Radiation treatment in early stage triple-negative breast cancer in New Zealand: A national database study

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Abstract

Introduction: We aimed to investigate the impact of radiation treatment in early-stage triple negative breast cancer (TNBC).

Methods: Patients with early stage (T1-3, N0-2, M0) TNBC were identified using the New Zealand breast cancer register. The outcomes of local recurrence (LRFR), local recurrence free survival (LRFS), loco-regional recurrence free rate (LRRFR), loco-regional recurrence free survival (LRRFS), breast cancer specific survival (BCSS), metastasis free (MFS) and overall survival (OS) were determined. Predefined univariate and multivariate cox regression analyses were used to explore associations between known prognostic and treatment factors.

Results: 1209 patients were identified with a median follow-up of 3.88 years. The majority were post- menopausal. The mean tumour size was 26mm, the majority had grade III disease and a third were node positive. 625 patients had mastectomy and 584 had breast conservation surgery (BCS). 92% of BCS and 38% of mastectomy patients received radiation. 67% received adjuvant chemotherapy. The 5 year OS was 77.6% (95% CI 74.6-80.2), 5 year BSS was 82.1% (95%CI 79.1-84.7), 5 year LRRFS was 73.9% (95% CI 73.87-73.93), 5 year LRFS was 75.4 (75.37-75.43) and the 5 year LRFR was 92.4% (95% CI 90.6-94.2). The significant prognostic/predictive factors for OS were adjuvant radiation treatment, chemotherapy, T stage, lymph node involvement and lympho-vascular space invasion. Results were similar for BSS, DMFS, LRFS and LRRFS except that LVSI was not significantly associated with BCSS, LRFS or LRRFS. When analysed by surgical type, in the WLE group, radiation was found to be significantly associated with improvement in all outcomes. In mastectomy group, radiation was not found to be significant for BCSS, LRFS, LRRFS or OS.

Conclusion: Radiation treatment is significantly associated with improved outcomes in early stage TNBC. This argues against the hypothesis that TNBC has inherent radiation resistance.