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### PREDICTIVE FACTORS FOR FAILURE OF FIRST RADIOACTIVE IODINE THERAPY IN PATIENTS WITH HYPERTHYROIDISM

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#### INTRODUCTION

Radioactive iodine (RAI) therapy is used commonly and successfully as a definitive treatment for hyperthyroidism. Predictive factors for RAI outcomes have been previously shown to be heterogenous. This study aimed to examine the prevalence of treatment failure at one year post-RAI as well as identify the predictors of RAI failure in our local urban population.

#### METHODOLOGY

We performed a retrospective study involving patients who had undergone first RAI therapy from January 2015 to December 2020 in the University Malaya Medical Centre. Pre- and post-RAI data were collected from electronic medical records, including demographics, goiter size, thyroid function tests at diagnosis/pre-RAI, RAI dose, anti-thyroid drug duration and dose, and time taken to achieve euthyroidism or hypothyroidism. Data were analyzed using SPSS® version 23 and expressed as mean/median or frequencies, and multivariate analysis using logistic regression.

#### RESULTS

A total of 292 patients were included in the study. Majority of the patients were female (69.9%) with Graves' disease (79.2%). The median RAI dose given was 16 mCi (range, 10-18). Within one year of RAI, 85.3% of patients achieved treatment success; of these, 93.2% attained success within six months. Treatment failure, defined as persistent hyperthyroidism one year post-RAI, was seen in 14.7%. We found that a high serum free T4 at diagnosis was a predictive factor for RAI failure (OR 1.01; 95% CI, 1.01-1.02;  $p=0.002$ ). There were no significant associations between age, gender, body mass index, goiter size and RAI dosage with failure of RAI in our study population.

#### CONCLUSION

High serum free T4 at diagnosis was associated with poorer RAI outcomes. Higher doses of RAI or thyroidectomy may be considered in these patients.