Impact of delays in initiating postoperative chemoradiation while determining the MGMT promoter-methylation statuses of patients with primary glioblastoma.

Abstract:
The benefits of new innovations in glioblastoma therapies should not be curtailed as a result of delays in commencement of radiation therapy, caused by clinical circumstances as well as diagnostic procedures. This study evaluates whether delays in chemo-radiotherapy after surgery, while determining O6-methylguanine-DNA-methyltransferase (MGMT) promoter status, affect the survival rates of patients with glioblastoma (GBM). Our sample comprised 50 GBM patients in a retrospective analysis of three prospective studies that focused on combined radiotherapy and required MGMT promoter-status testing as inclusion criteria. Results were compared with a reference group of 127 favourable GBM cases (Karnofsky performance-status scale >= 70), in which the patients underwent standard postoperative chemo-radiotherapy with temozolomide. Survival time was calculated using the Kaplan-Meier method, and a multivariate analysis of the delays between surgical and radiotherapy procedures was performed using the Cox regression model. The study group's median overall survival time was 16.2 months (with a range of 2 to 56 months), versus the reference group's survival time of 18.2 months (with a range of 1 to 92 months) (p = 0.64). The delay between surgery and radiotherapy...
was increased by 8 days in the study patients (p< 0.001), with a median delay of 35 days (range: 18-49 days) corresponding to the typical 27-day delay (range: 5-98 days) for those in the reference group. Univariate and multivariate analyses did not show any negative association between survival time and delaying radiation therapy to determine MGMT-promoter status; commencement of radiation therapy sooner than 24 days after surgery was the threshold for significantly decreased overall survival (p = 0.01) and progression-free (p = 0.03) survival. Delaying postoperative chemoradiation for GBM patients--carried out in order to determine MGMT-promoter status--did not have a negative impact on survival time. Indeed, the data of the present study shows that initiating radiation therapy sooner than 24 days after surgery has a negative impact on progression and survival.