New Classification for Central Nervous System Tumors: Implications for Diagnosis and Therapy.

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Abstract

The 2016 World Health Organization Classification of Tumors of the Central Nervous System (WHO 2016) represents a noteworthy divergence from prior classification schemas. This new classification introduced the concept of "integrated diagnoses" based on a marriage of both phenotypic (microscopic) and genotypic parameters, with the intended goals of improving diagnostic accuracy and patient management. The result is a major restructuring in many of the brain tumor categories, with the codification of multiple new tumor entities and subgroups. It is therefore imperative that pathologists, clinicians, and neuro-oncology researchers alike rapidly become familiar with this new classification schema. Many of the diagnostic updates set forth in the WHO 2016 have impacted brain tumor types that commonly arise in the pediatric age group, particularly within the diffuse glioma, ependymoma, and embryonal tumor categories. This review gives a brief overview of (1) the WHO 2016 as it relates to pediatric central nervous system (CNS) tumors, with an emphasis on molecular diagnostic tools used in the clinical arena, (2) ongoing and developing approaches to the molecular and genomic classification of pediatric CNS tumors, and (3) the impact of this new classification schema on clinical trials in pediatric neuro-oncology.

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