

Combination of Oncolytic Measles Virus Strains and Radiation Therapy has Synergistic Activity in the Treatment of Glioblastoma Multiforme

Glioblastoma Multiforme (GBM), the most frequent primary brain tumor in adults, and represents one of the most lethal malignancies with a median survival of 12-16 months. Radiation therapy (RT) is one of the key therapeutic modalities in the treatment of GBM, the majority of GBM however recur within the radiation field. We have previously shown that oncolytic measles virus derivatives expressing soluble human carcinoembryonic antigen (MV-CEA) have significant antitumor activity against GBM cell lines and xenografts. Here we tested the hypothesis that the combination of RT with MV-CEA would enhance the treatment outcome against gliomas.

In the first 6 months, we have examined the effects of combination treatment on GBM cell lines in vitro with cell survival and proliferation assays. The results indicated that RT remarkably enhanced the killing effects of MV-CEA against GBM that the achieved antitumor effect was significantly higher than the simple addition of the two modalities (synergy). We also investigated the mechanism of the synergistic interaction between MV-CEA and RT in GBM cell lines. The synergistic effect of the combination appears to be due to increased viral proliferation and increase tumor cell apoptotic death. Animal experiments are ongoing. These results could have immediate translational implications in glioma therapy.