Abstract

PURPOSE OF REVIEW: Systematic use of next-generation sequencing technologies has transformed the field of cancer genomics, leading to the identification of genetic alterations in an unanticipated number of genes and regulatory elements. Here, we review recent advances in brain tumour genomics and highlight how these findings improve classification and diagnosis of brain tumours.

RECENT FINDINGS: The studies discussed in this review have shed light on different areas of neuro-oncology. In-depth analysis of paediatric low-grade gliomas as well as paediatric glioblastomas has clarified our molecular understanding of these diseases, clearly distinguishing them from their adult counterparts. Unexpected novel mutations have been discovered in adult low-grade astrocytomas and in glioblastomas. Novel studies also highlighted candidate tumour suppressor genes located on the chromosome arms frequently deleted in oligodendrogiomas. Finally, we review recent discoveries in the molecular landscapes of medulloblastomas and meningiomas.

SUMMARY: These recent studies begin to provide an in-depth view of the molecular routes leading to brain tumour development. The findings will be critical for refining classification systems and improving clinical management.

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