Patterns of care and outcomes in gliosarcoma: an analysis of the National Cancer Database.

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Abstract

OBJECTIVE The authors compared presenting characteristics and survival for patients with gliosarcoma (GS) and glioblastoma (GBM). Additionally, they performed a survival analysis for patients who underwent GS treatments with the hypothesis that trimodality therapy (surgery followed by radiation and chemotherapy) would be superior to nontrimodality therapy (surgery alone or surgery followed by chemotherapy or radiation).

METHODS Adults diagnosed with GS and GBM between the years 2004 and 2013 were queried from the National Cancer Database. Chi-square analysis was used to compare presenting characteristics. Kaplan-Meier, Cox regression, and propensity score analyses were employed for survival analyses.

RESULTS In total, data from 1102 patients with GS and 36,658 patients with GBM were analyzed. Gliosarcoma had an increased rate of gross-total resection (GTR) compared with GBM (19% vs 15%, p < 0.001). Survival was not different for patients with GBM (p = 0.068) compared with those with GS. After propensity score analysis for GS, patients receiving trimodality therapy (surgery followed by radiation and chemotherapy) had improved survival (12.9 months) compared with those not receiving trimodality therapy (5.5 months). In multivariate analysis, GTR, female sex, fewer comorbidities, trimodality therapy, and age < 65 years were associated with improved survival. There was a trend toward improved survival with MGMT promoter methylation (p = 0.117).

CONCLUSIONS In this large registry study, there was no difference in survival in patients with GBM compared with GS. Among GS patients, trimodality therapy significantly improved survival compared with nontrimodality therapy. Gross-total resection also improved survival, and there was a trend toward increased survival with MGMT promoter methylation in GS. The major potential confounder in this study is that patients with poor functional status may not have received aggressive radiation or chemotherapy treatments, leading to the observed outcome. This study should be considered hypothesis-generating; however, due to its rarity, conducting a clinical trial with GS patients alone may prove difficult.

KEYWORDS: CCI = Charlson Comorbidity Index; GBM = glioblastoma; GS = gliosarcoma; GTR = gross-total resection; MGMT = O6-methylguanine-DNA methyltransferase; NCDB = National Cancer Database; brain tumors; chemotherapy; molecular genetics; neurosurgery; oncology; radiation

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