Tumor recurrence

see Glioblastoma recurrence.

Etiology

Glioma stem cells (GSC) contribute to the tumor's heterogenous nature, therapeutic resistance, and, thereby, inevitable tumor recurrence [1) 2)].

Diagnosis

Ancillary criteria to identify tumor recurrence such as MacDonald criteria or RANO criteria may provide false diagnoses. Perfusion MRI imaging has been proposed to differentiate post-treatment changes from recurrence.

An increase in FLAIR signal of the fluid within the resection cavity might be a highly specific and early sign of local tumor recurrence/tumor progression also for brain metastases recurrence. [3)].

Outcome

Tumor recurrence is a leading cause of cancer mortality. Therapies for recurrent disease may fail, at least in part, because the genomic alterations driving the growth of recurrences are distinct from those in the initial tumor. To explore this hypothesis, Johnson et al., sequenced the exomes of 23 initial Low-grade gliomas and recurrent tumors resected from the same patients. In 43% of cases, at least half of the mutations in the initial tumor were undetected at recurrence, including driver mutations in TP53, ATRX, SMARCA4, and BRAF; this suggests that recurrent tumors are often seeded by cells derived from the initial tumor at a very early stage of their evolution. Notably, tumors from 6 of 10 patients treated with the chemotherapeutic drug temozolomide (TMZ) followed an alternative evolutionary path to high-grade glioma. At recurrence, these tumors were hypermutated and harbored driver mutations in the RB (retinoblastoma) and Akt-mTOR (mammalian target of rapamycin) pathways that bore the signature of TMZ-induced mutagenesis [4)].

Tumor recurrence remains the major clinical complication of meningiomas, the majority of recurrences occurring among WHO grade I/benign tumors.

1)
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2)
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3)
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4)

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