Astrocytoma IDH-mutant Grade 4

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- Clinical, molecular and radiological predictors of prognosis in newly diagnosed astrocytoma, IDH-mutant, WHO grade 4
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The World Health Organization Classification of Tumors of the Central Nervous System 2021 defined IDH-mutant Astrocytoma, Grade 4. However, the understanding of this subtype is still limited. Chen et al. from the Peking Union Medical College Hospital conducted a study to describe the features of astrocytoma, IDH-mutant, and Grade 4, and explored the similarities and differences between histological and molecular subtypes.

Patients who underwent surgery from January 2011 to January 2022, classified as astrocytoma, IDH-mutant, Grade 4 were included in this study. Clinical, radiological, histopathological, molecular pathological, and survival data were collected for analysis.

Altogether 33 patients with astrocytoma, IDH-mutant, Grade 4 were selected, including 20 with histological and 13 with molecular WHO Grade 4 astrocytoma. Tumor enhancement, intratumoral-necrosis like presentation, larger peritumoral edema, and more explicit tumor margins were frequently observed in histological WHO Grade 4 astrocytoma. Additionally, molecular WHO Grade 4 astrocytoma showed a tendency for relatively longer overall survival, while a statistical significance was not reached (47 vs. 25 months, p = 0.22). TP53, CDK6, and PIK3CA alteration was commonly observed, while PIK3R1 (p = 0.033), Notch1 (p = 0.027), and Mycn (p = 0.027) alterations may affect the overall survival of molecular WHO Grade 4 astrocytomas.

The study scrutinized IDH-mutant, Grade 4 astrocytoma. Therefore, further classification should be considered as the prognosis varied between histological and molecular WHO Grade 4 astrocytomas. Notably, therapies aiming at PIK3R1, Notch1, and Mycn may be beneficial [1].

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Chen W, Guo S, Wang Y, Shi Y, Guo X, Liu D, Li Y, Wang Y, Xing H, Xia Y, Li J, Wu J, Liang T, Wang H, Liu Q, Jin S, Qu T, Li H, Yang T, Zhang K, Wang Y, Ma W. Novel insight into histological and molecular astrocytoma, IDH-mutant, Grade 4 by the updated WHO classification of central nervous system tumors. Cancer Med. 2023 Sep 5. doi: 10.1002/cam4.6476. Epub ahead of print. PMID: 37667984.