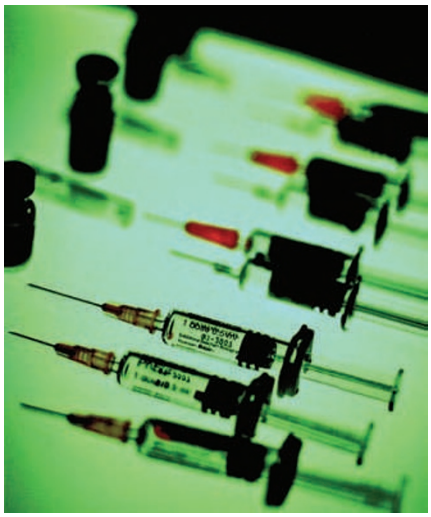
IMMUNOTHERAPY

EGFRvIII vaccine is safe in GBM

Glioblastoma multiforme (GBM) is associated with a poor prognosis and aggressive therapy with conventional agents often results in damage to surrounding normal tissue. More-precise eradication of neoplastic cells is possible by targeting tumor-specific gene mutations using immunologic approaches. A common EGFR mutation, EGFRvIII, is consistently expressed in GBM patients and is an ideal target for antitumor immunotherapy. Sampson and colleagues carried out a study to assess the safety and immunogenicity of a dendritic cell-based vaccine targeting the EGFRvIII antigen.



The study included patients aged 18 years or over with newly diagnosed and histopathologically confirmed GBM. All patients underwent gross total resection and standard external beam radiotherapy before vaccination. Participants received three consecutive vaccinations with autologous mature dendritic cells pulsed with an EGFRvIII-specific peptide conjugated to keyhole limpet hemocyanin. Outcomes included immune response, toxicity, radiographic and clinical progression and death.

In total, 12 patients were vaccinated in this phase I trial. Minimal toxic effects of grade 2 or less occurred. The maximum feasible dose of the vaccine without dose-limiting toxicity was $5.7 \times 10\ 7$ ($+/- 2.9 \times 107$). Antigen-specific T-cell proliferation in response to the vaccine was seen in most patients. The median time to progression was 6.8 months from vaccination and median survival time from vaccination was 18.7 months. From the time of histologic diagnosis, the overall median survival time was 22.8 months.

The authors conclude that the EGFRvIII mutation is a suitable immunogenic target and vaccination that targets this protein is a safe and effective therapy for GBM.

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Original article Sampson, J. H. *et al.* An epidermal growth factor receptor variant III-targeted vaccine is safe and immunogenic in patients with glioblastoma multiforme. *Mol. Cancer Ther.* **8**, 2773–2779 (2009)