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Research Article

Potential Biomarkers in Diagnosis, Prognosis and Prediction of Treatment Response in Malignant Glioma

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ABSTRACT

Gliomas are the most common type of primary central nervous system malignancies with poor prognosis in adults. There are several challenges in developing a treatment protocol for this malignancy including presence of blood-brain barrier that inhibit drug delivery to brain tissue, drug and radiation resistance of tumor cells, and inter and intra-tumor heterogeneity of glioma. In addition, early treatment assessment is difficult for glioma patients because of phenomenon of pseudo-progression. Due to the challenges involved in treatment and monitoring of treatment response for glioma, it is very helpful to identify specific and non-invasive molecular and imaging markers in order to provide useful prognostic information. The aim of this article is to summarize several potential biological and imaging markers regarding malignant glioma. A brief description of the proteins involved in the glioma signaling pathways is provided in order to introduce potential biological markers. Furthermore, the role of imaging techniques in treatment management is discussed. Finally, correlation between tumor characteristics and values of angiogenesis and physiological factors measured in perfusion magnetic resonance imaging techniques as well as metabolites in MRS, and PET tracer's uptake is investigated.

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