The etiopathogenesis of diffuse low-grade gliomas.

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Abstract

The origins of diffuse low-grade gliomas (DLGG) are unknown. Beyond some limited data on their temporal and cellular origins, the mechanisms and risk factors involved are poorly known. First, based on strong relationships between DLGG development and the eloquence of brain regions frequently invaded by these tumors, we propose a "functional theory" to explain the origin of DLGG. Second, the biological pathways involved in DLGG genesis may differ according to tumor location (anatomo-molecular correlations). The cellular and molecular mechanisms of such "molecular theory" will be reviewed. Third, the geographical distribution of diffuse WHO grade II-III gliomas within populations is heterogeneous, suggesting possible environmental risk factors. We will discuss this "environmental theory". Finally, we will summarize the current knowledge on genetic susceptibility in gliomas ("genetic predisposition theory"). These crucial issues illustrate the close relationships between the pathophysiology of gliomagenesis, the anatomo-functional organization of the brain, and personalized management of DLGG patients.

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