



Safety and efficacy of photodynamic therapy using talaporfin sodium for malignant gliomas

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Introduction

To investigate the safety and efficacy of photodynamic therapy(PDT) using talaporfin sodium in patients with surgically completely unresectable malignant gliomas with invasion into the eloquent areas of the brain associated with language and motor functions.

Methods

Subjects consisted of consecutive 14 adult patients

with malignant gliomas that were shown on preoperative diagnostic imaging to have invaded the eloquent areas of the brain. Of these, 6 patients had newly diagnosed tumors and 8 patients had recurrent tumors. In 15 craniotomy and tumor resection procedures, PDT was used as additional intraoperative treatment 24hours after 40 mg/m2 of talaporfin sodium had been injected

intravenously. After the tumor bulk had been resected as extensively as possible either 1 or 2 sites of probable tumor invasion in the bottom of resection cavity were irradiated superficially with a 664-nm diode laser for 180 seconds (27 J/cm2) at a power density of 150 mW/cm2.

Results

PDT achieved a response rate of 80% at the treated sites in the 6 patients with newly diagnosed malignant gliomas. In these patients, the median progression-free survival time was 23 months. The median survival time in 3 patients who died was 26 months, and the remaining 3 patients survived for more than 3 years with a good Karnofsky Performace Scale (KPS). In the 8

patients with recurrent tumors who received PDT, their response rate was low (25.0%), their gliomas recurred 3 months after PDT, and their survival time was only 9 months following PDT. No adverse events directly attributable to PDT occurred in any patients. Protection against light was only required for approximately 3 days after PDT.

Conclusions

We examined the safety and efficacy of PDT using talaporfin sodium as an additional intraoperative treatment for malignant glioma. PDT in addition to surgical resection achieved better therapeutic results than conventional protocols, especially in patients with newly diagnosed malignant gliomas. However, the current methodology has some limitations with respect to patients with recurrent tumors. Larger-scale studies are required to confirm the clinical feasibility of PDT plus surgery.

Learning Objectives

Investigate the safety and efficacy of photodynamic therapy(PDT) using talaporfin sodium in patients with surgically completely unresectable malignant gliomas