

Title: Outcome of using equation for prediction of 24-hour thyroid uptake, first and second therapeutic doses calculation in Graves' disease patients

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Background: The Radioactive Iodine Thyroid Uptake (RAIU) is used in calculation the I-131 treatment dose for Graves' disease. The duration time for the standard RAIU is 24-hours, then the patient is required to visit hospital in 2 consecutive days. Equation is the alternative method which applies 3-hours RAIU to predict 24-hours RAIU. Thus, we can reduce duration of the study time.

Objective: The study aims to evaluate the correlation between the I-131 treatment doses that calculated by Predictive 24-hours RAIU (P24U) from equation and treatment dose that calculated by actual 24-hour RAIU. The study was performed in both the first and the second Therapeutic Doses (TD) in Graves' disease.

Methods: A retrospective study was performed in Graves' disease patients who underwent thyroid uptake and radioactive iodine treatment. Two groups were identified as the first and the second therapeutic doses. For each group, predictive value of 24-hours RAIU was calculated the equation. The equation is $24\text{-hour RAIU} = 32.5 + (0.702 \times 3\text{-hour RAIU})$. The TD and PTD were calculated and compared.

Results: The patients with the first therapeutic doses are 92 and the second therapeutic doses are 36. The first therapeutic dose, the correlation between 24U and P24U is 0.902 and the second therapeutic doses, the correlation between 24U and P24U is 0.806. The correlations between TD and PTD in the first and second therapeutic doses are 0.954 and 0.953 respectively. The mean difference between TD and PTD of the first and second therapeutic doses are less than 1 millicuries (-0.3 to -0.5), there is no statistically significant difference in both groups.

Conclusion: The equation is an alternative method to calculate I-131 dose for Graves' disease patients in the first and second therapeutic doses.

Biography

Piyarat Parklug is nuclear medicine radiologist at Faculty of Medicine, Vajira hospital, Navamindradhiraj University for over 20 years. She is the director and instructor of nuclear medicine department of the Vajira hospital for over 10 years. Her research interests are focused on radioactive iodine treatment of hyperthyroid and Bone mineral density. She is an advisor of the nuclear medicine research in Navamindradhiraj University. She is the coordinator of drone in emergency medicine project.