ABSTRACT

J Neuroimaging. 2021 Oct 11. doi: 10.1111/jon.12939. Online ahead of print.

Neuroimaging features of diffuse hemispheric glioma, H3 G34-mutant: A case series and systematic review.

Kurokawa R(1), Baba A(1), Kurokawa M(1), Pinarbasi ES(2), Makise N(3), Ota Y(1), Kim J(1), Srinivasan A(1), Moritani T(1).

Author information:
(1)Division of Neuroradiology, Department of Radiology, University of Michigan, Ann Arbor, Michigan, USA.
(2)Department of Pathology, University of Michigan Medical School, Ann Arbor, Michigan, USA.
(3)Department of Pathology, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan.

BACKGROUND AND PURPOSE: Diffuse hemispheric gliomas, H3 G34-mutant (DHGs-G34m), are newly recognized malignant brain tumors characterized by histone gene mutations. However, the neuroradiologic characteristics of these tumors require elucidation. We reviewed the demographic, clinical, and neuroradiological features of DHGs-G34m.

METHODS: Data were extracted using a database search in MEDLINE, SCOPUS, and Google Scholar in June 2021. Studies assessing pathologically proven DHGs-G34m with each patient's information and neuroradiological findings were included. After screening and reviewing 332 abstracts, 12 articles including 56 cases met the criteria. We also added the findings for three patients evaluated in our hospital. Two board-certified radiologists reviewed all demographic, clinical, and neuroradiological findings of each study. One board-certified pathologist reviewed all pathological data of each study. Kaplan-Meier analyses with log-rank tests were performed to compare the survival between patients with different tumor margin characteristics (well-delineated and ill-defined).

RESULTS: The median patient age at diagnosis was 19 years (range, 6-66 years), and 31/59 patients (52.5%) were men. Supratentorial tumors were observed in all patients (59/59, 100%). Frequent contact with leptomeninges (92.3%) and ependymal regions (87.5%) was observed. The 1- and 2-year survival rates after initial surgery were 66.7% and 40.0%, respectively. DHGs-G34m with ill-defined and well-delineated margins showed significant differences in survival ($p = .04$).

CONCLUSIONS: DHGs-G34m occur most often in the supratentorial regions of adolescents. Prognosis varies among patients. Evaluation of tumor margins may provide prognostic value.

DOI: 10.1111/jon.12939
PMID: 34632671