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Neuropathological diagnosis of brain tumours.

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Abstract

With recent progress in radiological, pathological, immunohistochemical, molecular and genetic diagnoses, the characterisation of brain tumours has improved. The last World Health Organization (WHO) Classification of Tumours of the Central Nervous System was done in 2007, based on morphological features, growth pattern and molecular profile of neoplastic cells, defined malignancy grade. The neuropathological diagnosis and the grading of each histotype are based on identification of histopathological criteria and immunohistochemical data. Molecular and genetic profiles may identify different tumour subtypes varying in biological and clinical behaviour, indicating prognostic and predictive factors. In order to investigate new therapeutic approaches, it is important to study the molecular pathways responsible for proliferation, invasion, angiogenesis, and anaplastic transformation. Different prognostic and predictive factors for glioma patients were identified by genetic studies, such as the loss of heterozygosity on chromosome 1p and 19q for oligodendrogliomas, proangiogenic factors such as Vascular Endothelial Growth Factor for glioblastomas and the methylation status of gene promoter of MethylGuanine-MethylTransferase. In conclusion, the prognostic evaluation and the therapeutic strategies for patients depend on the synthesis of histological diagnosis, malignancy grade, gene-molecular profile, radiological images, surgical resection and clinical findings (age, tumour location, and "performance status").

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