

Evaluation of the incidences rate of subclinical hypothyroidism and hypoparathyroidism in breast cancer patients undergoing radiotherapy

Abstract

Background: Radiotherapy is frequently used in patients with breast cancer and its effect on tumor control is undeniable. But despite its positive effects, it may cause some iatrogenic side effects, including thyroid and parathyroid disorders.

Aim: To evaluate the rate of subclinical hypothyroidism and hypoparathyroidism in breast cancer patients undergoing radiotherapy

Methods and materials: This study was a cross-sectional one. Initially, 70 women with breast cancer who registered in the cancer registration system and referred to the oncology-radiotherapy clinic of Imam Khomeini Hospital in Ardabil during 2019 and received radiotherapy after surgery were included in this study. One patient was excluded from the study due to brain metastasis. Serum levels of TSH and Free T4 were evaluated for hypothyroidism and serum levels of Ca, P and PTH were evaluated for hypoparathyroidism before radiotherapy and 6 months and 12 months after radiotherapy in all patients.

Results: The mean age of patients was 54.3 ± 6.4 years. There were no cases of hypothyroidism before radiotherapy, while there were 9 cases of hypothyroidism in 6 months after radiotherapy (1 clinical and 8 subclinical, 13% in total) and 6 cases of hypothyroidism in 12 months after radiotherapy (1 clinical and 5 subclinical, 8.7% in total). The hypothyroidism rate was statistically significant in both 6 months ($P = 0.003$) and 12 months ($P = 0.028$). There were no cases of hypoparathyroidism before and after radiotherapy. Serum levels of parathyroid hormone at 6 months ($P = 0.017$) and 12 months ($P = 0.040$) after radiotherapy had a significant increase compared to before radiotherapy, while changes in serum calcium and phosphorus levels after radiotherapy were not significant.

Conclusion: The results of the present study showed that hypothyroidism after radiotherapy is a relatively common finding in women with breast cancer; Also, serum levels of parathyroid hormone were significantly increased after radiotherapy. Therefore, it is recommended that all patients undergoing radiotherapy for breast cancer be screened regularly for thyroid and parathyroid function.

Keywords: Hypoparathyroidism, Subclinical hypothyroidism, Breast cancer, Radiotherapy.