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A Randomized Controlled Clinical Trial on the Efficacy of Lithium as Adjuvant Therapy to Radioiodine in the Treatment of Hyperthyroidism

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Background: Radioactive Iodine (RAI) is one of the main treatment modalities of hyperthyroidism. However, its success rate differs between centres. One of the determining factors of RAI success is its intrathyroidal persistence. Lithium has been said to improve efficacy of RAI but it remains debatable till today.

Objective: To assess the efficacy and safety of lithium carbonate as an adjuvant therapy to RAI in the treatment of hyperthyroidism.

Methods: This is a randomized, interventional, 2 arm parallel-group, open label single centre study carried out in Endocrinology Unit, Department of Medicine and Radionuclear Department of Penang General Hospital. The study period was from 30th August 2015 to 30th August 2016. The interventional medication is lithium carbonate 300mg twice daily for fourteen days starting on the day of RAI therapy was given to 37 subjects and no added medication to the standard RAI therapy in 38 subjects in the control group. Subjects were followed up for 24 weeks with 6 study visits to assess cure with adjustments to medications and determining cure during the study visits.

Results: There were no significant difference in the clinical, demographic and biochemical profile of the two groups. Dose of RAI was a standard 15mCi in both groups. The cure rate in RAI plus lithium group was 62.2% and the cure rate in RAI alone group was 63.2% (p=0.932). Mean time to cure in RAI plus Lithium versus RAI alone group were similar 13.6$\pm$6.1 vs 13.2$\pm$6.5 (p=0.841). There appears to be a trend towards better cure rate in Toxic Multinodular goitre in the RAI plus lithium group (71.3%) versus RAI alone group (53.3%) P=0.316. Lithium however was able to prevent thyroid hormone surge 2 weeks post RAI.

Conclusion: Lithium carbonate does not improve the efficacy of RAI significantly in hyperthyroid patients in our study. Its role in improving efficacy of RAI in toxic multinodular goitre needs further investigations.