Journal of Clinical Neuroscience xxx (2018) xxx–xxx

Contents lists available at ScienceDirect

Journal of Clinical Neuroscience

journal homepage: www.elsevier.com/locate/jocn

Case study

Patterns of care and outcomes for glioblastoma in patients with poor performance status

Nikita Malakhov [a], Anna Lee [a,b,*], Elizabeth Garay [a,b], Daniel J. Becker [b,c], David Schreiber [a,d]

[a] Department of Radiation Oncology, SUNY Downstate Medical Center, Brooklyn, New York, USA
[b] Department of Veterans Affairs, New York Harbor Healthcare System, Brooklyn, New York, USA
[c] Department of Medical Oncology, NYU School of Medicine, New York, NY, USA
[d] Summit Medical Group MD Anderson Cancer Center, Berkeley Heights, NJ, USA

ARTICLE INFO

Article history:
Received 25 January 2018
Accepted 11 March 2018
Available online xxxx

Keywords:
Chemoradiation
Glioblastoma
Poor performance status
NCDB

ABSTRACT

Purpose/objectives: While treatment with tumor resection followed by chemoradiation is generally the accepted standard of care for glioblastoma (GBM), the treatment for patients with poor performance status remains uncertain. Therefore we sought to examine patterns of care and survival outcomes among patients with poor performance status utilizing a large hospital database.
Methods/materials: We queried the National Cancer Database (NCDB) for patients with GBM and Karnofsky performance status (KPS) <60 between 2010 and 2013. Data was collected regarding surgery, radiation therapy and chemotherapy. Logistic regression was used to analyze predictors for utilization of chemoradiation. The Kaplan-Meier method was used to compare survival between those who received chemoradiation to radiation alone and Cox regression was performed to assess covariates associated with survival.
Results: There were 488 patients included in the analysis of which 51.2% received chemoradiation and 46.1% underwent subtotal or gross total resection. None of the factors analyzed were significantly associated with increased likelihood of receiving chemoradiation over radiation alone. Survival data was available for 236 patients that received radiation therapy with and without combination chemotherapy. The median overall survival for those receiving radiation alone was 3.6 months and 8.7 months in those who received chemoradiation ($p < 0.001$). On multivariable Cox regression, older age (HR 1.80–2.10, $p = 0.001$) was associated with worse survival and subtotal/gross total resection compared to no surgery (HR 0.60, $p = 0.003$) was associated with improved survival.
Conclusion: Even patients with poor performance status had better survival outcomes when they received treatment with chemoradiation over radiation alone.
© 2018 Published by Elsevier Ltd.

1. Introduction

Glioblastoma (WHO Grade IV astrocytoma; GBM) is the most common primary malignant brain tumor in adults. Prognosis is poor with median progression-free survival (PFS) ranging from 5 to 7.5 months and median overall survival (OS) from diagnosis ranging from 12.1 to 16.0 months as reported in clinical trials [1,2].

The current treatment strategy for glioblastoma consists of maximal safe resection followed by stratification by age and performance status into different treatment groups as delineated by the National Cancer Care Network (NCCN) guidelines [3]. The recommended treatment options for patients with Karnofsky performance status (KPS) <60 are much more limited as compared to those with good performance status (KPS $\geq$ 60) and consist of standard radiation therapy (RT) for 6 weeks for those less than 70 years old, hypofractionated RT, temozolomide, or palliative/best supportive care. Combined chemoradiation treatment is not a suggested treatment strategy for patients with low performance status.

A number of small studies, with sample sizes ranging from 29 to 74 patients, have reported that glioblastoma patients with poor performance status benefit from more aggressive interventions [4–6]. Additionally, there is a growing body of research focused on treatment options for elderly glioblastoma patients with some suggesting that combination chemoradiation after surgical resec-

* Corresponding author at: Department of Radiation Oncology, SUNY Downstate Medical Center, 450 Clarkson Avenue, Mail Stop #1211, Brooklyn, NY 11203, USA.
E-mail address: anna.lee@downstate.edu (A. Lee).

https://doi.org/10.1016/j.jocn.2018.03.006
0967-5868/© 2018 Published by Elsevier Ltd.

Please cite this article in press as: Malakhov N et al. Patterns of care and outcomes for glioblastoma in patients with poor performance status. J Clin Neurosci (2018), https://doi.org/10.1016/j.jocn.2018.03.006

tion is a feasible treatment option for these patients [7–9]. Studies of elderly patients have included subgroups of patients with low performance status and have found that they benefit from hypofractionated radiation therapy with concomitant and adjuvant temozolomide therapy [10]. However, research focusing solely on the feasibility and tolerability of combination chemoradiation therapy for low performance status glioblastoma patients, irrespective of age, is lacking.

Therefore, we sought to analyze patterns of care and outcomes for glioblastoma patients with KPS < 60, and identify whether there was any benefit to chemoradiation over radiation alone.

2. Methods

The NCDB is a hospital-based registry that is the joint project of the American Cancer Society and the Commission on Cancer of the American College of Surgeons. It is estimated that 70% of all diagnosed malignancies in the United States are captured by facilities participating in this registry and reported to the NCDB. The Commission on Cancer's NCDB and the hospitals participating in the NCDB are the source of the de-identified data used in this study. However, they have not been verified and are not responsible for the statistical validity or conclusions derived by the authors of this study. Exemption was obtained from the New York Harbor Veterans Affairs Committee for Research and Development prior to the initiation of this study.

