant proportion of the cases are occurring in the younger population as compared to the elderly. The same has also been established through studies across US and Europe. Multinodular goitre has more chance of malignancy than Solitary thyroid nodule. Incidence of such malignancies are significant. Therefore, high incidence of malignancy in multinodular goitre patient, makes total thyroidectomy as preferable procedure in the treatment of the disease.

This study also revealed that the number of histopathologically proven malignancies, are more in the females as compared to males. In this study amongst total of 29 patients with malignancy, 15 (52%) were females as compared to 14 (48%) males. All the participants of the study who presented with thyroid swellings were classified as per the duration. They were classified into four groups, i.e. <1, 1-5, 5-10, >10 years of duration. Amongst 120 patents included in this study, 15 (12.5%) were found to have elevated TSH levels. Eight out of these 15 patients were eventually diagnosed with thyroid malignancy and remaining 7 had benign lesions. The correlation between incidence of elevated TSH levels and the ultimate confirmation of malignancy was 50% in the entire group of participants with malignant thyroid disease [10]. All 29 cases of malignant goitre were subjected to total thyroidectomy with neck dissection. 2 cases showed extensive involvements of neck nodes of levels II, III, IV, VI. All the nodes in each case were dissected out and tested (+ve) for malignancy although no vascular involvement or encasement or nerve damage were noted in either. There was no intra-operative complication in any of these cases, except in 1 case where thoracic duct was accidentally injured and there was persistent lymphoria for about 8-10 days which subsided spontaneously. 3 patients had developed hoarseness of voice postoperatively, out of which 2 patients recovered and in the other patient it still persists. Among 120 patients, 7 patients developed hypocalcaemia features in immediate post-operative period, but recovered with I.V. calcium and vitamin D3. The routine use of postoperative radioiodine is more and more accepted. In our studies, all 29 malignant patients had undergone radioiodine scan postoperatively and an improved outcome of patients had been observed during repeated follow ups.

Conclusion

Over all in this study we observed that a complete thyroid profile is highly essential as hypothyroid cold nodules are more predictive of malignancy than a hyperthyroid swelling. With advances in cytological detection and imaging modalities, FNAC and USG have become essential diagnostic tools in diagnosing as well as planning a proper

therapeutic surgical intervention. According to the recent ATA guidelines, total thyroidectomy remains the mainstay in the management of Malignant thyroid swellings following proper assessment of extent and nodal involvement. It sometimes comes down to the high expertise, skill and experience of the surgeon in undertaking such surgeries without causing serious intra or post-operative complications. Radioiodine uptake study and Radio iodine ablation are adjunct to surgical therapy. Follow up with serum thyroglobulin assay is an important tool for future assessment for recurrence. With increasing incidence of thyroid malignancies as shown in various studies it is essential to have a multimodality approach for the proper assessment, evaluation and surgical management of malignant thyroid swellings.

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