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### Original Article

#### Effects of Early Liothyronine Consumption After Radioiodine Therapy on Accumulated Dose and Exposure Rate in Patients With Thyroid Carcinoma

Daryoush Shahbazi-gahrouei<sup>1</sup>; Parvin Bonyadi<sup>1</sup>; Masoud Moslehi<sup>2</sup>; Zahra Shahi<sup>2</sup>

<sup>1</sup>Department of Medical Physics and Medical Engineering, <sup>2</sup>Nuclear Medicine Department, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

#### Corresponding Author:

Daryoush Shahbazi-Gahrouei

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#### Abstract:

**Introduction:** Patients administered with a therapeutic dose of <sup>131</sup>I for thyroid cancer treatment are potential sources of unacceptably high radiation exposure to other individuals, particularly the patient's immediate family members. The aim of this study is to investigate effects of early liothyronine consumption after radio-iodine therapy on accumulated dose and exposure rate in patients with thyroid carcinoma. This study was also undertaken to provide specific guidelines as to when <sup>131</sup>I treated thyroid cancer patients may be safe to resume close contact with their family members.

**Methods:** Forty patients treated postoperatively by <sup>131</sup>I for the first time were studied. These patients were divided into two groups of twenty (group 1 with liothyronine and group 2 without liothyronine). The administered dose was 100 mCi for all patients. Thermoluminescent dosimeter chips were placed on the neck of the patients to measure thyroid dose. Liothyronine was administered 24 h after iodine therapy. Accumulated dose was measured at 12, 24, 36 and 48 h after iodine therapy. Exposure rate was also measured at 0.5, 1 and 1.5 meters from the patient's body axis with Geiger-Muller detectors at discharge time and one week later.

**Results:** The findings indicated that liothyronine reduces accumulated dose of thyroid and stimulates rapid washout from the body after 48 h. The patient exposure rate was significantly higher in group 2 during or one week following discharge from the hospital.

**Conclusion:** This study shows that liothyronine consumption decreases the exposure rate of patients at discharge time to the levels lower than that recommended by regulatory organizations.

#### Keywords:

Radio-iodine therapy , Liothyronine , Thermoluminescent dosimeter , Accumulated dose , Exposure rate

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