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# Shorter survival time of adolescents and young adult patients than older adults with spinal cord glioblastoma: a multicenter study

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## Abstract

**Objective:** Cancers in adolescents and young adults (AYAs) (age 15-39 years) often present with unique characteristics and poor outcomes. To date, spinal cord glioblastoma, a rare tumor, remains poorly understood across all age groups, including AYAs. This comparative study aimed to investigate the clinical characteristics and outcomes of spinal cord glioblastoma in AYAs and older adults (age 40-74 years), given the limited availability of studies focusing on AYAs.

**Methods:** Data from the Neurospinal Society of Japan's retrospective intramedullary tumor registry (2009-2020) were analyzed. Patients were dichotomized on the basis of age into AYAs and older adults. Univariate and multivariate Cox proportional hazards regression models were utilized to explore risk factors for overall survival (OS).

**Results:** A total of 32 patients were included in the study, with a median (range) age of 43 (15-74) years. Of these, 14 (43.8%) were AYAs and 18 (56.2%) were older adults. The median OS was 11.0 months in AYAs and 32.0 months in older adults, and the 1-year OS rates were 42.9% and 66.7%, respectively, with AYAs having a significantly worse prognosis ($p = 0.017$). AYAs had worse preoperative Karnofsky Performance Status (KPS) than older patients ($p = 0.037$). Furthermore, AYAs had larger intramedullary tumors on admission ($p = 0.027$) and a significantly higher frequency of intracranial dissemination during the clinical course ($p = 0.048$). However, there were no significant differences in the degrees of surgical removal or postoperative radiochemotherapy between groups. The Cox proportional hazards regression model showed that AYAs (HR 3.53, 95% CI 1.17-10.64), intracranial dissemination (HR 4.30, 95% CI 1.29-14.36), and no radiation therapy (HR 57.34, 95% CI 6.73-488.39) were risk factors for mortality for patients of all ages. Worse preoperative KPS did not predict mortality in AYAs but did in older adults. The high incidence of intracranial dissemination may play an important role in the poor prognosis of AYAs, but further studies are needed.

**Conclusions:** The clinical characteristics of AYAs with spinal cord glioblastoma differ from those of older adults. The prognosis of AYAs was clearly worse than that of older adults. The devastating clinical course of spinal glioblastoma in AYAs was in line with those of other cancers in this age group.

**Keywords:** adolescent and young adult patients; glioblastoma; intracranial dissemination; multicenter study; oncology; spinal cord tumor.