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Clinico-Pathological Evaluation of Carcinoma Thyroid

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Abstract

Protein-energy malnutrition (PEM) is a prevalent condition in peritoneal dialysis (PD) patients, contributing to increased morbidity and mortality. Feeding difficulties can exacerbate PEM, making adequate nutrition challenging. Percutaneous endoscopic gastrostomy (PEG) tubes offer a potential solution for patients unable to maintain oral intake. This case series presents adult prevalent six PD patients with PEM who underwent PEG tube placement by an interventional radiologist. Clinical outcomes, including complications, survival rates, and nutritional status, were evaluated. PEG tube insertion was successfully performed in all six patients without major complications. Nutritional status improved, and patients tolerated feeding well. Despite successful PEG placement, mortality rates remained high due to underlying comorbidities and complications unrelated to the PEG tube.

Percutaneous endoscopic gastrostomy tubes can be a safe and effective option for PD patients with PEM and feeding difficulties. Further research is needed to establish definitive guidelines and evaluate long-term outcomes in this population.

Keywords: Thyroid Carcinoma; Clinico-Pathological Evaluation; FNAC (Fine-Needle Aspiration Cytology); Total Thyroidectomy.

Introduction

Cancer is becoming a leading cause of death in many countries around the world. Thyroid carcinoma is a relatively rare tumor but represents the most frequent form of carcinoma of the endocrine glands [1-5]. It represents 1% of human neoplasm and its annual incidence is estimated worldwide from 0.5 to 10: 100,000 subjects in the world population [6].

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. Exposure to ionizing radiation, changing levels of iodine in diet and better diagnostic facilities have all been proposed as explanations for a worldwide rise in the incidence of thyroid carcinoma over the past six decades [7-10]. The annual incidence of thyroid carcinoma varies considerably in different registries and is increasing in some European countries, USA and Canada [11].

Thyroid carcinomas originate from the two cell types found within the thyroid gland. The follicular cells, which are derived from the endoderm, are responsible for the development of papillary, follicular, and likely anaplastic carcinomas. The neuroendocrine-derived calcitonin-producing C cell gives rise to MTCs [9]. Thyroid lymphomas develop from lymphoid tissue within

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the thyroid, while sarcomas likely originate from the gland's connective tissue [4].

Thyroid carcinomas primarily arise from epithelial follicular cells, with differentiated types—papillary (PTC) and follicular (FTC) carcinomas—accounting for about 95%. In contrast, 1–2% are undifferentiated anaplastic carcinomas (ATC), which are invariably fatal [12]. The remaining 3–4% are medullary thyroid carcinomas (MTC) derived from the parafollicular C cells [13].

Fine-needle aspiration cytology (FNAC) is the most important diagnostic tool in evaluating thyroid nodules [7]. The technique is affordable, simple to perform, and carries minimal risk of complications. Complications from FNAC are rare and generally mild, with the most common being minor hematoma, bruising, and localized discomfort [3]. Clinically significant hematoma and swelling are extremely uncommon. Accidental puncture of the trachea, carotid artery, or jugular vein typically does not lead to serious issues and can be managed by applying local pressure [6].

This study is to determine the clinical presentation of thyroid malignancy in respect of age and sex in our country and to assess the result of FNAC and routine histology. This study was carried out on 50 patients. So, it is probable that the result obtained from this study may provide incidence of malignancy in goiter and it will give an idea.

Methodology & Materials

This prospective observational study was conducted in the Department of Surgery at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, from April 2011 to April 2012. Using consecutive sampling, 50 patients with fine-needle aspiration cytology (FNAC)-proven thyroid malignancy were enrolled, excluding those with recurrent thyroid malignancy or who did not undergo surgery after initial evaluation.

Data were collected from patients admitted to BSMMU using a pre-structured form, capturing demographic details, clinical findings, and preoperative investigations, along with perioperative and histopathological data. Clinical history focused on epidemiological factors and risk factors related to thyroid malignancy, followed by thorough examinations to document clinical presentations. FNAC-confirmed diagnoses of thyroid malignancy were subsequently validated through histopathology, with tumor grading assessed accordingly.

