

Pediatric Pathology & Laboratory Medicine

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Magnetic resonance (MR) techniques offer a non-invasive, non-irradiating yet sensitive approach to diagnose and monitor pediatric brain tumors. Proton magnetic resonance spectroscopy (MRS), as an adjunct to MRI, has been more widely applied to monitor the metabolic aspects of brain cancer. *In vivo* MRS biomarkers represent a promising method and may influence the treatment choice both at initial diagnosis and follow-up, given the inherent difficulties of sequential biopsies to monitor therapeutic response. When combined with anatomical or other types of imaging, MRS provide unique information regarding biochemistry in inoperable brain tumors and may complement neuro-pathologic data, guide biopsies and suggest therapeutic options. The combination of non-invasively acquired prognostic information and the high-resolution anatomical imaging provided by conventional MRI is expected to surpass molecular analysis or DNA microarray gene profiling, both of which, although promising, depend on invasive biopsy. This presentation will focus on recent bibliographic data in the field of MRS in children with brain tumors.

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The AJCC Cancer Staging Manual updates are scheduled to be published on or before October 31, 2016 and will be effective as of January 1, 2017. With regard to lung cancer staging, more emphasis will be placed on tumor size in the 8th edition in order to better stratify patient prognosis. Additional changes in the upcoming addition include factors such as diaphragm invasion, tumor distance from the main stem bronchus, concomitant atelectasis/pneumonitis, changes in nodal status, and changes in the metastatic category. Although therapeutic changes are not anticipated, the new addition is anticipated to place patients with newly diagnosed lung cancer into better prognostic categories. As such, as a practicing pathologist, it is essential to have a thorough understanding of lung cancer staging. The intent of this lecture will be to touch on the AJCC 8th edition updates and to discuss the rationale behind the various changes. Additionally, challenges will be discussed with regard to staging patients, such as appropriately determining tumor size, appropriate categorization of lung adenocarcinoma, and determining synchronous primaries versus metastatic lesions.

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