Pathol Res Pract. 2024 Jan 24:254:155165. doi: 10.1016/j.prp.2024.155165. Online ahead of print.

IDH1 mutation predicts seizure occurrence and prognosis in lower-grade glioma adults

Ting Tang [1], Yihe Wang [1], Yang Dai [1], Quanlei Liu [1], Xiaotong Fan [2], Ye Cheng [1], Jie Tang [1], Xinru Xiao [1], Yongzhi Shan [2], Penghu Wei [3], Guoguang Zhao [4]

Affiliations

PMID: 38286053 DOI: 10.1016/j.prp.2024.155165

Abstract

Epileptic seizures are frequently the first symptom in glioma patients. However, the causal relationship between glioma and epilepsy is not yet fully understood, as it cannot be explained solely by tumor mass effect or peritumoral factors. In this study, we retrospectively enrolled 320 patients with grade 2-4 glioma who received treatment between January 2019 and July 2022, and explored the biomarkers of seizure occurrence and seizure outcome prediction using univariate and multivariate logistic regression analyses. Our results showed that IDH1 R132H mutation was an independent risk factor for seizure occurrence in lower-grade glioma (LGG) patients (OR = 4.915, 95%CI = 1.713 - 14.103, P = 0.003). Additionally, IDH1 R132H mutation predicted higher seizure-free ratios in LGG patients with intact ATRX expression (OR = 6.793, 95%CI = 1.217 - 37.923, P = 0.029) one year after diagnosis. Therefore, our findings suggest that IDH1 mutation can predict seizure occurrence and control in LGG patients, providing further insights into the relationship between glioma and epilepsy.

Keywords: Engel classification; Epilepsy; Glioma; Isocitrate dehydrogenase.