HONORABLE MENTION

Efficacy of HER2-Targeted Antibody Therapy in HER2-Positive Breast Cancer Brain Metastases: a National Analysis

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ABSTRACT (250/250 words)

Background: Breast cancer brain metastases (BCBM) commonly develop in human epidermal growth factor 2-positive (HER2+) breast cancer, but BCBM patients are underrepresented in clinical trials, leading to a lack of knowledge on the efficacy of HER2-targeted therapy in this population.

Methods: We analyzed clinical characteristics and outcomes of HER2+BCBM patients from the National Cancer Database 2010–2016, comprising 70% of newly-diagnosed cancers in the U.S, to assess overall survival (OS) associated with HER2-targeted monoclonal antibody therapy (HER2-mab; i.e. trastuzumab, pertuzumab, and trastuzumab emtansine; encoded as of 2013). Survival was estimated with Kaplan-Meier techniques and compared with landmark analysis and Cox regression.

Results: 1,059 HER2+BCBM patients were identified, 67.7% were estrogen receptor negative (ER-, median OS 12.2 months) and 32.3% were ER+ (median OS 22.1 months). Median follow-up was 12.0 months, and 73.8% of patients died. Following FDA approvals of pertuzumab (2012) and ado-trastuzumab emtansine (2013), HER2-mab usage for HER2+BCBM patients rose from 53.6% in 2013 to 71.7% in 2016. 420 BCBM patients had complete data for landmark analyses: HER2-mab (n=294) was associated with significantly improved OS in both ER- (median 22.2 months, 95CI=18.2–25.4; vs. 9.5 mos, 95CI=6.3–10.7; p=0.0001) and ER+ (median 25.7 months, 95CI=21.4–not reached; vs. 19.6 months, 95CI=11.1–35.2; p=0.02) patients. In multivariable Cox landmark analysis adjusted for ER status, age, extracranial disease, chemotherapy, radiotherapy, and metastasectomy; HER2-mab demonstrated improved OS (adjustedHR=0.59, 95CI=0.44–0.77; p<0.001).

Conclusions: Herein we demonstrate that HER2-mab is associated with improved OS in HER2+ BCBM patients as well, regardless of ER status.