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# "IncidenceOfMalignancy inSolitary Thyroid Nodule andMulti-Nodular Goitre"

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**ABSTRACT**

**Introduction:**Thyromegaly can be the clinical manifestation of a wide spectrum of thyroid pathology, ranging from functional enlargements to immunologically mediated disorders to neoplastic lesions. Thyroid malignancy has varied prevalence worldwide and it is traditionally believed that solitary thyroid nodules are more likely to be neoplastic than multiple nodules.

**Objectives:** To find out relative incidence of malignancy in solitary thyroid nodule and multi-nodular goiter.

**Materials and Methods:**This cross-sectional comparative study was done in the Dept. of ENT, Abdul MalekUkil Medical College Hospital, Noakhali, Bangladesh from January 2019 to June 2020. 55 admitted cases of solitary thyroid nodules and multi nodular goiter matching the inclusion and exclusion criteria were included in this study. The data was collected on a predesigned excel sheet and statistical analysis was done using SPSS version 19. Percentages and means were calculated for quantitative variables. All the patients treated surgically, and histopathological examination carried out. Results were analyzed by proper test of significance.

**Results:**In this study, 55 patients with thyroid swelling (solitary & multi-nodular goitre) were studied. Mean age of the patients of nodular goitre was 36.5±12.33 years and the highest frequency (41.8%) was in 31-40 years.After operation, histopatholoical report analysis was done and found that nodular colloidal goitre was 52%, follicular adenoma was 24% and auto-immune thyroiditis was 6%. Among the malignancies papillary carcinoma was 66.66%, follicular carcinoma was 22.22% and anaplastic carcinoma was 11.11%. The relative frequency of malignancy in solitary thyroid nodule was 28% and in multi-nodular goitre was 8%. As there is a chance of malignancy is high so it should get serious medical attention.

**Conclusion:** Nodular goitre is very common in our country. A significant proportion of solitary thyroid nodule & multi-nodular goitre may be malignant. Females are most commonly affected. But carcinoma in nodular goitre predominantly affects male patients. FNAC and histopathological evaluation are mandatory for proper treatment of every patient. So, it should get appropriate medical attention. Our people should be offered the early treatment of thyroid nodule is better and late treatment of even asymptomatic thyroid nodule may be fatal.

**Keywords:** Thyroid nodule, Solitary thyroid nodule, Multi-nodular goitre, Malignancy, Histopathbology.

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## I. INTRODUCTION

Thyroid nodules can be the clinical manifestation of a wide spectrum of thyroid pathology, ranging from functional enlargements to immunologically mediated disorders to neoplastic lesions. There may be solitary within a normal thyroid gland or dominant within a multi-nodular goiter. The incidence of thyroid malignancy varies from 0.9% to 13% worldwide [1]. It is traditionally believed that solitary thyroid nodules are more likely to be neoplastic than multiple nodules [2-4]. Nodules are usually multiple, forming a multinodulargoitre. Occationally, only one macroscopic nodule is found, but microscopic changes will be present throughout the gland, this is one form of clinically solitary nodule Nodules appear early in endemic goitre and later (between 20 and 30 years) in sporadic goiter [5].Palpable thyroid nodules occur in 4-7% of the population

but nodules found incidentally on ultrasonography suggest a prevalence of 19-67%. The majority of the thyroid nodules are asymptomatic. Because about 5% of all palpable nodules are found to be malignant, the main objective of evaluating thyroid nodules is to exclude malignancy [6]. Iodine deficiency is the main cause of goitre development in Bangladesh. In clinical practice, we consider nodular goitre either with solitary nodule or multiple nodules in different stages of development [7]. Nodules in the thyroid gland are important for their malignant potential. It is the highest among the cancer affecting endocrine glands. Cancer of the thyroid gland occurs at earlier ages in most parts of the world. It is commonest between 20-40 years of age [8]. Early diagnosis helps in early treatment, results in good outcome. But late diagnosis indicates advanced stage of disease with unsatisfactory treatment and poor prognosis. Frequency of malignancy in thyroid nodules varies among different studies in our country & abroad. However, in recent past, various studies have reported a rising incidence of malignancy even in multinodular goiter [9-11]. With this background, this study was undertaken to determine and compare the prevalence and the types of various thyroid malignancies clinically presenting as multinodular goiter and solitary thyroid nodule by histopathological examination of thyroidectomy specimens.

