The Akaike information criterion (AIC) is an estimator of out-of-sample prediction error and thereby relative quality of statistical models for a given data set.

Given a collection of models for the data, AIC estimates the quality of each model, relative to each of the other models. Thus, AIC provides a means for model selection.

Lee et al. retrospectively analyzed data for 311 patients treated with Gamma Knife radiosurgery at a single institute. The mean age at time of treatment was 60 years (range 23-86 years), and the median Karnofsky performance status (KPS) score was 90 (range 60-100). Using a new prognostic index, the prognostic index for brain metastases (PIBM), the patients were categorized into 3 groups according to the primary tumor status and KPS score. We performed survival analysis and compared the prognostic ability of the PIBM with other published indices.

During the median follow-up duration of 8.2 months (range 0.1-109 months), the median overall survival rate was 9.1 months. Stable primary tumor status (hazard ratio [HR] 0.497, 95% confidence interval [CI] 0.321-0.769, p = 0.002) and KPS score ≥90 (HR 1.407, 95% CI 1.018-1.946, p = 0.039) significantly predicted longer overall survival. The PIBM showed the lowest Akaike information criterion value and the highest integrated area under the curve value compared with other prognostic indices.

The PIBM may be a more accurate prognostic indicator than other published indices. Although this new and practical prognostic index requires further validation in larger cohort studies, they suggested that the PIBM could be useful to predict survival rate and inform appropriate management of patients with brain metastases [1)]

[1)] Lee SR, Roh TH, Jeong DH, You N, Jang AH, Seo MR, Choung JH, Park B, Kim SH. A Simple and Practical Scoring System for Radiosurgical Treatment in Patients with Brain Metastases. Stereotact Funct Neurosurg. 2020 May 14:1-8. doi: 10.1159/000507338. [Epub ahead of print] PubMed PMID: 32408303.

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