

# Incidence of Malignancy in Multinodular Goiter in Rizgary Teaching Hospital

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## Abstract

**Background and objectives:** Multinodular goiters have recently been indicated to have an incidence of cancer that approaches that of solitary thyroid nodule. The objective of this study was to determine the incidence and the types of various thyroid malignancies in multinodular goiters in Rizgary Teaching Hospital. **Methods:** A retrospective study of 328 consecutive patients with multinodular goiter underwent thyroidectomy at a Rizgary Teaching Hospital in Erbil from May 2013 to Nov 2017. All saved histopathological reports were collected for the patients based on age, sex of the patients with the histopathological results from the histopathological reports. The patients with histopathological report of thyroiditis & solitary thyroid nodule were excluded from the study. **Results:** A final pathologic diagnosis of malignancy was found in 12 of 328 (3.7%) of multinodular goiters patients. Larger number of the malignant tumors was found in female patients 11 (91.7%). Most common type of malignant tumors was papillary carcinoma 11 (91.7%) of which 10 cases were found in females (90.9%). **Conclusions:** We conclude that the incidence of malignancy in multinodular goiters is 3.7% in our patients. The Incidence of malignant tumors in multinodular goiter in female patients is significantly higher than in male patients. The commonest type of malignant tumors in multinodular goiters was papillary carcinoma.

**Keywords:** Multinodular goiter; Malignant; Papillary carcinoma.

## Introduction

Thyroid nodules are usually multiple, forming multi nodular goiter (MNG), occasionally one macroscopic nodule is found. Nodules may be cellular and cystic degeneration. In endemic goiter, nodules appear early and later (20-30 years) in sporadic goiter. MNG is more common in female than male<sup>1</sup>. MNG is one of the most endocrine disorders; it's only present when the goiter becomes enlarged and symptomatic<sup>2</sup>. Thyroid malignancy is one of the most common endocrine malignancy accounting approximately 1% of all human cancers and causing 0.5% of all cancer death<sup>3</sup>. The symptoms of MNG include; shortness of breath, dysphagia due to pressure on trachea and esophagus respectively, and may lead to obstruction of venous blood flow in the head and neck<sup>2, 4</sup>. Hanumanthappa et, al. has observed the papillary carcinoma (60%) as a most common type of malignancy among 100 cases<sup>5</sup>. The incidence of malignancy vary from country to country and with the changing methods of evaluation<sup>6</sup>. The gender

distribution in adult patients with the thyroid malignancy differs from that in children. In adult, women outnumber men 4:1, whereas in children below age of 15 years, the ratio of girls to boys with thyroid cancer is 1.5:1, and in the patient aged 15-20 years, the female to male ratio is 3:17. In adult; the Bethesda criteria for reporting of thyroid nodule cytology are widely used These criteria comprise six classes, where each class has an implied cancer risk and also an associated recommendation for management according to American Thyroid Association (ATA)<sup>8</sup>. Microcarcinomas has been shown in several studies<sup>9,10</sup> with a torpid evolution and local recurrence which may cause death, and also that aggressive histological variants may manifest themselves in MNG, such as anaplastic carcinoma<sup>11, 12</sup> The indicators of high risk of MNG-associated carcinoma are not well established<sup>13</sup>. The objective of this study was to determine the incidence and the types of various thyroid malignancies in MNG in Rizgary Teaching Hospital.

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### Patients and methods

This retrospective study included 328 cases who had MNG and underwent thyroidectomy in Rizgary Teaching Hospital, Erbil, Kurdistan region-Iraq from May 2013 to Nov 2017. Information collected about age, sex of the patients with the histopathological results from the histopathological reports. The patients with histopathological report of thyroiditis & solitary thyroid nodule were excluded from the study. Patient's reports of age, females, and males were separated from each other and recorded. Histopathology reports with benign and malignant MNG have also been separated in addition to the type of thyroid carcinoma. The data was analyzed statistically by Microsoft Excel. Analysis of data was conducted to calculate the percentage of female and male patients with Benign and malignant reports. Ethical approval was not applicable because of prospective study based on histopathological examination report in Rizgary Teaching hospital.

### Results

The total number of the patients was 328 patients. Female (279 cases) and Male (49 cases) (Female to Male Ratio F:M= 1:0.18), aged 11 to 80 years (mean: 45). The larger number of the patient with MNG was seen in age group (41-50) that was 107 (32.6%) cases. Table 1 shows age groups of the patients.

