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abstract

Radiation-induced Hypothyroidism in Locally Advanced Breast Cancer

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Introduction: Breast cancer is the most common cancer in the world. Adjuvant radiation, particularly supraclavicular radiation given in locally advanced breast cancer, is known to cause hypothyroidism. Hypofractionated radiation could be more thyroid-suppressing than conventional radiation, and this prospective cohort study was done to compare the incidences of hypothyroidism in both cohorts.

Methodology: Locally advanced breast cancer patients who were treated with either conventional or hypofractionated radiation with a supraclavicular portal were evaluated in this prospective cohort study. Baseline thyroid function tests were performed before radiation and every six months after radiation. Patients with normal baseline thyroid function were included in the study. Elevated thyroid-stimulating hormone and decreased free thyroxin confirms diagnosis of hypothyroidism. Conventional radiation was delivered in 50 Gy/25 fractions, and 40 Gy/15 fractions was delivered in hypofractionated radiation. Radiation was planned with the 3DCRT technique.

Results: 50 locally advanced breast cancer patients received adjuvant radiation between 2018 and 2023. 25 patients received conventional radiation, and the same number of patients received hypofractionated radiation. At median follow-up of 24 months, 6 and 7 patients developed hypothyroidism in the conventional and hypo-fractionated radiation group respectively.

Conclusion: The incidence of radiation induced hypothyroidism was high in locally advanced breast cancer patients receiving supraclavicular radiation, particularly hypofractionated radiation. Baseline thyroid function test should be done before radiation, and 6 months after radiation, to detect hypothyroidism at the earliest.

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