Letter: Newly Diagnosed Adult Basal Ganglia Gliomas Treated With Laser Interstitial Thermal Therapy: A Comparative Cohort With Needle Biopsy

To the Editor:

With great interest we have read the case series of Drs Merenzon et al.[1] The authors report retrospectively on 22 cases of basal ganglia gliomas over the course of 7 years of whom 7 received laser interstitial thermal therapy (LITT) using the Visualase platform, and 15 underwent a biopsy. Selection of treatment was based on surgeon judgment and patient's preference, and LITT was offered when ablation of at least 70% was deemed possible. Baseline characteristics of both cohorts were comparable. The authors report no complications in the LITT group and a mean overall survival (OS) of 20.28 months in the LITT group. They conclude that *"Laser ablation may be a valid treatment option for neuro-oncology patients with basal ganglia lesions. Our study seems to validate that LITT may not add significant complications to biopsy in deep eloquent diffuse gliomas in a tertiary referral center."*

The application of LITT is increasing over the last years, although comparative trials are lacking. We appreciate the effort of the authors to report their experience in this patient population and compare results with those of biopsy only. However, we think some methodological issues should be highlighted, to prevent readers from forming an unfounded opinion about LITT.

The authors report on a significantly heterogeneous cohort of all "basal ganglia gliomas," including very different histological entities, from Pilocytic Astrocytoma WHO I to Glioblastoma IDH1-Wt WHO IV. From a neuro-oncological point of view, this seems highly questionable because survival and complications strongly correlate with histological subtype.

Mean OS was calculated combining low-grade and high-grade gliomas. The reported mean OS of 20.28 vs 13.85 months of LITT vs biopsy should be interpretated keeping in mind the very wide ranges (2.86-53 months in the LITT group and 1.05-32.88 months in the biopsy group) in combination with the different histological diagnoses. The authors state that *"OS was greater in the LITT group without statistical significance […] This was also found when analyzing and comparing the high-grade glioma subgroups alone."* This statement may be factually correct but directs the reader to indicate that there may be a survival benefit of LITT, while it should be noticed that the greater mean OS can be attributed to the bias of histological subtypes. Even in the high-grade glioma subgroup, the Kaplan-Meier curves do not show a trend toward improved survival, while median survival seems worse for the LITT group.

The quality of the data is further degraded by missing outcome data in a substantial proportion of the cohorts. In the biopsy group, 5 of 15 were lost to follow-up (33%). In the LITT group, 2 of 7 (29%) were lost to follow-up early in the treatment (<6 months, with majority less than 1 month). Given the highly limited sample size, data seem simply insufficient to allow a meaningful comparison. The limitations in the quality of the data are briefly mentioned in the study limitations but do not adequately reflect the caution that should be advised when interpreting these results.

Furthermore, the authors report no complications in patients treated with LITT, which is in contradiction with previous reports.[2-5] It should be noted that 2 of 7 (29%) LITT patients were followed for less than 30 days, while surgical complications are generally reported as complications within 30 days. Nevertheless, the authors claim LITT of deep-seated lesions adds no significant risks, and they state that their extensive experience has contributed to these results. With these limited data, this statement cannot be made. Even when adding the cases from this report to the 18 previously reported cases[2,3] of thalamic lesions, combined morbidity and mortality is still over 45% and LITT in this indication should be used with great caution, even at tertiary sites.

Finally, the authors fail to mention that this study, by its retrospective nature, has substantial risk of patient selection bias because consistent inclusion and exclusion criteria were not applied.

In our opinion, the data presented in this study show LITT is feasible in patients with basal ganglia gliomas, but the retrospective design, low sample, missing data, and heterogenous population cannot substantiate any claims regarding safety and overall survival. Statements such as *"Given that LITT is as safe as a needle biopsy but provides a thermoablation option, it should be considered as a potential treatment option […]"* are, in our opinion, not justified. Unfounded positive claims do not help colleague neurosurgeons nor our patients to make conscious choices and could lead to significant medical expenses for interventions that, at this point, are not shown to be effective nor safe. We strongly agree with the authors that well-powered, prospective, randomized trials are necessary to improve evidence of effectiveness of this treatment for appropriate indications.

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