Therapeutic targeting of malignant glioma.

Alexandru-Abrams D, Jadus MR, Hsu FP, Stathopoulos A, Bota DA.

Abstract

Glioblastoma Multiforme (GBM) is the most aggressive primary brain tumor with poor survival rates and universal recurrence despite aggressive treatments. Recent research suggested that GBM has multiple glioma cell populations, some of which are organized in a stem cell hierarchical order with different stages of differentiation. Evidence indicated that recurrence is due to a development or persistence of a subpopulation of these tumor cells which are inherently resistant to treatment and these were defined as the glioma stem-like cells (GSC). It is hypothesized that GSC become highly malignant by accumulating mutations in oncogenic pathways. These cells present with specific surface markers which helps identify them. Targeting the surface markers as well as the signaling pathways of GSCs has been an ongoing research effort. This review focuses on summarizing the current treatment modalities used to glioblastoma treatments, evaluating their efficacy in controlling and eradicating the GSCs, discussing the mechanisms involved in GSC tumor proliferation and resistance to treatments in addition to proposing potential avenues to target GSCs in order to provide a potential cure for this cancer.

PMID: 25175690 [PubMed - in process]