



Prevalence of Seizures in Oligodendroglioma: A Systematic Review and Meta-analysis

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Introduction

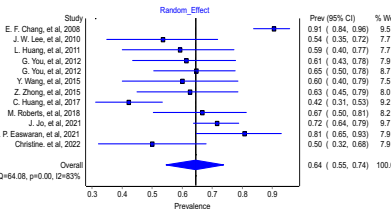
- Oligodendrogliomas are diffusely infiltrating glioma and constitute approximately 5% of primary intracranial tumors.
- Seizure is a common manifestation in this group of patients. However, the prevalence of seizures reported is very heterogeneous as it was affected by different inclusion criteria and the design of a study.
- This study aimed to examine the pooled prevalence of seizures in a patient with oligodendroglioma through a systematic review and meta-analysis.

Method

- A systematic search of three major bibliographic databases PUBMED, EMBASE, and WEB OF SCIENCE, searching for articles published in English up to July 14, 2021.
- Prevalence estimation at 95% CI was carried out with the aid of a random-effects in this meta-analysis.
- Heterogeneity between studies was assessed with a chi-square test (Cochran Q statistic) and quantified with the I² statistic.

Results

Study, Date, Year	Case	Total	Prevalence
E. F. Chang, et al, 2008,	86	95	91
J. W. Lee, et al, 2010	15	28	54
L. Huang, et al, 2011	16	27	59
G. You, et al, 2012	19	31	61
G. You, et al, 2012	31	48	65
Y. Wang, et al, 2015	15	25	60
Z. Zhong, et al, 2015,	20	31	63
C. Huang, et al, 2017	32	76	42
M. Roberts, et al, 2018	24	36	67
J. Jo, et al, 2021	98	137	72
T. P. Easwaran, et al, 2021	25	31	81
Christine, et al, 2022	15	30	50



- A total of 2238 studies were identified from the search strategy. Of these, 12 published, 1 submitted manuscripts, with a total of 724 participants were included in the review.
- The overall pooled prevalence of epilepsy in oligodendroglioma was 64% (95% confident interval (CI) 55 to 74) and significant heterogeneity ($p < 0.001$; $I^2 = 83\%$)
- About 6 out of 10 patients with oligodendroglioma develop a seizure.

Discussion

- The reported prevalence of seizure in oligodendroglioma is varied widely.
- The result was largely affected by various factors such as the sample size and local regional difference encountered by Huang et al that caused lower prevalence. In the study by Chang et al., the longer time frame of follow-up could be the contributing factor for higher seizure prevalence.
- Four papers described the relationship of the genetic mutation with seizure in oligodendrogliomas. One studies showed that 80% of those without LOH 19q mutation developed seizure preoperatively. IDH mutation has no significant relationship with the preoperative seizure.

Conclusion

- Pooled analyses from this review estimates the prevalence of seizure in oligodendroglioma is 64%

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