Treatment and Survival for High-Grade Spinal Gliomas – A Surveillance, Epidemiology, and End Results (SEER) Study

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Introduction

High grade spinal gliomas are an extremely rare entity in the literature. Only sporadic cases have been reported, and overall survival remains unclear. We aim to characterize post-treatment prognosis of these tumors with attempt to find factors influencing survival using the SEER database.

Methods

We examined all patients with gliomas located in spinal cord or cauda equina. WHO-grade was first determined by site-specific factor 1(WHO-grade), then supplemented by direct review of ICD-O-3 histology. Only grade 3/4 were included in this study. Multivariable Cox regression analysis was performed. Due to small sample size, a step-wise Akaike information criterion(AIC) was performed for full model to select variables into an optimized multivariable model, with forced inclusion of treatment-related variables and variables that were significant in the full model.

Results

A total of 165 high-grade spinal cord gliomas with 118 glioblastomas(GBM) were included. Mean age at diagnosis was 37.5 years with 36.8% male. Median survival of all patients was 25 months. The overall survival for 1-year, 2-year, 3-year is 71.3%, 51.2%, and 40.7%, respectively. A stepwise AIC was performed, with forced inclusion of patient age, tumor extension, surgery extent and postoperative radiation. The final model after step-wise AIC selection added tumor size in addition to these four variables. Distant tumor invasion(HR:1.74,p=0.043), GTR/TR(HR:2.38,p=0.037) were found to be significant risk factors, while postoperative radiation is a significant protective factor(HR:0.55,p=0.033). Age over 60(HR:1.73,p=0.072) and partial resection(HR:1.91,p=0.065) were borderline risk factors.

Conclusions

Prognosis of high-grade spinal glioma is poor with median survival of 25 months. Distant tumor invasion and elderly age are risk factors for poor survival. Surgical resection is also a risk factor, which deserves further investigation. Post-operative radiation significantly improves survival and should be recommended.

Learning Objectives

By the conclusion of this session, participants should be able to:

1.Understand the median and 2-year survival of spinal glioma patients

2.Understand that tumor extension is a significant risk factor in these patients

3.Understand that post-operative radiation therapy poses significant survival benefit in these patients