Data were analyzed using SPSS for Windows, version 16. Results were presented in tables, graphs, and charts for easy interpretation. To ensure ethical standards, ethical clearance was obtained from Bangladesh College of Physicians and Surgeons (BCPS) Ethical Review Committee, and permissions were secured from all relevant departments. Patients were fully informed about the study's nature, purpose, potential benefits, and any risks. Confidentiality was maintained, and participants were assured of their right to withdraw at any time. Written informed consent was obtained without coercion, following verbal explanations of the study design and participants' rights.

Results

Table 1: Age distribution of the patients (n = 50).

Age (Years)	Number of Patients	Percentage (%)
1-10	0	0
11-20	2	4
21-30	14	28
31-40	16	32
41-50	10	20
51-60	6	12
61-70	2	4

In this study of 50 patients, age ranged from 15 years to 70 years. The number of patient of different age groups is shown in Table 1. Most of the patients belonged to the age group of 21-40 years (60%). In this study, mean age was 36.54 years with majority of the patients were in 3rd, 4th & 5th decade.

Table 2: Sex distribution of the patients (n=50)

Sex	Number of patients	Percentage (%)	Male: Female
Male	20	40	01:01.5
Female	30	60	

Sex distribution of the 50 patients in this study is shown in Table 2. Out of 50 cases 30 patients (60%) were female and 20 patients (40%) were male. Female to male ratio was 1.5:1.

Table 3: Age-sex relation

Age groups (years)	Male (n=20)		Female (n=30)		P value
	Number	Percentage (%)	Number	Percentage (%)	
Nov-20	0	0	2	6.67	
21-30	4	20	10	33.33	
31-40	10	50	6	20	0.188
41-50	2	10	8	26.67	
51-60	3	15	3	10	
61-70	1	5	1	3.33	

Table 3 shows below 21 years of age, there were only 2 female patients but no male patient. Above 21 years of age, there were 28 female patients and 20 male patients. The difference was statistically not significant between male and female ($P<0.05$).

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Table 4: Clinical presentation

Symptoms	Number of patients	Percentage (%)
Neck swelling (painless or painful)	50	100
Pressure symptoms (Dysphasia or/& dyspnea)	6	12
Voice changes	4	8
Thyrotoxicosis	3	6
Cough	3	6
Cervical lymphadenopathy	2	4
Bone pain	2	4

Clinical presentation of the 50 patients in this study is shown in Table 4. All patients presented with neck swelling (painless & painful). Only 6 patients had pressure symptoms.

Table 5: Histological pattern of malignancy (n=50)

Histological pattern	Number of patients	Percentage (%)
Papillary carcinoma	33	66
Follicular carcinoma	10	20
Medullary carcinoma	6	12
Anaplastic carcinoma	1	2
Lymphoma	0	0

Histological pattern of malignancy in goiter occurring in this study is shown in Table 5. Out of 50 thyroid malignancy, 33 patients (66%) had papillary carcinoma, 10 patients (20%) had follicular carcinoma, 6 patients (12%) had medullary carcinoma and 1 patient (2%) had anaplastic carcinoma.

Table 6: Results of FNAC and routine paraffin section in patients with thyroid carcinoma

Thyroid carcinoma	FNAC		Routine paraffin		P value
	No.	%	No.	%	
Yes	50	100	50	100	0.315
No	0	0	0	0	

Table 6 shows all FNAC proved thyroid carcinoma were proved malignant by routine paraffin section.

Discussion

Thyroid carcinoma is the most frequent endocrine malignancy which represents 1% of all malignancy. Most of the study regarding incidence of thyroid malignancy was done worldwide, but rarely in Bangladesh.

This is a prospective study carried out in Department of Surgery, Bangabandhu Sheikh Mujib Medical University. Total 50 patients with thyroid malignancy have been studied prospectively during a period of 12 months to determine the clinic-pathological characters of thyroid carcinoma.

