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Natural Course and Prognosis of Primary Spinal Glioblastoma: A Nationwide Study

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Abstract

Background and objectives: Primary spinal glioblastoma is extremely rare. The dramatic neurological deterioration and unresectability of primary spinal glioblastoma makes it a particularly disabling malignant neoplasm. Since it is a rare and heterogeneous disease, the assessment of prognostic factors remains limited.

Methods: Primary spinal glioblastomas were identified from The French Brain Tumor Database and the Club de Neuro-Oncologie of the Société Française de Neurochirurgie retrospectively. Inclusion criteria were age ≥ 18 years at diagnosis, spinal location, histopathological diagnosis of newly glioblastoma according to the 2016 World Health Organization classification, and surgical management between 2004 and 2016. Diagnosis was confirmed by a centralized neuropathological review. The primary outcome was overall survival. Therapeutic interventions and neurological outcomes were also collected.

Results: Thirty-three patients with an histopathologically confirmed primary spinal glioblastoma (median age 50.9 years) were included (27 centers). The median overall survival (OS) was 13.1 months (range 2.5-23.7) and the median progression-free survival was 5.9 months (range 1.6-10.2). In multivariable analyses using Cox model, ECOG PS at 0-1 was the only independent predictor of longer OS [Hazard Ratio: 0.13, 95%CI 0.02-0.801; p=0.02], whereas a Karnofsky PS score <60 [Hazard Ratio: 2.89, 95%CI 1.05-7.92; p=0.03] and a cervical anatomical location [Hazard Ratio: 4.14, 95%CI 1.32-12.98; p=0.01] were independent predictors of shorter OS. The ambulatory status (Frankel D-E) [Hazard Ratio: 0.38, 95%CI 0.07-1.985; p=0.250] was not an independent prognostic factor while the concomitant standard radiochemotherapy with temozolomide (Stupp protocol) [Hazard Ratio: 0.35, 95%CI 0.118-1.05; p=0.06] was at the limit of significance.

Discussion: Preoperative ECOG PS, Karnofsky PS score and the location are independent predictors of overall survival of primary spinal glioblastomas in adults. Further analyses are required to capture the survival benefit of concomitant standard radiochemotherapy with temozolomide.

Keywords: Primary spinal glioblastoma; Resection; Survival; temozolomide.

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