Asian Journal of Surgery xxx (xxxx) xxx

Contents lists available at ScienceDirect

Asian Journal of Surgery

journal homepage: www.e-asianjournalsurgery.com

Letter to Editor

Prognostic value of preoperative seizures in adult glioblastoma: A systematic review and meta-analysis

Keywords:
Seizures
Preoperative
Adult
Glioblastoma

Dear editor

Glioma is the most common type of primary central nervous system tumour and intracranial malignant tumor, representing the majority of all brain tumours.[1] The GBM is belonged to the high grade malignant glioma (WHO grade III-IV), accounting for approximately 65% of cases of gliomas.[2] Epilepsy is a common clinical presentations of primary brain tumors, and seizures are often present as the first clinical symptom, especially in patients with glioma.[3] The incidence of seizures among GBM patients has been reported between 30% and 50%.Preoperative seizures are common symptoms in patients with glioblastoma (GBM).[4]Nevertheless, the prognostic value of the history of preoperative seizures in GBM remains controversial.

We therefore performed a meta-analysis to evaluate the prognostic value of preoperative seizures in adult GBM. A systematic review and meta-analysis was conducted according to the PRISMA guidelines.[5] Relevant articles were retrieved from PubMed, Web of science, Embase and the Cochrane Library databases. The retrieval time limits will be from the database establishment to December 2020. The multivariate-adjusted hazard ratio (HR) and corresponding 95% confidence interval (CI) were used to appraise the effects of preoperative seizures on survival. Heterogeneity between studies and publication bias were also be assessed.

A total of nine retrospective studies including 2954 adult patients with GBM were finally enrolled into the present meta-analysis (Table 1). A significant association was found between positive history of preoperative seizures in GBM adult patients and improved prognosis, with an overall HR for overall survival of 0.74 (95%CI, 0.64 to 0.86; $p < 0.0001$; $I^2 = 41\%$) (Fig. 1).

Positive history of preoperative seizures can be associated with favorable prognosis in GBM patients. But there are still a lot of variables to be taken into further considered, such as genetic map, lead time bias, and anti-epileptic drugs (AEDs) therapy. The results from this review provides the high-quality synthesis of evidence to judge whether positive history of preoperative seizures is a prognostic factor for GBM patients. Moreover, future larger prospective cohort studies are need to validate these results.

Table 1
Survival outcomes in all glioblastoma patients stratified based on history of preoperative seizures. HR, hazard ratio; CI, confidence interval.

						Multivariate Analysis of History of Preoperative Seizures and Mortality				
Author	Published year	Country	Sample size	Study design	No. of patients with preoperative seizures	HR	95% CI	p-value	Most common agent	NOS
Ahmadipour et al.	2020	Germany	867	Retrospective	236	0.82	0.69–0.97	0.03	Unavailable	7
Berendsen et al.	2016	Netherlands	647	Retrospective	212	0.75	065–1.01	<0.01	Levetiracetam	7
Flanigan et al.	2017	USA	443	Retrospective	63	0.81	0.65–1.01	0.007	Unavailable	7
Henker et al.	2019	Germany	224	Retrospective	74	1.22	0.801 −1.85	0.357	Unavailable	7
Lorimer et al.	2017	England	339	Retrospective	94	0.63	0.48–0.83	0.001	Unavailable	7
Rigamonti et al.	2017	Italy	151	Retrospective	32	0.8	0.33–1.94	0.67	Levetiracetam	7
Shin et al.	2017	USA	122	Retrospective	58	0.52	0.27–0.95	0.033	Unavailable	7
Singh et al.	2020	India	27	Retrospective	14	0.398	0.16–0.99	0.048	Unavailable	7
Toledo et al.	2015	Spain	134	Retrospective	37	0.52	0.33–0.82	0.006	Unavailable	7

https://doi.org/10.1016/j.asjsur.2021.04.023

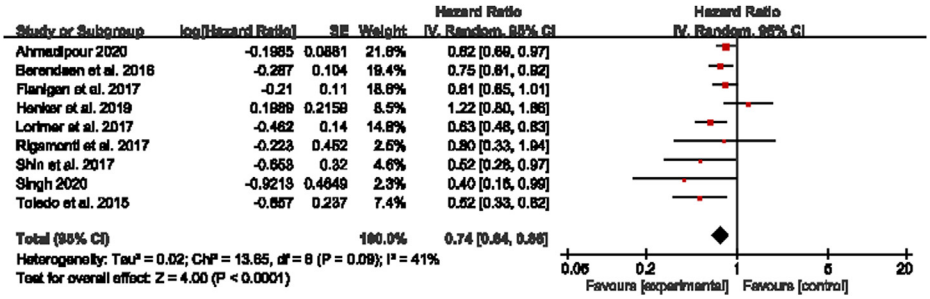

Fig. 1. Forest plot of hazard ratios for the relationship between positive history of preoperative seizures in glioblastoma patients and overall survival. SE, standard error; IV, inverse variance; CI, confidence interval.

Acknowledgements

No funding support was received for this research project.

Appendix B. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.asjsur.2021.04.023.

References

1. Wesseling P, Capper D. WHO 2016 Classification of gliomas. *Neuropathol Appl Neurobiol*. 2018;44:139–150.
2. Liang J, Lv X, Lu C, et al. Prognostic factors of patients with Gliomas - an analysis on 335 patients with Glioblastoma and other forms of Gliomas. *BMC Canc*. 2020;20:35.
3. van Breemen MS, Wilms EB, Vecht CJ. Epilepsy in patients with brain tumours: epidemiology, mechanisms, and management. *Lancet Neurol*. 2007;6:421–430.
4. Sizoo EM, Braam L, Postma TJ, et al. Symptoms and problems in the end-of-life phase of high-grade glioma patients. *Neuro Oncol*. 2010;12:1162–1166.
5. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med*. 2009;6, e1000097.

Keyu Chen, Pei Duan, Pucha Jiang*
Department of Neurosurgery, Zhongnan Hospital of Wuhan University, Wuhan, China

* Corresponding author.
E-mail address: 1042589714@qq.com (P. Jiang).

12 April 2021
Available online xxx