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Brain Cancer Stem Cells as potential research and therapeutic target in treatment of Glioblastoma Multiforme (GBM)

Short Title:

Brain Cancer Stem Cells

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Abstract:

Brain Cancer Stem cells as potential research and therapeutic target in treatment of Glioblastoma Multiforme (GBM)

Primary Brain tumors account for less than 2% of all Cancers in adults; however, they are often associated with neurologic morbidity and high mortality. Glioblastoma multiforme (GBM) is one of the most malignant forms of Human Brain Cancer. Despite intensive treatment, the mean survival of GBM patients remains about 1 year. Recent Cancer studies revealed that Cancer tissues are pathologically heterogeneous and only a small population of Cells has the specific ability to reinitiate Cancer. This small Cell population is called Cancer Stem Cells (CSCs); in Brain Cancers these are known as Brain Cancer Stem cells (BCSCs). The identification of BCSCs yielded new insights into chemo- and radioresistance, by which BCSCs can survive selectively and initiate recurrence. The current research focused on BCSCs as treatment targets by generating an in vivo model system that may contribute to the discovery of new therapeutic strategies. Glioblastoma multiforme (GBM) has been a focus of new therapy development in neurooncology because it is the most common primary Brain tumor in adults. Standard-of-care therapy for newly diagnosed GBM includes surgical resection, radiotherapy, and temozolomide, administered both during and after radiotherapy. However, most patients develop tumor recurrence or progression after this multimodality treatment. Repeat resection and stereotactic radiosurgery upon recurrence may improve outcome only in selected patients. The generation of the working in vivo GBM model system has enabled us to test leading compounds and potential drug candidates for the treatment of GBM patients.