Interferon-alpha for high-grade glioma

- ELF4 was a prognostic biomarker and related to immune infiltrates in glioma
- Immune Response following FLASH and Conventional Radiation in Diffuse Midline Glioma
- FISH analysis reveals CDKN2A and IFNA14 co-deletion is heterogeneous and is a prominent feature of glioblastoma
- Development and validation of a personalized classifier to predict the prognosis and response to immunotherapy in glioma based on glycolysis and the tumor microenvironment
- A co-formulation of interferons alpha2b and gamma distinctively targets cell cycle in the glioblastoma-derived cell line U-87MG
- The Therapeutic Values of IL-7/IL-7R and the Recombinant Derivatives in Glioma: A Narrative Review
- Human neural stem cells repress glioma cell progression in a paracrine manner by downregulating the Wnt/beta-catenin signalling pathway
- Adjuvant Temozolomide Chemotherapy With or Without Interferon Alfa Among Patients With Newly Diagnosed High-grade Gliomas: A Randomized Clinical Trial

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Some studies have shown that Interferon-alpha can slow the growth of high-grade gliomas and improve survival in some patients. However, the effectiveness of Interferon-alfa as a treatment for high-grade gliomas is still being studied, and it is not currently a standard treatment for these tumors. Other treatments, such as surgery, radiation therapy, and chemotherapy, are usually used first.

The add-on efficacy of Interferon-alfa is unclear for the high-grade glioma treatment.

Guo et al. compared the therapeutic efficacy and toxic effects of the combination of temozolomide and Interferon-alfa and temozolomide alone in patients with newly diagnosed high-grade glioma.

Design, setting, and participants: This multicenter, randomized, phase 3 clinical trial enrolled 199 patients with newly diagnosed HGG from May 1, 2012, to March 30, 2016, at 15 Chinese medical centers. Follow-up was completed on July 31, 2021, and data were analyzed from September 13 to November 24, 2021. Eligible patients were aged 18 to 75 years with newly diagnosed and histologically confirmed HGG and had received no prior chemotherapy, radiotherapy, or immunotherapy for their HGG.

Interventions: All patients received standard radiotherapy concurrent with temozolomide. After a 4-week break, patients in the temozolomide with Interferon-alfa group received standard temozolomide combined with Interferon-alfa every 28 days. Patients in the temozolomide group received standard temozolomide.

Main outcomes and measures: The primary endpoint was 2-year overall survival (OS). Secondary endpoints were 2-year progression-free survival (PFS) and treatment tolerability.

Results: A total of 199 patients with HGG were enrolled, with a median follow-up time of 66.0 (95% CI, 59.1-72.9) months. Seventy-nine patients (39.7%) were women and 120 (60.3%) were men, with ages ranging from 18 to 75 years and a median age of 46.9 (95% CI, 45.3-48.7) years. The median OS of patients in the temozolomide plus Interferon-alfa group (26.7 [95% CI, 21.6-31.7] months) was significantly longer than that in the standard group (18.8 [95% CI, 16.9-20.7] months; hazard ratio

[HR], 0.64 [95% CI, 0.47-0.88]; P = .005). Temozolomide plus Interferon-alfa also significantly improved median OS in patients with O6-methylguanine-DNA methyltransferase (MGMT) unmethylation (24.7 [95% CI, 20.5-28.8] months) compared with temozolomide (17.4 [95% CI, 14.1-20.7] months; HR, 0.57 [95% CI, 0.37-0.87]; P = .008). Seizure and influenzalike symptoms were more common in the temozolomide plus Interferon-alfa group, with 2 of 100 (2.0%) and 5 of 100 (5.0%) patients with grades 1 and 2 toxic effects, respectively (P = .02). Finally, results suggested that methylation level at the IFNAR1/2 promoter was a marker of sensitivity to temozolomide plus Interferon-alfa.

Conclusions and Relevance: Compared with the standard regimen, temozolomide plus Interferon-alfa treatment could prolong the survival time of patients with HGG, especially the MGMT promoter unmethylation variant, and the toxic effects remained tolerable [1)].

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Guo C, Yang Q, Xu P, Deng M, Jiang T, Cai L, Li J, Sai K, Xi S, Ouyang H, Liu M, Li X, Li Z, Ni X, Cao X, Li C, Wu S, Du X, Su J, Xue X, Wang Y, Li G, Qin Z, Yang H, Zhou T, Liu J, Hu X, Wang J, Jiang X, Lin F, Zhang X, Ke C, Lv X, Lv Y, Hu W, Zeng J, Chen Z, Zhong S, Wang H, Chen Y, Zhang J, Li D, Mou Y, Chen Z. Adjuvant Temozolomide Chemotherapy With or Without Interferon-alfa Among Patients With Newly Diagnosed High-grade Gliomas: A Randomized Clinical Trial. JAMA Netw Open. 2023 Jan 3;6(1):e2253285. doi: 10.1001/jamanetworkopen.2022.53285. PMID: 36705923.

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