The future of glioblastoma therapy: synergism of standard of care and immunotherapy.

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Abstract

The current standard of care for glioblastoma (GBM) is maximal surgical resection with adjuvant radiotherapy and temozolomide (TMZ). As the 5-year survival with GBM remains at a dismal <10%, novel therapies are needed. Immunotherapies such as the dendritic cell (DC) vaccine, heat shock protein vaccines, and epidermal growth factor receptor (EGFRvIII) vaccines have shown encouraging results in clinical trials, and have demonstrated synergistic effects with conventional therapeutics resulting in ongoing phase III trials. Chemoradiation has been shown to have synergistic effects when used in combination with immunotherapy. Cytotoxic ionizing radiation is known to trigger pro-inflammatory signaling cascades and immune activation secondary to cell death, which can then be exploited by immunotherapies. The future of GBM therapeutics will involve finding the place for immunotherapy in the current treatment regimen with a focus on developing strategies. Here, we review current GBM therapy and the evidence for combination of immune checkpoint inhibitors, DC and peptide vaccines with the current standard of care.