Malignancy was found in 12 (3.7%) cases, Figure 1). One of them was male and the other (11) patients were female, Table 2.

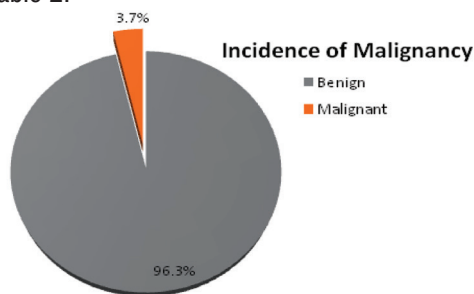


Figure (1):Incidence of malignancy in multinodular goiter

Table (1)Age and sex distribution of the patients.

Age Groups (years)	Male	Female	Total
11-20	0	8	8
21-30	6	56	62
31-40	11	73	84
41-50	19	88	107
51-60	8	33	41
61-70	4	16	20
71-80	1	5	6
Total	49	279	328
Percentage	15%	85%	100%

Table 2 shows the histopathological examination to classify the benign and malignant multinodular goiter between male and female.

Table (2):Histopathological findings.

HPE Findings	No. of Cases	
	Male	Female
Benign multinodular goiter	48	268
Malignant thyroid lesion	1	11
Total	49	279
Percentage	14.9%	85.1%

Table 3 shows types of malignant multinodular goiter. The most common malignant type was papillary thyroid carcinoma which was seen in 11 cases (%91.7).

Table (3):Distribution of thyroid malignancies.

HPE Findings	No. of Cases	
	Male	Female
Papillary thyroid carcinoma	1	10
Follicular carcinoma	0	0
Medullary carcinoma	0	1
Anaplastic Carcinoma	0	0
Lymphoma	0	0
Total	1	11
Percentage	8.3%	91.7%

### Discussion

Multinodular goiter is defined as the palpation of multiple discrete nodules in the enlarged thyroid gland<sup>8</sup>. The etiology and pathogenesis of the MNG is not very clear. Slight impairment of hormone synthesis, Iodine deficiency, increased iodide clearance from the kidney and the presence of thyroid stimulating immunoglobulins have been suggested as the various causes<sup>14</sup>. Traditionally, patients with multinodular goiter have been considered at lower risk of malignancy than those with solitary thyroid 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 goiter<sup>15</sup>. Several authors have discussed the risk of malignant MNG<sup>16-18</sup>.

In this study; 328 patients with MNG were collected in the histopathological department. The youngest patient in this study was 27 years old female with papillary carcinoma of the thyroid and oldest age was 65 years old female with papillary carcinoma, showing that the extreme ages has more chance to be malignant. Al-Saleh et al, reported malignant changes were seen in 10% of the MNG after pathological examination and 75% of the carcinomas seen in MNG were of the papillary type<sup>13, 18, 19</sup>. Multinodular

goiter were reported a highly percentage for female (85%) compare with male (15%) and common age group was 41-50 (50%)<sup>5</sup>.

However, one of the patient was 41 years old female with medullary carcinoma of the thyroid. Several studies illustrated medullary carcinoma for patients with ages range of 40-50 in worldwide in different positions<sup>14, 20, 21</sup>.

Our Collected data showed that benign multinodular goiter was present in 316 (96.3%) cases, and malignant thyroid lesion in <sup>12</sup> (3.7%) cases. Yamashita et al<sup>13</sup>, reported the incidence of malignancy is 30.7% in 835 cases. Several independent studies have shown the risk of malignancy in MNG to be 10-31 %<sup>22</sup>.

Generally, among malignancies, papillary carcinoma was found as the commonest malignancy (91.7 %) with medullary carcinoma (8.3%). Previous studies reported the majority of MNG malignancy; approximately 60 % are papillary carcinoma.<sup>20, 23-25</sup> the papillary carcinoma as a commonest. The female to male ratio in this study is noted to be 1:0.18 which is comparable to international data of 4:126. In most reported cases, papillary carcinoma was the most popular differentiated, more than half were papillary type<sup>13, 19</sup>.

## Conclusions

We concluded that the incidence of malignancy in MNG is 3.7% in our patients. The incidence of malignant tumors in MNG in female patients is higher than in male patients. The commonest type of malignant tumors in MNG was papillary carcinoma.

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