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Poster Presentation

Role of Exosomes as Novel Biomarkers in Diagnosis and Prognosis of Glioblastoma

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Abstract

Glioblastoma multiforme (GBM) is the most prevalent primary brain tumor. Exosomes are extracellular vehicles for exchanging information between various cell types including cancer and normal cells. Exosomes are indicative of pathophysiological conditions of brain tumors that could be used in diagnosis and prognosis of GBM. In tumors, exosomes could carry various molecules like several miRNAs and proteins from host cells to recipient cells leading to development of tumor. Exosomes can be isolated from blood serum in different manners. One way is using antibodies against exosomal markers. What makes the exosomes “ideal” biomarkers for clinical diagnosis and prognosis is that exosomal miRNAs and proteins are protected from RNases and proteases respectively, thus can be stably detected in circulating serum. For instance, it has been shown that the upregulated miRNA-326 and miRNA-130a, and downregulated miRNA-323 and miRNA-329 could be associated with long overall survival in GBM patients. Also it is found that circulating miRNA-128 and miRNA-342-3p were positively correlated with histopathological grades of GBM. Moreover, it is indicated that miRNA-24 could be an oncogene and be used as diagnostic biomarker. On the other hand, Serum exosomes from patients with brain tumors possess EGFR, EGFRvIII, TGF-beta, and Tetraspanins which are potentially useful in diagnosis of GBM. There are few studies in term of using exosomes as tumor biomarkers but we claim that the most important advantage of exosomes is their potential to be used as biomarkers for clinical diagnosis and prognosis. Further studies are needed to prove this concept and make it operative in clinics.

Keywords: Glioblastoma Multiform, Exosomes, Micronas, Diagnosis, Prognosis

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