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Bilateral Laser Interstitial Thermal Therapy for Butterfly Gliomas Compared With Needle Biopsy: A Preliminary Survival Study

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Abstract

Background and objectives: Bilateral/butterfly glioblastoma (bGBM) has a poor prognosis. Resection of these tumors is limited due to severe comorbidities that arise from surgical procedures. Laser interstitial thermal therapy (LITT) offers a minimally invasive cytoreductive therapy for deep-seated tumors such as bGBM. The objective of this study was to evaluate the safety of bilateral LITT in patients with bGBM.

Methods: Medical records of all consecutive patients diagnosed with bGBM by a single surgeon at a single institution from January 2014 to August 2022 were reviewed. Clinical, safety, and radiographic volumetric data were obtained. In addition, an exploratory analysis of survival was performed.

Results: A total of 25 patients were included; 14 underwent biopsy only, and 11 underwent biopsy + LITT (7 underwent bilateral and 4 underwent unilateral LITT). No (0%) intraoperative or postoperative complications were recorded in the treatment group. Tumor volume negatively correlated with extent of treatment (r 2 = 0.44, P = .027). The median progression-free survival was 2.8 months in the biopsy-only group and 5.5 months in the biopsy + LITT group (P = .026). The median overall survival was 4.3 months in the biopsy-only group and 10.3 months in the biopsy + LITT group (P = .035).

Conclusion: Bilateral LITT for bGBM can be safely performed and shows early improvement of the progression-free survival and long-term survival outcomes of these patients.

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