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New therapy for malignant brain tumors, complications and challenges

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Primary malignant glioma or Glioblastoma (GBM) is the most aggressive brain tumor in adults. With maximized safe resection followed by the standard therapy consisting of radiation and chemotherapy with temozolomide, the median overall survival is only about 14 to 16 months and 5 year survival rate less than 5%. The treatment for the recurrence is more challenging. Administration of Bevacizumab, a humanized monoclonal antibody targeting vascular endothelial growth factor (VEGF) inhibitor, is an approved therapy in the US for recurrent glioma, which does improve QOL but prolongs limited survival. A latest study showed that adding medical device tumor-treating fields (NovoTTF/Optune) improves the median overall survival to 20 months and 5-year survival rate to 13%. Other new therapies are currently being investigated in variety of clinical trials for the effectiveness. Here we will review recently developed therapeutic glioma vaccines, proteasome inhibitors, gene therapy, other immunotherapy and targeted therapy for the treatment of malignant brain tumors and the challenges.

Recent Publications

1. Tran P N and Kong XT (2017) Cytarabine induced acute cerebellar syndrome during Hyper-CVAD treatment for B-Cell acute lymphoblastic leukemia. *Case Rep. Neurol.* 9(1):114-120.
2. Kong X T et al. (2018) Phase II study of Bortezomib in combination with Temozolomide and regional radiation therapy for upfront treatment of patients with newly-diagnosed glioblastoma multiform: safety and efficacy assessment. *Intl. Journal of Radiation Oncology, Biology, Physics* 100 (5):1195-1203.
3. Pham J T, Kim R C, Nguyen A, Bota D, Kong X T, Vadera S, Hsu F, Carrillo JA. Intracranial meningioma with carcinoma tumor-to-tumor metastasis: two case reports. *CNS Oncology* 7(2):CNS09.
4. Bota D A, Chung J, Dandekar M, Carrillo J A, Kong X T, Fu B D, Hsu F P, Schönthal A H, Hofman F M, Chen T C, Zidovetzki R, Pretto C, Strik A, Schijns V E and Stathopoulos A (2018) Phase II study of ERC1671 plus bevacizumab versus bevacizumab plus placebo in recurrent glioblastoma: interim results and correlations with CD4+ T-lymphocyte counts. *CNS Oncology* 7(3):CNS22.

Biography

Xiao-Tang Kong received her first Doctoral degree in Pediatric Medicine (1993) from Beijing Capital Medical University, China. She received her second Doctoral degree (PhD, 1996) in Molecular Biology of Cancer from University of Tokyo, Japan, and then completed her Postdoctoral research in Cancer Genetics at Memphis Children's Research Hospital (1997-1998) and University of California, Irvine (1998-2001), USA. She was awarded her third Doctoral degree (MD, 2008) from Keck School of Medicine at University of Southern California (USC). She completed her neuro-oncology fellowship at University of California, Los Angeles (UCLA) (2013). Currently, she serves as Assistant Professor of Neurology at University of California, Irvine. Her clinical research focuses on identifying effective treatment for newly diagnosed and recurrent malignant brain tumors.

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