Comparing CNS and Extra_CNS Hemangiopericytomas in the Surveillance, Epidemiology, and End Results Program (SEER). An Analysis of 655 Patients

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Purpose/Objective(s): Hemangiopericytomas (HPC's) are rare tumors in the CNS and extra-CNS sites. Prognostic factors and the role of radiotherapy (RT) are not well known. We aim to use the SEER program to provide a singular source of data with long-term follow-up, strong statistical power, and uniform patient populations to study the prognostic factors of HPCs.

Materials/Methods: The SEER database was analyzed for patients diagnosed with an HPC tumor from 1973-2007. Patients were stratified into CNS and extra-CNS groups. The heterogeneity of the groups was assessed using Student's t test, Pearson's chisquare test, and Fisher's exact test. Univariate (Kaplan-Meier survival with log-rank significance test) and multivariate (Cox proportional hazards regression) analyses were then performed on the basis of an overall survival (OS) endpoint using major demographic (age, race and sex), disease (tumor site), and treatment factors (surgery, RT, and RT sequence).

Results: A total of 655 HPC patients were identified and stratified into CNS (n = 199) and extra-CNS (n = 456) groups. The two groups were well balanced on the basis of race and sex. The extra-CNS patients were statistically older (mean age 53 vs. 49 years, p = 0.008), less likely to undergo surgery (85% vs. 95%, p<0.001), less likely to receive RT (33% vs. 43%, p = 0.037), and morelikely to have larger tumors (median diameter: 7.0 vs. 5.2 cm, p<0.001). Patients with CNS tumors had better OS and cause specific survival (CSS) compared to extra-CNS patients (p<0.001 and p<0.001). In addition to tumor site the only significant positive predictor of OS on univariate analysis was the use of surgery (p<0.001). Significant negative predictors of OS on multivariate analysis included extra-CNS tumor site (HR 1.6, p = 0.005), use of brachytherapy (HR 3.9, p = 0.023), age 40-59 (HR 2.08, p = 0.032), age 60-79 (HR 3.9, p\0.001), and age 80+ (HR 7.7, p<0.001). The only positive predictor of OS on multivariate analysis was the use of surgery (HR 0.481, p<0.001).

Conclusions: This report represents the largest published series of patient outcomes for HPC's and highlights the outcome disparity between CNS and extra-CNS tumors. This analysis may provide evidence to support the more aggressive treatment of extra-CNS HPC's, possibly with greater consideration of RT use in conjunction with surgical resection.