FULL TEXT LINKS

SpringerLink FULL-TEXT ARTICLE

Review Clin Transl Oncol. 2024 Dec 23. doi: 10.1007/s12094-024-03830-9.

Autologous tumor lysate-loaded dendritic cell vaccination in glioblastoma patients: a systematic review of literature

Siddharth Shah [1], Aiswarya Nag [2], Brandon Lucke-Wold [3]

PMID: 39714754 DOI: 10.1007/s12094-024-03830-9

Abstract

Glioblastoma (GBM) is one of the most common primary malignant brain tumors. Annually, there are about six instances recorded per 100,000 inhabitants. Treatment for GB has not advanced all that much. Novel medications have been investigated recently for the management of newly diagnosed and recurring instances of GBM. For GBM, surgery, radiation therapy, and alkylating chemotherapy are often used therapies. Immunotherapies, which use the patient's immune reaction against tumors, have long been seen as a potential cancer treatment. One such treatment is the dendritic cell (DC) vaccine. This cell-based vaccination works by stimulating the patient's own dendritic cells' antigenic repertoire, therefore inducing a polyclonal T-cell response. Systematic retrieval of information was performed on PubMed, Embase, and Google Scholar. Specified keywords were used to search, and the articles published in peer-reviewed scientific journals were associated with brain GBM, cancer, and Autologous Tumor Lysate-Loaded Dendritic Cell Vaccination. Selected 90 articles were used in this manuscript, of which 30 articles were clinical trials. Compared to shared tumor antigen peptide vaccines, autologous cancer DCs have a greater ability to stimulate the immune system, which is why dendritic cell fusion vaccines have shown early promise in several clinical studies. Survival rates for vaccinated patients were notably better compared to matched or historical controls. For newly diagnosed patients, the median overall survival (mOS) ranged from 15 to 41.4 months, while the progression-free survival (PFS) ranged from 6 to 25.3 months. We discovered through this analysis that autologous multiomics analysis of DC vaccines showed enhanced antitumor immunity with a focus on using activated, antigen-loaded donor DCs to trigger T-cell responses against cancer, particularly in glioblastoma. It also showed improved patient survival, especially when combined with standard chemoradiotherapy. DC vaccines show promise in treating GBM by enhancing survival and reducing tumor recurrence. However, challenges in vaccine production, antigen selection, and tumor heterogeneity highlight the need for continued research and optimization to improve efficacy and patient outcomes.

Keywords: Brain tumor; Neurosurgery; Vaccine.

© 2024. The Author(s), under exclusive licence to Federación de Sociedades Españolas de Oncología (FESEO).