We identified all patients diagnosed with glioblastoma (histologic code 9440) between 2010 and 2013 and were identified as having a Karnofsky performance status (KPS) <60. These years were utilized because 2010 was the first year in which KPS status was collected by the NCDB for glioblastoma. Data were collected regarding surgical procedure, radiation therapy, and chemotherapy, if any of these were utilized. For those who received radiation therapy, the total dose and dose per day were also collected for analysis. These were used to identify the patterns of care for treatment of these patients.

Survival data were available only on patients who were treated between 2010 and 2012. For these, we analyzed overall survival via the Kaplan-Meier method and compared between those who received active treatment of either chemoradiation or radiation alone via the log-rank test. Univariable logistic regression was performed to assess for predictors for utilization of chemoradiation. The variables included were age (≤60, 61–70, >70), race (White, Black, Other), facility type (academic, non-academic), surgery (none, biopsy only, subtotal/gross total resection), year of diagnosis (2010, 2011, 2012, 2013) and methylguanine-methyl transferase (MGMT) promoter status (MGMT+, MGMT-, MGMT unknown). Variables with a p-value <0.1 on univariable analysis were planned to be included in the multivariable analysis. However, none of the variables were noted to have a p-value <0.1 and therefore a multivariable logistic regression was not performed. Univariable and multivariable Cox regression was also performed on those who received radiation therapy to assess for covariables associated with differences in survival. The variables used were age (≤60, 61–70, >70), race (White, Black, Other), facility type (academic, non-academic), surgery (none, biopsy only, subtotal/gross total resection), year of diagnosis (2010, 2011, 2012), MGMT promoter status (MGMT+, MGMT-, MGMT unknown), treatment (chemoradiation, radiation alone) and radiation dose per day (180–200 cGy, >200 cGy, unknown). Variables that had a p-value <0.1 on univariable analysis were included in the multivariable model. All survival analyses were repeated only including patients who survived ≥2 months and ≥3 months, in order to assess for immortal time bias. All analyses were conducted using SPSS V 23.0 (IBM Inc, Armonk NY, USA). All tests were two sided with a p-value <0.05 the threshold for significance.

3. Results

3.1. Patient demographics and patterns of care

There were a total of 488 patients included in this analysis. The median age was 68 years (interquartile range 58–76). There were 358 patients with available survival data. Of these, the median follow up for the entire cohort was 4.4 months and the median follow up for living patients was 14.7 months, with 319 (89.1%) dead at the time of last contact. Regarding radiation and/or chemotherapy, there were 250 patients (51.2%) who received chemoradiation, 71 (14.5% who received radiation alone), 150 (30.7%) who received neither, and 17 (3.5%) who received chemotherapy alone. The median number of days from diagnosis to initiation of chemotherapy was 31 days (interquartile range 21–44) and similarly the median number of days from diagnosis to initiation of radiation was also 31 days (interquartile range 22–41). Regarding surgical treatment, there were 225 patients (46.1%) who underwent subtotal or gross total resection, 107 (21.9%) who received biopsy only, and 156 (32.0%) who received no surgical intervention. Further details and a breakdown of treatment by patient demographics are available in Table 1.

There were 321 patients who received radiation therapy, of which 250 (77.9%) received chemoradiation. Overall, the most common fractionation scheme was 180–200 cGy per day (n = 188, 58.6%), followed by doses >200 cGy per day (n = 92, 28.7%). Of those who received chemoradiation, 166 (66.4%) were identified as receiving 180–200 cGy per day while 50 (20%) were identified as receiving doses >200 cGy. For the 71 patients who received radiation alone, 22 (31.0%) received standard fractionation while 42 (59.2%) received daily doses >200 cGy.

3.2. Predictors of chemoradiation use

On univariable logistic regression, there were no identifiable predictors for chemoradiation use over radiation alone, as age, race, surgery, facility type, year of diagnosis, and MGMT status were not significant contributors to receipt of chemoradiation over radiation alone (Table 2).

3.3. Survival analysis for patients who received radiation

There were 236 patients with available survival data. The median overall survival was 3.6 months in those who received radiation alone and 8.7 months in those who received chemoradiation, p < 0.001 (Fig. 1). This survival analysis was repeated in patients who survived ≥2 months and ≥3 months in order to account for immortal time bias without significant change in the results (p = 0.002 and p = 0.018 respectively).

On univariable analysis, increasing age (HR 1.81–2.01, p = 0.001) was associated with worse survival while subtotal or gross total resection (HR 0.62, p = 0.003), chemoradiation (HR 0.52, p < 0.001), and daily radiation dose of 180–200 cGy (HR 0.63, p = 0.007) were associated with improved survival. MGMT status was not associated with any differences in overall survival (Table 3). On multivariable analysis, increasing age (HR 1.72–1.99, p = 0.001) was associated with worse survival while only subtotal/gross total resection (HR 0.61, 95% CI 0.43–0.85, p = 0.004) was associated with improved survival (Table 3).

The multivariable analysis was repeated after only including patients who survived ≥2 months and then ≥3 months. For the former, there remained an improvement in survival associated with chemoradiation (HR 0.66, 95% CI 0.44–0.99, p = 0.044). However, after only including patients who survived ≥3 months, there was no longer a survival benefit associated with chemoradiation (HR 0.71, 95% CI 0.45–1.11, p = 0.13).

Please cite this article in press as: Malakhov N et al. Patterns of care and outcomes for glioblastoma in patients with poor performance status. J Clin Neurosci (2018), https://doi.org/10.1016/j.jocn.2018.03.006

Download English Version:

https://daneshyari.com/en/article/8685031

Download Persian Version:

https://daneshyari.com/article/8685031

Daneshyari.com