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Recent Developments and Future Directions in Adult Lower-Grade Gliomas: Society for Neuro-Oncology (SNO) and European Association of Neuro-Oncology (EANO) Consensus.

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The finding that most grade II and III gliomas harbor isocitrate dehydrogenase (IDH) mutations conveying a relatively favorable and fairly similar prognosis in both tumor grades highlights that these tumors represent a fundamentally different entity from IDH wild-type gliomas exemplified in most glioblastoma. Herein we review the most recent developments in molecular neuropathology leading to reclassification of these tumors based upon IDH and 1p/19q status, as well as the potential roles of methylation profiling and CDKN2A/B deletional analysis. We discuss the epidemiology, clinical manifestations, benefit of surgical resection, and neuroimaging features of lower-grade gliomas as they relate to molecular subtype, including advanced imaging techniques such as 2-hydroxyglutarate magnetic resonance spectroscopy and amino acid PET scanning. Recent, ongoing and planned studies of radiation therapy and both cytotoxic and targeted chemotherapies are summarized, including both small molecule and immunotherapy approaches specifically targeting the mutant IDH protein.

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