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Adequate duration and modality of follow-up for patients treated with 131 I for differentiated thyroid cancer

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DECLARATION

I declare that this dissertation is my work. It is being submitted for the degree of Master of Sciences in Medicine in the field of Nuclear Medicine, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other university.

_____ _____

Kayode Adedapo Date

This research was approved by the committee for Research on Human Subjects, University of the Witwatersrand (protocol M080621) and was carried out at the Nuclear Medicine department of the Johannesburg Hospital in 2008

Dedication

To God almighty, the giver of life and opportunities be all the glory, honour and majesty

Abstract

A 20 years retrospective study of all patients treated at the Johannesburg Hospital with radioactive iodine post thyroidectomy for differentiated thyroid carcinoma from 1986 to 2006 was carried out with the aim of determining the adequate duration and modality of follow-up.

A total of 106 patients (91 female and 15 male) out of 287 patients qualified for inclusion into the study. The mean age of the patients was 45 years (range: 16-81 years). There was a ratio of 6 females to 1 male. The mean ages of incidence in papillary, follicular, Hurthle and mixed papillary and follicular cancers were 40, 49, 53 and 49 years respectively. Only the ages of the patients with papillary cancer differed significantly from the ages of patients with other cancers ($p=0.011$)**.** Of the 4 histologic types of cancer recorded, papillary thyroid cancer was the most common 58 (55%) followed by follicular 30 (28%), Hurthle cell 10(9%) and the mixed papillary-follicular cancers 8 (8%).

More than half of the patients 58 (53.7%) had total thyroidectomy, while 36(34%), and 12(11.3%) patients had near total thyroidectomy and lobectomy respectively. Majority of the patients with papillary carcinoma (35 out of 58), and Hurthle cell carcinoma (6 out of 10) had total thyroidectomy. All patients had complete 24 months follow-up after a negative whole body iodine scan. A proportion of the patients were followed up to 36 and 60 months after a negative whole body iodine scan.

The mean iodine dose administered by the first 6 months of follow-up was 3.3GBq (88mCi). Following the first iodine treatment, 58 of 101 patients were Iodine scan negative. The remaining 43 patients progressed to a negative scan by the fourth treatment.

The histology and the type of surgery did not affect the outcome of iodine therapy in the patients studied.

The proportion of patients with negative whole body iodine scan after radioactive iodine ablation increased progressively from 58 out of 101 (57.4%) at the first 6 months to 99 of 101(98%) by 24 months of follow up.

Twenty four months was found to be the minimum adequate follow-up period, while the modality of follow-up was whole body iodine scan and thyroglobulin determination in concordant patients on and off T_4 suppression.

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LIST OF ABBREVIATIONS

DNM- Department of Nuclear medicine
DTC – Differentiated Thyroid Cancer
PTC – Papillary Thyroid Cancer
FTC – Follicular Thyroid Cancer
HTC – Hurthle cell Thyroid Cancer
MTC – Medullary Thyroid cancer
ATC – Anaplastic Thyroid Cancer
Tg -Thyroglobulin
MEN - Multiple Endocrine Neoplasia
TNM – Tumour Nodes, Metastasis
RRA – Radioactive Remnant Ablation
RAI - Radioactive Iodine
TSH - Thyroid Stimulating Hormone
WBS – Whole Body Scan
I-131 – Iodine -131
RhTSH- Recombinant Human Thyroid Stimulating Hormone
FT3 - Free Triiodothyronine
FT4 – Free Thyroxine
LT4 – Levothyroxine
FNAC - Fine Needle Aspiration Cytology
CT – Computerized Tomography
US – Ultrasound
TENIS – Thyroglobulin Elevated Negative Iodine Scan
EBR- External Beam Radiotherapy