## II. MATERIALS AND METHODS

This cross-sectional comparative study was done in the Dept. of ENT, Abdul MalekUkil Medical College Hospital, Noakhali, Bangladesh from January 2019 to June-2020. 55 admitted cases of solitary thyroid nodules and multi nodular goiter matching the inclusion and exclusion criteria were included in this study. The data was collected on a predesigned excel sheet and statistical analysis was done using SPSS version 19. Percentages and means were calculated for quantitative variables. All the patients treated surgically, and histopathological examination carried out. Results were analyzed by proper test of significance.

## III. RESULTS

**Table-1: Age distribution in solitary and multinodulargoitre (n=55)**

| Age(years) | Solitarythyroidnodule | Multi-nodulargoitre | Total % |
|---|---|---|---|
| 11-20 | 6 | 2 | 8 (14.5%) |
| 21-30 | 4 | 2 | 6 (10.9%) |
| 31-40 | 8 | 15 | 23 (41.8%) |
| 41-50 | 8 | 5 | 13 (23.6%) |
| 51-60 | 2 | 1 | 3 (5.4%) |
| 61-70 | 0 | 2 | 2 (3.6%) |
| Total | 28 | 27 | 55 (100%) |

In this study, 55 patients with thyroid swelling (solitary & multi-nodular goitre) were studied. Mean age of the patients of nodular goitre was 36.5±12.33 years and the highest frequency (41.8%) was in 31-40 years.

**Table-2: Sex distribution in solitary and multi-nodular goiter (n=55)**

| Sex | Solitarythyroidnodule | Multi-nodulargoitre | Total % |
|---|---|---|---|
| Male | 5 | 2 | 7 (12.7%) |
| Female | 23 | 25 | 48 (87.2%) |
| Total | 28 | 27 | 55 (100%) |

In this series, out of 55 patients, male were 7 (12.7%) and female were 48 (87.2%). Male female ratio was (1:7.31).

**Table-3: Distribution of habitat of patients (n=55)**

| Habitat | Solitarythyroidnodule | Multi-nodulargoitre | Total % |
|---|---|---|---|
| Urban | 7 | 6 | 13 (23.6%) |
| Rural | 21 | 21 | 42 (76.3%) |
| Total | 28 | 27 | 55 (100%) |

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**Table-4: Histopathological diagnosis (n=55)**

| Diagnosis | Solitarythyroidnodule | Multi-nodulargoitre | Total % |
|---|---|---|---|
| Multi-nodular colloid goitre | 0 | 17 | 17 (30.9%) |
| Single nodular colloid goitre | 12 | 0 | 12 (21.8%) |
| Follicular Adenoma | 8 | 4 | 12 (23.6%) |
| Papillary carcinoma | 7 | 0 | 6 (10.9%) |
| Follicular carcinoma | 1 | 1 | 2 (3.6%) |
| Medullary carcinoma | 0 | 1 | 1 (1.8%) |
| Anaplastic carcinoma | 0 | 1 | 1 (1.8%) |
| Auto immune thyroiditis | 0 | 3 | 3 (5.4%) |
| Total | 28 | 27 | 55 (100%) |

**Table-5: Frequency of malignancy in solitary thyroid nodule & multi-nodular goiter (n=55)**

| Types | Malignant | Non malignant | Total (%) | Relative frequency (%) |
|---|---|---|---|---|
| Solitary thyroid nodule | 8 | 20 | 28 (50%) | 40% |
| Multi-nodular goire | 2 | 25 | 27 (50%) | 8% |

$z = 2$ $p<0.05$

In study solitary thyroid nodule, malignancy was 40% and in multi-nodular goitre was 8%.

