

**Original Article****Radioiodine Treatment of Differentiated
Thyroid Cancer at CNMU, Rajshahi**M M Ahasan¹, F U Ahmed², S M Bodrudozza³, S M K Hasan⁴, M N Khanam⁵**Abstract**

A retrospective study has been conducted on 19 patients who attended at CNMU, Rajshahi with differentiated thyroid cancer, treated with radioiodine for ablation of residual tissue after thyroidectomy. The patients included in this study were between 06 to 70 years of age, the mean age being about 36 years. The main objective of the study was to evaluate the response of the radioiodine therapy in patient with differentiated thyroid cancer after surgery. The incidence of papillary, follicular and mixed variety was found in approximately 69%, 26% and 5% cases respectively. Result showed that the incidence of thyroid cancer were found more, approximately 58% in the age group 21-40 years. Results also showed that papillary carcinoma involved approximately 23% in male and 77% in female. It was also found that approximately 89% patients were treated successfully by single dose of radioiodine.

TAJ 2003; 16(2): 54-57

Introduction

Nuclear medicine techniques play an important role in the treatment of thyroid cancer. Differentiated thyroid cancer (DTC) constitutes the papillary and follicular variants, which are curable cancers. It arises from the follicular epithelium cells so they retain their ability to concentrate iodine to a variable degree. Well differentiated papillary and follicular carcinomas are slow-growing and carry a relatively good prognosis, while poorly differentiated follicular and anaplastic carcinomas are aggressive tumors with a poor prognosis.¹ Papillary carcinoma occurs more frequently in women than in men and

is prevalent in younger patients.² The ablation of residual thyroid tissue can be achieved in 3 ways viz. with a low dosage of ¹³¹I, a high dosage of ¹³¹I and calculated dosage of ¹³¹I. High dosage of ¹³¹I for tissue ablation is more commonly used. The purpose of the study was to evaluate the response of the radioiodine treatment in-patient with differentiated thyroid cancer after total or near total thyroidectomy.

Materials and Method

Nineteen cases of thyroid cancer patients were obtained therapy from CNMU, Rajshahi during the period of June '91 to July '02. Of which, 5 were male and 14 were female. Their ages at the time of

¹ Scientific Officer, Center for Nuclear Medicine & Ultrasound, Rajshahi.² Director & CMO, Center for Nuclear Medicine & Ultrasound, Rajshahi.³ Assistant Professor, Department of Pathology, Rajshahi Medical College, Rajshahi.⁴ Medical Officer, Mysisdi Modern Hospital, Noakhali.⁵ Medical Officer, Center for Nuclear Medicine & Ultrasound, Bogra.

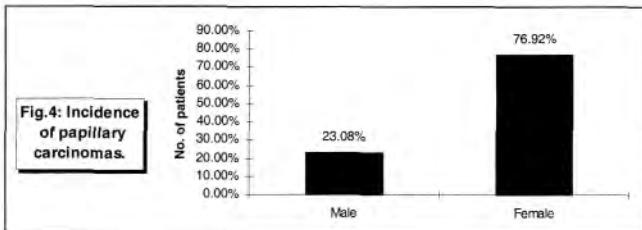
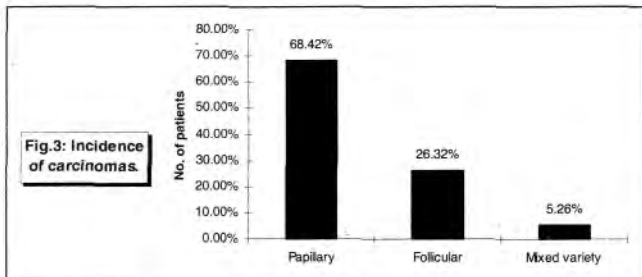
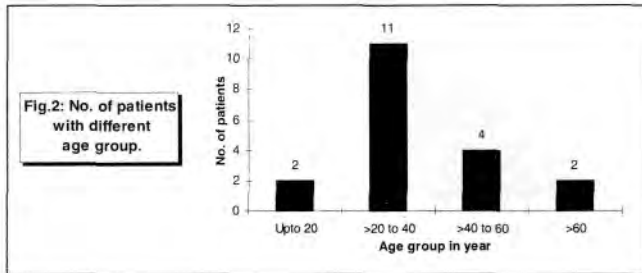
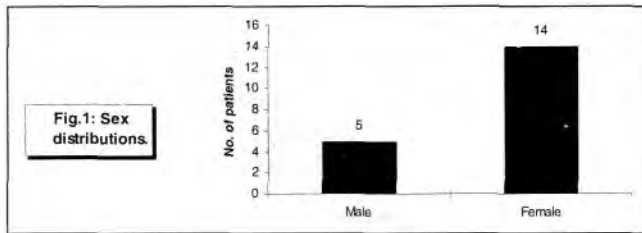
radioiodine therapy ranged from 06-70 years. After thyroidectomy, all patients under study with radioiodine were assessed the amount of residual or remnant thyroid tissue. If the radioiodine uptake was more than 15% and the scan showed a large amount of thyroid tissue left behind, then second surgery was advised for debulking of residual thyroid tissue as much as possible. Patient getting radioiodine treatment was kept in an isolated cabin with attached bathroom in a hospital for at least 7-10 days. Verbal and vivid written instructions regarding radiation safety were given to the patient, associate physician and nurses. High dosage of ablation method was used and generally, 75-150 mCi of radioiodine was administered as an in patient therapy. When the radioactivity of the patient equals to the activity of 29 mCi radioiodine at a distance of 5 meters or after significant reduction of urine count within the acceptable limit ($<1\text{kcpm}/10\text{ml}$), patient was discharged from the hospital, with the T4 suppression therapy (usually 200 mgm daily). Whole body scan was performed on the day of discharge. During discharge, patients were advised to maintain the radiation protection precautions for the next week at home.

