

## **Postmastectomy Radiation Therapy in Younger Women Aged Less Than 50 with T3N0 Invasive Breast Cancer\_ Outcomes by Receptor Status\_Race\_Age**

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**Purpose/Objective(s):** Patients with T3N0 disease have historically been selectively treated with post mastectomy radiation therapy (PMRT). However, the role of PMRT for patients with T3N0 disease is still controversial. In an analysis of various NSABP studies, the authors challenge the routine use of PMRT in patients with pathologic T3N0 disease. A SEER database paper suggested that radiation might be beneficial in the age group over 50. However, association/relevance of some of the factors such as estrogen receptor (ER) and progesterone receptor (PR) status, race and the role of PMRT are not fully elucidated in patients < age 50.

**Materials/Methods:** The cause-specific survival (CSS) and overall survival (OS) of women with T3N0M0 breast cancer in the Surveillance, Epidemiology, and End Results (SEER) Database after mastectomy and axillary staging from 1998 to 2007 were analyzed. We performed univariate analysis to compare CSS between PMRT and no PMRT groups stratified by prognostic factors such as age, ethnicity, tumor size, tumor grade, ER status, and PR status. In addition, multivariate Cox regression analysis for CSS was performed.

**Results:** One thousand one hundred four total patients meet the study requirements, 47% of patients received PMRT. No difference in CSS or OS was detected for women treated with or without post-operative radiation. Five-year CSS was 89.4% and 91.5% for no PMRT and PMRT groups, respectively ( $p = 0.44$  by log-rank test); 5-year OS was 87.6% and 88.3%, for no PMRT and PMRT groups, respectively ( $p = 0.34$  by log-rank test). PMRT seems to adversely affect CSS after 90 months. However, after stratifying by age group, this adverse radiation treatment effect was likely to be restricted to patients aged 40 years or older. PMRT seems to be beneficial in patients younger than age 40 (hazard ratio [HR] = 0.65; 95% confidence interval [CI] = 0.31 – 1.35;  $p = 0.25$ ; nonsignificant trend indicated for favorable radiation effect). The adverse effect on CSS after 90 months was likely limited to patients aged 40-50 (HR = 1.58; 95% CI = 0.94 – 2.67;  $p = 0.09$ ; nonsignificant trend indicated for unfavorable radiation effect). Univariate analysis of the correlation between PMRT and CSS suggested that patients who are ER positive and/or PR positive do not benefit from PMRT (compared to no PMRT; HR = 2.87; 95% CI = 1.02 – 8.09;  $p = 0.05$ ).

**Conclusions:** This retrospective SEER data base analysis suggested that no statistical difference in CSS at 5 years was detected in patients with or without PMRT. PMRT may be beneficial in patients younger than age 40 as suggested from a non-significant trend. Patients who are ER and/or PR positive did not benefit from PMRT. Future studies on the effect of PMRT on patients under age 40 and ER/PR/HER2 triple negative status might offer more insight in individualizing radiation treatment.