Original Article

**Incidence of thyroid carcinoma in multinodular goiters**

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**ABSTRACT**

**Objective**

To determine the frequency of thyroid carcinoma in multinodular goiter in patients undergoing thyroidectomy.

**Patients and Methods**

This retrospective study was carried out at two private hospitals including a teaching University Hospital i.e. Isra University Hospital, Hyderabad over a period of three years from April 2005 to March 2008. All patients who underwent different types of thyroid surgeries during this period were included in the study. All data including age, gender, relevant investigations like ultrasonography, fine needle aspiration cytology, type and duration of surgery and final histopathology report were recorded on a standard form.

**Results**

Out of 140 patients operated for different thyroid operations, 15 had thyroid carcinoma. Among them, 105 patients had multinodular goiter and eight (7.6%) had different thyroid cancers among these multinodular goiters. Papillary carcinoma was found to be the most common cancer in patients with multinodular goiter.

**Conclusion**

The risk of malignancy in multinodular goiter should not be underestimated as majority of the patients with thyroid cancers presents with multinodular goiter. (Rawal Med J 2010;35: ).
Key words
Multinodular goiter, thyroidectomy, thyroid cancer.

INTRODUCTION
Cancer is becoming a leading cause of death in many countries of the world. Thyroid carcinoma is a relatively rare tumor, but represents the most frequent form of cancer of the endocrine glands. It may present either as a solitary nodule or as a dominant nodule in a multinodular goiter. In Pakistan, thyroid cancer is responsible for 1.2% cases of all malignant tumors\(^1\) and studies from this region have reported papillary thyroid cancer to constitute 57% to 89% of all thyroid malignancies.\(^2\-3\) The incidence of malignancy in multinodular goitres has been found to vary from 7.5% to 13%.\(^4\-6\) There are no statistically significant differences between incidence of thyroid carcinoma in patients with a solitary nodule and those with multinodular goitre.\(^7\) Exposure to ionizing radiation, changing levels of iodine nutrition and increased pathologic diagnosis of clinically unimportant thyroid neoplasia have all been proposed as explanations for a world wide rise in the incidence of thyroid carcinoma over the past six decades.\(^8\-11\) The objective of this study was to determine the frequency of thyroid carcinoma in multinodular goitre in patients undergoing thyroidectomy.

MATERIALS AND METHODS
This retrospective study was carried out in patients who underwent different thyroid surgeries at Isra University Hospital between April 2005 and March 2008. Patients with solitary nodule, Graves disease and metastatic lymphadenopathy with no palpable goitres were excluded from the study. These patients underwent a thyroid hormonal assay and only in cases with a suspected dominant nodule during the clinical examination or
suspected nodule on ultrasound, a fine needle aspiration cytology (FNAC) was conducted. Scintigraphy was not performed. All patients underwent different thyroid operations ranging from hemithyroidectomy to total thyroidectomy and resected specimens were sent for histology. Age, gender, ultrasonography, FNAC, type and duration of Surgery and final histopathology report recorded.

RESULTS

Out of 140 patients who underwent different thyroid operations, multinodular goiter was found in 105 (75%) patients. The total numbers of malignant lesion were 15/140 (9 papillary cancer, 3 follicular cancers, 2 mixed papillary and follicular and 1 Anaplastic cancer). In the 105 multinodular goiters, eight malignant (7.6%) lesions were found (Table 1).

Table 1. Histopathological type of thyroid cancers in multinodular goiter.

<table>
<thead>
<tr>
<th>S NO.</th>
<th>Histopathological diagnosis</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Papillary carcinoma</td>
<td>6</td>
<td>75%</td>
</tr>
<tr>
<td>2</td>
<td>Follicular carcinoma</td>
<td>1</td>
<td>12.5%</td>
</tr>
<tr>
<td>3</td>
<td>Anaplastic carcinoma</td>
<td>1</td>
<td>12.5%</td>
</tr>
</tbody>
</table>

Among these eight patients, seven were females and one was male. The mean age was 52 years with range from 40-68 years. In all patients total thyroidectomy was performed.

DISCUSSION

Globally, incidence of thyroid cancer has increased by up to five-fold during the past 60 years. The annual incidence of thyroid cancer varies considerably in different registries and is increasing in some European countries, USA and Canada. There are several
possible reasons for the increase in thyroid cancer and include ionizing radiation, sex hormones, iodine deficiency and other factors but the findings are inconsistent.\textsuperscript{14-17}

Multinodular goiter is the commonest indication for thyroidectomy in endemic iodine-deficient regions. Pre-operative evaluation for thyroid cancer by means of fine needle aspiration biopsy is difficult in multinodular goiter owing to the presence of multiple nodules and thyroid cancer is frequently an unexpected post operative finding.\textsuperscript{4}

Traditionally, patients with multinodular goiter have been considered at lower risk of malignancy than those with solitary nodule. However, the literature review has shown that the incidence of malignant tumors in patients with solitary nodule does not differ much from those with multinodular goitre.\textsuperscript{4,18}

Majority of the patients with of thyroid cancer in Pakistan present as multinodular goiter rather than solitary thyroid nodules. A higher percentage of these patients have distant metastasis at the time of presentation, thereby reducing the chances of favorable outcome.\textsuperscript{19} Variation in the frequencies of thyroid carcinoma has been observed in various parts of the world. The overall incidence of malignancy in this study was 11\%. This is consistent with figures from various international studies\textsuperscript{20,21} but in contrast to Mofti et al observing higher incidence of thyroid malignancies (29\%) in a study of 158 patients.\textsuperscript{22} In this study, papillary carcinoma was the most common thyroid cancer observed in about 60\% (9/15) of the lesions. This is consistent with observations made in most of the national and international studies.\textsuperscript{23-26}

The two recent studies from Nigeria have reported follicular carcinoma as the commonest thyroid cancer.\textsuperscript{27-28} The histopathologic distribution of differentiated thyroid cancer is comparable to international literature,\textsuperscript{23-26} and has been reported in an earlier Pakistani
study.\textsuperscript{1} It has been suggested that rising incidence of thyroid cancer have also been associated with increased diagnostic activity because of more sensitive diagnostic tests.\textsuperscript{34}

**CONCLUSION**

The risk of malignancy in multinodular goitre should not be underestimated as majority of the patients with thyroid cancers present with multinodular goitre. Dominant nodule in multinodular goitre should be considered as significant as solitary nodule in an otherwise normal gland.

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