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Response assessment in pediatric neurooncology (RAPNO) criteria revisited: a practical navigation guide for neuroradiologists

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Abstract

The Response Assessment in Pediatric Neuro-Oncology (RAPNO) Working Group is an international, collaborative network of experts dedicated to pediatric central nervous system (CNS) tumors that was created in 2011. Since then, six RAPNO articles with imaging guidelines for response assessment in diverse pediatric tumor subgroups have been published, namely: 1) medulloblastomas and leptomeningeal seeding tumors (2018), 2) pediatric high-grade gliomas (2020), 3) pediatric low-grade gliomas (2020), 4) diffuse intrinsic pontine gliomas (2020), 5) pediatric intracranial ependymomas (2022) and 6) pediatric craniopharyngiomas (2023). The purpose of this article is to review all current available RAPNO criteria using a systematized and comparative approach centered on the role of neuroradiologists and supported by neuroimaging examples. Special emphasis will be placed on clarification of core concepts as well as practical adoption aspects of the RAPNO guidelines, namely how and when to image the brain and/or the spine; how to interpret the imaging findings; which other clinical, therapeutic and laboratory variables to consider; and finally how to apply the information to attribute the final appropriate response assessment classification.

Keywords: Brain tumor; Central Nervous System Neoplasms; Neuroimaging; Pediatrics; Spinal cord tumor.

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