Results and Discussion

Total 19 patients were studied. Of which 5(26.32%) were male and 14(73.68%) were female age range 06-70 years [Fig.1]. Incidence of thyroid cancer was found more (57.89%) in 21-40 years age group [Fig.2]. Papillary and follicular carcinoma were found in 13(68.42%) and 5(26.32%) cases respectively [Fig.3]. Mixed variety was seen in a single case (5.26%) [Fig.3]. Incidence of papillary carcinoma was seen more in female (76.92%) than male (23.08%) [Fig.4]. The radioiodine therapy dose to ablate functional thyroid bed remnant has been debated. A fixed dose of 75-150 mCi had been advocated by most authors,^{3,8} by which ablation of thyroid bed had been achieved in more than 85% of patients with a single dose.⁶ In our study, we had given generally 75-150 mCi of radioiodine to the most of the patients. Higher dose (>150 mCi) was administered to thyroid carcinoma patients with metastasis especially in lymph nodes. An exceptional case of 06 years old minor child

suffering from papillary carcinoma had given 20 mCi of ^{131}I . We selected the low dosage regime of ^{131}I therapy for this rare case. In our observation, 89.47% cases were treated successfully by single dose of radioiodine. Roquibul Hoque et al reported that second and third doses were required for complete ablation in 29.9% and 6.52% respectively.⁷ In our series, second dose was required for complete ablation in 10.53% cases. Nobody was required third dose yet. Begum et al reported that 77% patients suffered from papillary variety, 13% from follicular and 9% from mixed variety.⁸ But in present series, approximate results of these were 69%, 26% and 5% respectively. Higher incidences were also found in 21-40 years age group, i.e. 49% and 57.89% respectively.

Follicular carcinoma of thyroid with metastasis in the bone was treated in a single case. After the first dose administration, this patient came for follow-up visits for four times at our centre. During this period, patient was referred to bone scan with $^{99\text{m}}\text{Tc}$ -HDP. The positive result was found. For confirmation, we also performed whole body scan with ^{131}I . Same result was also found. Finally, second dose was administered to the patient at nearly 06 months interval for complete ablation with the view to get hopeful result. This patient did not visit yet at the centre for further follow-up after the second dose given. The most frequent used initial dose of ^{131}I was 75-150 mCi, depending on the amount of thyroid remnant. Most of the patients suffering from such malignancies were in the middle age group and had a long life expectancy. All the thyroid cancer patients were being under follow up and maintaining their life without any illness. None showed any complication during or after higher dose of radioiodine. The most common practice in this centre was to administer ^{131}I in capsule form for doses required to treat thyroid carcinoma. After ^{131}I therapy, patients were encouraged to drink plenty of fluids and to empty the bladder frequently. Patients were also encouraged to chew gum or candy during the first 24 to 48 hours in order to stimulate salivary excretion to avoid inflammation due to radioiodine in salivary gland. A whole body scan was done before discharge to assess additional tumour sites after therapy.



Conclusion

All the thyroid cancer (papillary, follicular and mixed variety) patients after radioiodine treatment were maintaining their life without any illness and most of them had a long life expectancy. About 89% patients were treated successfully by single dose of radioiodine. None showed any complication during or after higher dose of radioiodine. Our study also revealed that female patients were more frequently affected by thyroid carcinoma and papillary carcinoma was more prevalent in female than in male.

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All Correspondence to:
M Monjur Ahasan
Scientific Officer
Centre for Nuclear Medicine & Ultrasound
Rajshahi