

ABSTRACT

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Emerging role of extracellular vesicles in the pathogenesis of glioblastoma.

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While brain tumors are not extremely frequent, they cause high mortality due to lack of appropriate treatment and late detection. Glioblastoma is the most frequent type of primary brain tumor. This malignant tumor has a highly aggressive behavior. Expression profile of different types of transcripts, methylation status of a number of genomic loci and chromosomal aberrations have been found to affect course of glioblastoma and propensity for recurrence and metastasis. Recent studies have shown that glioblastoma cells produce extracellular vesicles whose cargo can affect behavior of neighboring cells. Several miRNAs such as miR-301a, miR-221, miR-21, miR-16, miR-19b, miR-20, miR-26a, miR-92, miR-93, miR-29a, miR-222, miR-221 and miR-30a have been shown to be transferred by glioblastoma-derived extracellular vesicles and enhance the malignant behavior of these cells. Other components of glioblastoma-derived extracellular vesicles are EGFRvIII mRNA/protein, Ndfip1, PTEN, MYC ssDNA and IDH1 mRNA. In the current review, we discuss the available data about the molecular composition of glioblastoma-derived extracellular vesicles and their impact on the progression of this malignant tumor and its resistance to therapeutic modalities.

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