ESTIMATION OF ABSORBED DOSE TO THYROID CARCINOMA PATIENTS WHO ARE TREATED WITH RADIOACTIVE NUCLIDE IODINE – ^{131}I

A PROJECT REPORT PRESENTED BY

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ABSTRACT

Estimation of dose to thyroid cancer patients is important for investigation of effectiveness of the treatment by comparing dose recommended for a thyroid cancer. If the recommended dose is not deliverd to the thyroid gland or thyroid remnant, the treatment may not be effective and this may result unnecessary dose to the other organs of the body. Absorption of ^{131}I could be differed from patient to patient, due to many factors. Such as volume of the remnant, preparation before treatment, stage of the cancer ect.

Aim of this study was to estimate the effective half life of ^{131}I and absorbed dose in thyroid remnant and the whole body of the patient, who are treated with Radio active iodine-131 after the thyroid gland surgery.

This research work was done in the Cancer hospital, Maharagama, Sri Lanka, from 31st of May 2004 to 20th of October 2004. During this period 28 thyroid cancer patients who were treated with ^{131}I after total thyroidectomy were used for this study. The activity of ^{131}I 100 mCi capsules were orally taken by the patients as a single dose. First four days dose rate measurements were taken by using the well calibrated survey meter (GM tubes). 8 cm lead collimator was introduced to take measurement of the level of thyroid. Lead collimator was used to cut down the scatter radiation from the other organs of the body.

The dose rate measurements of the thyroid remnant and whole body were used to calculate the effective clearance constants which are required to estimate the total dose to thyroid remnant and the whole body. It was found in this study that absorbed dose deliverd to the thyroid remnant in 25 patients out of 28 were below the required dose.

Average radiation dose received by the staff member is also included in the study to recommend suitable protective measurements for optimization of radiation protection of workers.