Advances and challenges: dendritic cell vaccination strategies for glioblastoma.

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Abstract

INTRODUCTION: Glioblastoma is the most common primary brain tumor in adults and prognosis remains poor with a median survival of approximately 15-17 months. This review provides an overview of recent advances in the field of glioblastoma immunotherapy.

AREAS COVERED: Recent advances in dendritic cell vaccination immunotherapy are showing encouraging results in clinical trials and promise to extend patient survival. In this report we discuss current scientific knowledge regarding dendritic cell (DC) vaccines, including approaches to differentiating, priming, and injecting dendritic cells to achieve maximal anti-tumor efficacy in glioblastoma. These findings are compared to recently completed and currently ongoing glioblastoma clinical trials. Novel methods such as ‘fastDCs’ and vaccines targeting DCs in-vivo may offer more effective treatment when compared to traditional DC vaccines and have already entered the clinic. Expert Commentary: Finally, we discuss the challenges of T-cell dysfunctions caused by glioblastoma immunosuppression and how they affect dendritic cell vaccinations approaches.

KEYWORDS: Cancer Vaccine; Clinical Trials; Dendritic Cell; Glioblastoma; Immunosuppression; Immunotherapy; Recall antigens; T-cell dysfunction; fastDCs; in-vivo DC vaccine

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