In this study most of the patients (60%) were in between 21-40 years of age group. The mean age of the patients were 36.54 yrs. Pelizzo et al. [14] in their study of 41 patients of thyroid malignancy age ranged from minimum 17 years to maximum 78 years, mean age was 46 years. In another Waseem et al. [15] study reported thyroid malignancy can occur in all age group.

In this study, out of 50 patients 30 patients (60%) were female and 20 patients (40%) were male with female to male ratio 1.5:1. There was a female preponderance in this study that was firmly consistent with the study of Pelizzo [14]. In all age group the number of patients of thyroid malignancy was higher in female.

All the patients in this study presented with neck swelling (painless and painful) with features of thyroid malignancy of varying durations. Out of them, in addition to neck swelling, 6(12%) patients had pressure symptoms (dyspnea), 4(8%) patients had voice change, 3(6%) patients had Thyrotoxicosis, 3(6%) patients had cough, 2(4%) patients had cervical lymphadenopathy, 2(4%) patients had bone pain.

The diagnosis of malignancy in goitre is made by different methods such as history, clinical examinations, thyroid scanning, ultrasonogram of thyroid gland, fine needle aspiration cytology. Sometimes it is difficult to distinguish a nodule harboring malignancy clinically or radiologically requiring FNAC from it. This may makes the early detection of carcinoma in goitre a difficult task as sometimes FNAC may shows false negative results. However, the sensitivity of FNA was 79%, the false-negative rate 21%, and the inadequate rate is 12% [16].

Total thyroidectomy done in 50 patients due to malignancy, who were prescribed hormone therapy for rest of life. In all patients (100%), malignant cell was seen in FNAC.

Regarding the types of malignancy in this study, papillary carcinoma was the most common variety (66%) followed by follicular carcinoma (20%), medullary carcinoma (12%), and anaplastic carcinoma (2%). Veroux et al. [17] reported thyroid malignancy involves 1.5% of all malignant tumours. It causes yearly 0.5% carcinoma mortality. A study in USA shows among the thyroid malignancy, 81% were papillary carcinoma. In this study, papillary carcinoma is 66% and follicular carcinoma is 20% whereas they found 10%. [18] Medullary carcinoma is 12% and anaplastic carcinoma is 2% in this study.

The results of this study reflect trends observed globally in thyroid carcinoma, including the predominance of papillary carcinoma and a higher incidence in females. However, the mean age of 36.5 years in this sample suggests that thyroid carcinoma may present at a relatively younger age in this population compared to Western data. The high sensitivity of FNAC in this study reaffirms its utility as a primary diagnostic tool, though the presence of false-negative results highlights

the need for confirmatory histopathology. [19] Given that all patients underwent total thyroidectomy, surgical intervention appears to remain the standard approach for managing malignancy. Lifelong hormone therapy is essential for postoperative management, underscoring the importance of patient compliance and follow-up to monitor for recurrence and optimize outcomes. [20]

Limitations of the study

Sample size was small due to time constrain. This study was undertaken in a tertiary level hospital. So it does not reflex actual scenario of the country.

Recommendations

It needs to study of long duration with large number of patients. Clinical data and further studies were needed to produce evidence-based recommendations.

Conclusion

This study shows most common pattern of thyroid carcinoma were papillary carcinoma. Second most common were follicular carcinoma then medullary carcinoma and anaplastic carcinoma. Thyroid carcinoma is more common predominant in female. Although most common clinical presentation were Neck swelling (painless or painful) and the pressure symptom (Dysphasia or dyspnea). The association of thyroid swelling and thyroid carcinoma should always be carefully considered. The risk of thyroid malignancy should not be underestimated as majority of the patients with thyroid carcinoma present with asymptomatic goitre in middle age.

Declarations

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Ethical approval

The study was approved by the Institutional Ethics Committee.

Conflict of interest

There are no conflicts of interest.

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