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1: [Surg Neurol](#). 2009 Feb;71(2):188-95; discussion 195, 195-6. Epub 2008 Apr 24.



**Brain stem metastases treated with radiosurgery: prognostic factors of survival and life expectancy estimation.**

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**BACKGROUND:** The objective of this study is to study prognostic factors of survival and 3 stratification systems for life expectancy estimation in patients with brain stem metastases treated with radiosurgery. **METHODS:** Between December 1999 and November 2006, 25 patients with 27 brain stem metastases were treated with Gamma Knife radiosurgery. The lesions' mean volume was 0.6 mL (0.013-3.6 mL). The mean marginal dose was 20 Gy (15-24 Gy). Univariate and multivariate studies were done to identify prognostic factors, and 3 patient stratification systems were applied for survival estimation: RPA, SIR, and BSBM. **RESULTS:** The primary tumor location was in the lungs in 12 patients, breast in 8, and other in 5. Fourteen lesions were located in the pons, 9 in the midbrain, and 4 in the medulla. All patients were followed clinically. Radiologic follow-up was available in 21 lesions (78%). Tumor control was achieved in all but one followed lesion (95%). There were no complications related to treatment. Median survival of patients with brain stem metastases was 11.1 months. In multivariate analysis, KPS of 80 or more, control of the primary tumor, absence of radiotherapy, and a marginal dose higher than 18 Gy were associated with better survival. The BSBM in the univariate and multivariate analyses was the strongest predictor of survival ( $P < .0001$ ). **CONCLUSIONS:** The BSBM was the most useful tool for estimating survival. Rather than the brain stem location of an intracranial metastasis, the patient integral clinical status seems to be more important in determining survival.

PMID: 18439658 [PubMed - indexed for MEDLINE]

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