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[Cancer](#). 2010 Nov 8. [Epub ahead of print]

Benefits of interferon- β and temozolomide combination therapy for newly diagnosed primary glioblastoma with the unmethylated MGMT promoter: a multicenter study.

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Abstract

BACKGROUND: The aim of the current study was to catalog genomic and epigenomic abnormalities in newly diagnosed glioblastoma patients and determine the correlation among clinical, genetic, and epigenetic profiles and clinical outcome.

METHODS: This study retrospectively included 68 consecutive patients who underwent surgical treatment and received standard radiotherapy with temozolomide (TMZ)-based chemotherapy. Of a total of 68 patients, 39 patients (57.4%) received interferon (IFN)- β in combination of TMZ.

RESULTS: The genetic and epigenetic alterations frequently observed were EGFR amplification (51.5%), TP53 mutation (33.8%), CDKN2A loss (32.4%), TP53 loss (16.2%), methylation of the MGMT promoter (33.8%) and IDH1 mutation (5.9%). Multivariate analysis revealed that methylated MGMT promoter and the combination of TMZ and IFN- β were independent prognostic factors associated with survival. The median survival time (MST) of the patients who received the combination of IFN- β and TMZ was significantly greater with 19.9 months as compared to the TMZ alone group (12.7 months). Notably, in even patients whose tumors had unmethylated MGMT promoter, the MST prolonged to 17.2 months when receiving TMZ with IFN- β , compared to 12.5 months in those receiving TMZ without IFN- β .

CONCLUSIONS: Taken together, addition of IFN- β for newly diagnosed primary GBM achieved a favorable outcome, particularly in patients with unmethylated MGMT promoter. Cancer 2010. © 2010 American Cancer Society.

PMID: 21061328 [PubMed - as supplied by publisher]

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