Cystic Glioblastoma: An Evaluation of IDH1 Status and Prognosis.

Sarmiento JM, Nuño M, Ortega A, Mukherjee D, Fan X, Black KL, Patil CG.

Center for Neurosurgical Outcomes Research, Maxine Dunitz Neurosurgical Institute, Department of Neurosurgery, Cedars-Sinai Medical Center.

Abstract

BACKGROUND:: Controversy exists regarding the prognostic significance of cystic features in newly diagnosed glioblastoma (GBM) and the pathological origin of cystic GBMs.

OBJECTIVE:: To determine whether cystic GBMs develop from low-grade gliomas by evaluating IDH1 status and to evaluate differences in overall survival between patients with cystic and non-cystic tumors.

METHODS:: We retrospectively reviewed the records of 351 consecutive newly diagnosed adult GBM patients treated at our institution from October 1997 to November 2011; patients with >50% cystic tumor composition were further identified. IDH1 mutation was determined by immunohistochemical staining. Patient characteristics and treatment were reported for cystic and non-cystic tumors separately. Overall survival was reported for cystic and non-cystic cohorts using the Kaplan-Meier estimates.

RESULTS:: Of 351 patients, 27 (7.7%) had cystic tumors and 324 (92.3%) had non-cystic. Tumor samples for cystic GBM patients were immunohistochemically analyzed for IDH1 mutations. Two (7.4%) of the 27 tumor samples were documented as having IDH1 mutations. Characteristics such as age, gender, perioperative KPS, tumor size, extent of resection, post-surgery radiation and temozolomide therapy were comparable in the cystic and non-cystic cohorts. Cystic patients had a median overall survival of 15.0 months compared to 18.2 months for non-cystic (log-rank p=0.77).

CONCLUSION:: The low frequency of IDH1 mutation status in our cystic cohort strongly suggests that most newly diagnosed cystic GBMs do not arise from malignant transformation of previously undiagnosed cystic low-grade gliomas. Furthermore, there is no difference in overall survival between cystic and non-cystic newly diagnosed GBM patients.

PMID: 24089051 [PubMed - as supplied by publisher]