

Postmastectomy Radiation Therapy and Overall Survival of Breast Cancer Patients with T1-2 and 1-3 Positive Axillary Lymph Nodes: A SEER Data Analysis

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Background

The role of PMRT in patients with T1-2N1 breast cancer is controversial. Retrospective reviews reported locoregional recurrence rates of 6-13%, arguing for a very small or no survival benefit of PMRT. However, subset analysis of the Danish PMRT trials showed a 9% OS benefit in patients with 1-3 positive nodes. The meta-analysis by Oxford EBCTCG reported a 4.4% OS benefit of PMRT at 15 years. Should all node-positive patients receive PMRT? In this study, we sought to examine the relationship of PMRT and OS and to identify potential subsets of T1-2N1 patients who are least likely to derive benefit from PMRT.

Methods

We analyzed the SEER registry of breast cancer patients diagnosed between 1998 and 2006. We identified 20,882 women with T1-2N1M0 breast cancer who were treated with mastectomy. Among those, 4,498 patients received PMRT. Median follow up was 43 months (range 4-107 months). Pearson chi-square test was used to compare characteristics of the PMRT and no PMRT groups. OS rates were calculated using the Kaplan Meier method. Multivariate analysis was performed using the Cox regression model, and included tumor size, grade, nodal ratio, and PMRT use as variables.

Results

PMRT use was associated with previously reported adverse clinicopathologic factors, including large tumor size, high grade, multiple positive nodes, and nodal ratio ≥ 0.2 (all $P < 0.001$).

Kaplan Meier analysis showed OS was better in the PMRT group, compared to no PMRT (8-yr OS $77\% \pm 1.1\%$ vs. $74\% \pm 0.7\%$, log-rank $P = 0.002$).

Predictors of OS in Multivariate Analysis

Variables	HR	95% CI	P
Tumor ≤ 2 vs > 2 cm	1.82	1.68-1.98	<0.0001
Low Grade vs High Grade	1.82	1.69-1.97	<0.0001
Nodal Ratio ≤ 0.2 vs > 0.2	1.49	1.37-1.62	<0.0001
No PMRT vs PMRT	0.81	0.74-0.89	<0.0001

No difference in OS in pts with low risk features

Clinical Features	OS PMRT vs no PMRT P
Tumor ≤ 2 cm	0.1
Grade I	0.1
Nodal Ratio ≤ 0.15	0.5
Grade I & T1 & nodal ratio ≤ 0.2	0.4

Conclusions

Our study suggests that PMRT is associated with improvement in OS in patients with T1-2N1 breast cancer. However, PMRT does not seem to benefit those with very low risk features, including grade I tumors, T1 tumors, or nodal ratio < 0.15 , or grade I and T1 and nodal ratio ≤ 0.2 . Our findings may be helpful in developing nomograms for clinical decision making. The ongoing randomized phase III SUPREMO trial will help better define the indications and treatment volume of PMRT.



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