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A multicenter, randomized, placebo-controlled phase IIb trial of an autologous formalin-fixed tumor vaccine for newly diagnosed glioblastomas

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Abstract

Objective: An autologous formalin-fixed tumor vaccine (AFTV) derived from resected glioblastoma (GBM) tissue can be used against unidentified tumor antigens. Thus, the authors conducted a multicenter double-blind phase IIb trial to investigate the efficacy of an AFTV.

Methods: Eligible patients were adults with supratentorial GBMs, 16-75 years of age, with Karnofsky Performance Scale (KPS) scores ≥ 60%, and no long-term steroid administration. An AFTV comprising fixed paraffin-embedded tumor tissue with immune adjuvants or an identical placebo without fixed tumor tissue was injected intradermally over three courses before and after chemoradiotherapy. The primary and secondary end points were overall survival (OS), progression-free survival (PFS), and 3-year survival rate.

Results: Sixty-three patients were enrolled. The average patient age was 61 years. The median KPS score was 80%, and the median resection rate was 95%. The full analysis set of 57 patients indicated no significant difference in OS (p = 0.64) for the AFTV group (median OS 25.6 months, 3-year OS rate 38%) compared with the placebo group (31.5 months and 41%, respectively) and no difference in PFS (median PFS 13.3 months in both groups, p = 0.98). For patients with imaging-based total tumor removal, the 3-year PFS rate was 81% in the AFTV group versus 46% in the placebo group (p = 0.067), whereas the 3-year OS rate was 80% versus 54% (p = 0.16), respectively. Similar results were obtained in the p53-negative subgroups. Severe adverse effects were not observed.

Conclusions: The AFTV may have potential effects in certain patient subgroups. A phase III study for patients with total tumor removal remains warranted to confirm these findings. Clinical trial registration no.: UMIN000010602 (UMIN Clinical Trials Registry).

Keywords: glioblastoma; immunotherapy; oncology; temozolomide; total tumor resection; tumor vaccine.

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