The Prognostic Roles of Gender and O6-Methylguanine-DNA Methyltransferase Methylation Status in Glioblastoma Patients: The Female Power.


Department of Medical Oncology, Bellaria Hospital, Azienda USL-IRCCS Institute of Neurological Sciences, Bologna, Italy.

BACKGROUND: Clinical and molecular factors are essential to define the prognosis in patients with glioblastoma (GBM). O6-methylguanine-DNA methyltransferase (MGMT) methylation status, age, Karnofsky Performance Status (KPS), and extent of surgical resection are the most relevant prognostic factors. Our investigation of the role of gender in predicting prognosis shows a slight survival advantage for female patients.

METHODS: We performed a prospective evaluation of the Project of Emilia Romagna on Neuro-Oncology (PERNO) registry to identify prognostic factors in patients with GBM who received standard treatment.

RESULTS: A total of 169 patients (99 males [58.6%] and 70 females [41.4%]) were evaluated prospectively. MGMT methylation was evaluable in 140 patients. Among the male patients, 36 were MGMT methylated (25.7%) and 47 were unmethylated (33.6%); among the female patients, 32 were methylated (22.9%) and 25 were unmethylated (17.9%). Survival was longer in the methylated females compared with the methylated males (P = 0.028) but was not significantly different between the unmethylated females and the unmethylated males (P = 0.395). In multivariate analysis, gender and MGMT methylation status considered together (methylated females vs. methylated males; hazard ratio [HR], 0.459; 95% confidence interval [CI], 0.242-0.827; P = 0.017), age (HR, 1.025; 95% CI, 1.002-1.049; P = 0.032), and KPS (HR, 0.965; 95% CI, 0.948-0.982; P < 0.001) were significantly correlated with survival.

CONCLUSIONS: Survival was consistently longer among MGMT methylated females compared with males. Gender can be considered as a further prognostic factor.