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Newly-diagnosed high grade glioma surgery with carmustine wafers implantation. A long-term nationwide retrospective study

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Abstract

Background: Widespread use of carmustine wafers (CW) to treat high-grade gliomas (HGG) has been limited by uncertainties about its efficacy. To assess the outcome of patients after newly-diagnosed HGG surgery with CW implantation and, search for associated factors.

Methods: We processed the French medico-administrative national database between 2008 and 2019 to retrieve ad hoc cases. Survival methods were implemented.

Results: 1,608 patients who had CW implantation after HGG resection at 42 different institutions between 2008 and 2019 were identified. 36.7% were female and, median age at HGG resection with CW implantation was 61.5 years, interquartile range (IQR)[52.9-69.1]. 1,460 patients (90.8%) had died at data collection with a median age at death of 63.5 years, IQR[55.3-71.2]. Median overall survival (OS) was 1.42 years, 95% CI [1.35-1.49], id est 16.8 months. Median age at death was 63.5 years, IQR[55.3-71.2]. OS at 1, 2 and, 5 years was 67.4%, 95%CI[65.1-69.7], 33.1%, 95%CI[30.9-35.5] & 10.7%, 95%CI[9.2-12.4] respectively. In the adjusted regression, gender (hazard ratio (HR) =0.82, 95%CI[0.74-0.92], p<0.001), age at HGG surgery with CW implantation (HR=1.02, 95%CI[1.02-1.03], p<0.001), adjuvant radiotherapy (HR=0.78, 95%CI[0.7-0.86], p<0.001), chemotherapy by temozolomide (HR=0.7, 95%CI[0.63-0.79], p<0.001), and, redo surgery for HGG recurrence (HR=0.81, 95%CI[0.69-0.94], p= 0.005), remained significantly associated with the outcome.

Conclusion: OS of patients with newly-diagnosed HGG that underwent surgery with CW implantation

is better in young patient, female gender and, for those who complete concomitant chemoradiotherapy. Redo surgery for HGG recurrence was also associated with prolonged survival.

Keywords: Carmustine wafer; Glioblastoma; High grade glioma; Outcome; Prognostic factors; Survival.

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