**Table-6: Distribution of thyroid malignancy (n =10)**

| Name of malignancy | Number of cases | | Percentage |
|---|---|---|---|
| | Solitary thyroid | Multi-nodular goitre | |
| Papillaruy carcinoma | 7 | 0 | 70.00% |
| Sollicular carcinoma | 1 | 1 | 20.00% |
| Anaplastic carcinoma | 0 | 1 | 10.00% |

The most of the patients in this series came from rural areas (76.3%) having a socioeconomic status < 10, 0007 per month (54%). All the patients were in euthyroid state clinically & also biochemically. Clinically solitary nodular goitre was found 56% and rest was multi-nadulargoitre. After operation histopahtological examination (gold standard investigation) revealed nodular colloidal goitre 52.7%, follicular adenoma 23.6%, papillary carcinoma 10.9%, follicular carcinoma 3.6%, anaplastic carcinoma 1.8% and auto immune thyroiditis 5.4%. Among malignancies papillary carcinoma was 66.66%, follicular carcinoma 22.22%, anaplastic carcinoma each was 11.11%. Relative frequency of malignancy in solitary thyroid nodule and in multi-nodular goitre was 40% and 8% respectively.

## IV. DISCUSSION

In this study, 55 patients with thyroid swelling (solitary & multi-nodular goitre) were studied. Mean age of the patients of nodular goitre was 36.5±12.33 years and the highest frequency (41.8%) was in 31-40 years. Which correlated with study of Rahman.Nath, Sattar et al [8, 12]. The youngest patient in this study was a girl of 15 years with a papillary carcinoma and the oldest patients was a lady of 70 years with medullary carcinoma.

Most of the patients were in 31 - 40 years range. Mean age of the patients were 41.8 year. A similar study was done in home and abroad shows similar pattern of age distribution [13, 14]. The youngest patient and oldest patients of this study both had been suffering from malignant thyroid disease, the extreme of ages show less incidence of thyroid disease but has a more chance to be malignant.In this series, out of 55 patients, male were 7 (12.7%) and female were 48 (87.2%). Male female ratio was (1:7.31). This ratio was shown 1:5 by Rahman et al [8], l: 4 by Welkaret al [6], 1:2.5 to 4.1 Zuberiet al [15]. This female preponderance is reflected in all studies including the present. The cause of high female to male ratio in this series can be explained by most of the patients are from non-endemic area. In this study the commonest occupational group was house wife (58%). It was due to the fact that thyroid disorders are female prone owing to the presence of eostrogen receptors in the thyroid tissue [5]. In this series, after operation, histopathological report analysis was done and found that nodular colloid goitre was 52.7% (30.9%+21.8%), follicular adenoma was 23.6%, papillary carcinoma was 10.9%, follicular carcinoma was 3.6% & auto immune thyroiditis was 6%. Among the malignancies papillary carcinoma was 66.66%, follicular carcinoma was 22.22% and anaplastic carcinoma each was 11.11%. It was almost similer to study of zygmunt and Meckenzic et al [16]. In this series, relative frequency of malignancy in solitary thyroid nodule was 28% and in multi-nodular goitre was 8% which co relate with study of Alam MM,Rahman and Satter et al [7, 8, 12]. In study of Rahman in solitary thyroid nodule, malignancy was 21.44% and in multi-nodular goitre was 8.1%. Another study shown & chance of malignancy 9.89% [7]. One of the study in abroad found 5% of thyroid nodule was malignan [7]. It is observed that relative frequency of malignancy was higher than that of others. It might be happened due to small sample size, sampling bias, by chance, advanced stage of disease our patients took surgical treatment in advanced stage of disease. In this study frequency of malignancy differs significantly with age & sex, older patients and male sex are more prone to develop malignancy ($p<0.05$). In this study observed that follicular carcinoma occurred in the age group 31-40 years but follicular carcinoma usually occurs in the age group 50-59 years. So it is a matter of thinking that follicular carcinoma is occurring in early age group. But it may be a good sign that our patients are becoming aware regarding thyroid nodule and are attending in the hospital for early surgical treatment. But with this study we can plan our future strategy for better management of goitre patient in Bangladesh.

## V. CONCLUSION

Nodular goitre is very common in our country. A significant proportion of solitary thyroid nodule & multi-nodular goitre may be malignant. Females are most commonly affected. But carcinoma in nodular goitre predominantly affects male patients. FNAC and histopathological evaluation are mandatory for proper treatment of every patient. So, it should get appropriate medical attention. Our people should be offered the early treatment of thyroid nodule is better and late treatment of even asymptomatic thyroid nodule may be fatal.

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