Epigenetic Aberrations in Malignant Gliomas: An Open Door Leading to Better Understanding and Treatment

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Malignant gliomas and specially glioblastoma multiforme are the most frequent and devastating brain tumors in adults. Intensive molecular and cytogenetical studies have revealed a wide variety of deregulated genes implicated in cell cycle, DNA repair, apoptosis, cell migration, invasion and angiogenesis with little translational success. An increasing number of reports investigating epigenetic injuries in malignant gliomas have been recently published, although the panorama of CpG island aberrant hypermethylation, histone modification and chromatin states in these lethal tumors is only partially devised. In the present analysis, we discuss the magnitude and significance of epigenetic lesions in the pathogenesis and mechanisms of progression of malignant gliomas as well as their influence on patient survival. The new venue of epigenetic research provides tools for the identification of genes differentially methylated that may be implicated in tumorigenesis and furthermore, epigenetics-based drugs may constitute a promising alternative resource of therapy for this, to the moment, incurable malignancy.

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