

even in the absence of TPMs. Its presence may identify patients who may progress earlier and should be considered in risk stratification models.

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Molecular characterization of RTOG-0539 risk groups in meningioma: insights into radiotherapy response and tumor biology

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Background: Meningiomas are the most common intracranial tumors. Radiotherapy (RT) serves as an adjunct following surgical resection; however, response varies. RTOG-0539 is a prospective, phase 2, trial that stratified patients risk groups based on clinical and pathological criteria, providing key benchmarks for RT outcomes. This is the first study that aims to characterize the molecular landscape of an RT clinical trial in meningiomas. **Methods:** Tissue from 100 patients was analyzed using DNA methylation, RNA sequencing, and whole-exome sequencing. Copy number variations and mutational profiles were assessed to determine associations with meningioma aggressiveness. Tumors were molecularly classified and pathway analyses were conducted to identify biological processes associated with RT response. **Results:** High-risk meningiomas exhibited cell cycle dysregulation and hypermetabolic pathway upregulation. 1p loss and 1q gain were more frequent in aggressive meningiomas, and NF2 and non-NF2 mutations co-occurred in some high-risk tumors. Molecular findings led to the reclassification of several cases, highlighting the limitations of histopathologic grading alone. **Conclusions:** This is the first study to comprehensively characterize the molecular landscape of any RT trial in meningioma, integrating multi-omic data to refine treatment stratification. Findings align with ongoing genomically driven meningioma clinical trials and underscore the need for prospective tissue banking to enhance biomarker-driven treatment strategies.

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Negative feedback between Ezh2 and Cyclin D1 governs granule neuron precursor fate

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Background: While developing a differentiation therapy for Sonic Hedgehog Medulloblastoma (MB), we discovered a potential paradoxical feedback cycle between Ezh2, a protein that temporarily keeps differentiation genes silenced via trimethylating H3K27, and Cyclin D1, a protein that regulates cell cycle entry. **Methods:** We quantified H3K27me3 in P7 purified cerebral GNPs using chromatin immunoprecipitation sequencing and correlated it with gene expression via RNA sequencing (RNA-seq). To assess transcriptional effects of Ezh2 loss, we purified P7 GNPs from Math1-Cre, Ezh2-flox knockout mice. MB cells were

cultured in suspension spheres and imaged using the ImageXpress Micro XLS system, with nuclei segmented based on DAPI staining. **Results:** Cyclin D1 ranked among the top 7.37% of expressed genes but was heavily marked by the repressive histone mark H3K27me3 (top 5.5%) in GNPs. Ezh2 overexpression increased G0-arrested MB cells 2.7-fold, while, in GNPs, RNA-seq showed significant Cyclin D1 upregulation in Ezh2 knockout mice (Log2FC: 1.301). Cyclin D1 regulates the pRb/E2F1 complex, and we observe that Ezh2 expression depends on pRb/E2F1 complex abundance, forming a feedback loop. Notably, combining the Hedgehog inhibitor Vismodegib with an Ezh2 inhibitor rescued MB cells from Vismodegib-induced death. **Conclusions:** Our study introduces a model that promotes GNP differentiation, leading tumor cells to differentiate into neurons.

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Convexity dermoid cyst: a case report and review of the literature

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Background: Dermoid cysts are rare benign intracranial lesions arising from abnormal neuroectodermal folding during embryogenesis. While typically midline, near the sella or posterior fossa, we report an unusual case of a convexity dermoid cyst extending into the sylvian fissure. **Methods:** A 33-year-old female with a left convexity mass underwent resection, confirming a dermoid cyst. A literature review was also conducted. **Results:** The patient presented with progressive, intermittent right-sided hand and face paresthesias. CT showed a 4.3 × 4.7 cm hypodense lesion with peripheral calcification contiguous with the calvarium. MRI revealed an extra-axial, T2-hyperintense, T1-hypointense lesion with internal septations extending from the calvarium into the sylvian fissure. Craniotomy achieved gross total resection, revealing a soft lesion with interwoven hair, suggestive of a dermoid cyst. Pathology confirmed a cystic lesion with mature squamous epithelium, keratin, skin appendages, and chronic inflammation. **Conclusions:** Dermoid cysts are rare intracranial lesions that most commonly occur in the midline. This case highlights a rare convexity dermoid cyst, expanding our understanding of its atypical locations.

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Postoperative visual deterioration after endoscopic pituitary adenoma resection: predictors, management, and long-term sequelae

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Background: Postoperative visual deterioration following endoscopic endonasal surgery for pituitary adenoma is very rare yet significant morbidity. Visual deficit can arise from iatrogenic injury, compression or ischemic insults. The specific predictors of