Cardiac toxicity of hypofractionated radiotherapy in left breast cancer

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Abstract:

Background: Adjuvant postoperative breast radiotherapy improve local control and overall survival. Based on radiobiological and clinical data analysis, hypofractionated radiotherapy had comparable survival to conventional regimen radiotherapy. One of the major limitations of breast radiotherapy is cardiac toxicity that more significant in patients has left breast cancer.

Methods: This retrospective study recruited 200 patients with left nonmetastatic breast cancer. All patients underwent surgery followed by adjuvant 3D hypofractionated radiotherapy with different hypofractionation schedules with no cardiac or other comorbidity. Patients ≥18 years, were eligible. Patients with tumor size more than 1 cm or with lymph node involvement received adjuvant chemotherapy and those with positive estrogen and/ or progesterone receptors received hormonal therapy with either estrogen receptor modulator like tamoxifen or aromatase enzyme inhibitors like letrozole according to patient menopausal state and those with Her2neu Over-expression received trastuzumab. The cardiac toxicity was evaluated by measuring the left ventricular ejection fraction (LVEF) prior to treatment and repeated 3 years after radiation therapy or when indicated. Results: Median age was 55 years, 25% less than 50 years, T2 detected in 47.5% of patients, N1 in 40%, while positive hormonal receptors reported in 75%. Her2neu Over-expression reported in 20% and these patients received trastuzumab. At 94 months median follows up period, ten-year LRR-FS was 93.9%, DM-FS was 80.8%, and OAS was 88.9%. Grade I cardiac toxicity reported in 12 patients (6%), the univariate analysis of factors associated with significantly increased cardiac toxicity is only concurrent trastuzumab and none other factors were significant. Conclusion: The results of our study suggest that hypofractionation radiotherapy not associated with increased risk of cardiac toxicity in left-sided breast cancer patients and there is no difference between different hypofractionation radiotherapy protocol as regard cardiac toxicity with the comparable result as regard LRR, DM and survival. Trastuzumab increased cardiac toxicities during hypofractionated radiotherapy and this should study in large randomized trials with long-term follow-up to confirm these findings. [Tamer M. Samy, Samia Abdelkareem, Marwa Abdelgawad, Shimaa Ahmed. Cardiac toxicity of hypofractionated radiotherapy in left breast cancer. Cancer Biology 2018;8(2):65-72]. ISSN: 2150-1041 (print); ISSN: 2150-105X (online).
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