

Reactive gliosis differential diagnosis

In some circumstances, especially when the tissue [biopsy](#) is small, there may be difficult to discriminate this reactive condition with low-grade [diffuse astrocytoma](#) (World Health Organization [WHO] grade II) by conventional [hematoxylin](#) and [eosin](#) (H&E) slides, so some immunohistochemical and [molecular markers](#) have been introduced for this [differential diagnosis](#). One of the important aspects of updated WHO classification in 2016 has been dividing some of the glial tumors according to [IDH1](#) (isocitrate dehydrogenase 1) mutation.

In a study, Geramizadeh et al. tried to evaluate [IDH1 mutation](#) and [P53](#) mutation by [immunohistochemistry](#) as a simple and highly specific, and sensitive method to differentiate low-grade astrocytoma and reactive gliosis.

For 5 years (2013-2018), 50 cases of clinically documented reactive gliosis and 50 cases of [low-grade astrocytoma](#) were evaluated for the presence or absence of IDH1 and P53 mutation by immunohistochemistry.

Isocitrate dehydrogenase 1 was positive in 92% and 4% of the astrocytoma and reactive gliosis cases and P53 was positive in 90% and 4% of the cases with the final diagnosis of astrocytoma and reactive gliosis, respectively.

The combination of [P53](#) and [IDH1](#) as an immunohistochemical panel showed a specificity of 96% and [sensitivity](#) of 91% for [differential diagnosis](#) of [reactive gliosis](#) and [low-grade astrocytoma](#). These 2 markers can be extremely helpful for this differential diagnosis ¹⁾.

mIDH1R132H is a tumor-specific marker that is superior to other established markers to differentiate reactive from neoplastic cells in grade II and III gliomas and allows identifying tumor cells in posttherapy specimens with extensive reactive changes. As IDH mutations are not characteristic of grade IV primary glioblastomas, this antibody cannot differentiate primary glioblastoma from reactive gliosis. Thus, caution has to be taken and a combined panel with other markers is needed ²⁾.

¹⁾

Geramizadeh B, Kohandel-Shirazi M, Soltani A. A Simple Panel of IDH1 and P53 in Differential Diagnosis Between Low-Grade Astrocytoma and Reactive Gliosis. Clin Pathol. 2021 Feb 11;14:2632010x20986168. doi: 10.1177/2632010x20986168. PMID: 33634261; PMCID: PMC7887675.

²⁾

Capper D, Sahm F, Hartmann C, Meyermann R, von Deimling A, Schittenhelm J. Application of mutant IDH1 antibody to differentiate diffuse glioma from nonneoplastic central nervous system lesions and therapy-induced changes. Am J Surg Pathol. 2010 Aug;34(8):1199-204. doi: 10.1097/PAS.0b013e3181e7740d. PMID: 20661018.

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