Cell proliferation markers are used in grading of brain tumors and in patient stratification for different treatments. Therefore, defining simple and accurate proliferation markers are of essential importance. Ki67 labeling index is widely studied, yet it is subject to interlaboratory variability. Ki67 protein is expressed on all cell cycle phases except G0 and does not precisely reflect proliferating cells. Counting mitotic figures (MFs) is used in World Health Organization grading of brain tumors (meningiomas), but the detection of MFs on conventional hematoxylin and eosin stained slides is very time consuming. Further, karyorrhexis and pyknosis in apoptotic or crushed cells may mimic mitotic morphology and falsify counting results. Histone H3 phosphorylation on serine-10 is specific to mitosis and phosphorylated histone H3 (PHH3) proliferation markers (as counts defined per area or as indices defined per cell numbers) are increasingly being used to evaluate proliferation in various tumors. Herein, we review current data on PHH3 proliferation markers in meningeal tumors. PHH3-staining highlights mitotic cells and makes easier of rapid grading by driving pathologist's attention on the most mitotically active areas. Thereby, it would function more sensitive in detecting MFs that might be otherwise overloked and more precise by reducing interobserver variability through allowing the pathologist to analyze if the stained nuclei exhibit morphologic features of mitosis ¹⁰.

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Elmaci İ, Altinoz MA, Sari R, Bolukbasi FH. Phosphorylated Histone H3 (PHH3) as a Novel Cell Proliferation Marker and Prognosticator for Meningeal Tumors: A Short Review. Appl Immunohistochem Mol Morphol. 2017 Aug 2. doi: 10.1097/PAI.000000000000499. [Epub ahead of print] PubMed PMID: 28777144.

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