

عنوان مقاله:

Leukemia- Derived Exosomes Activate Migration and Tumor-Associated Genes in Astrocytes Isolated from Human Brain Tissue

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خلاصه مقاله:

Background: In children with lymphoblastic leukemia (ALL), cancerous metastasis to the central nervous system (CNS) is common, but there is insufficient information on this metastasis and cancer progression process. Further, the role of exosomes on cancer growth and metastasis has been the attention of many studies. Because the astrocytes involve in the blood-brain barrier and stay in contact with peripheral blood, we investigated the effect of exosomes derived Nalm6 cell line on astrocytes from human brain fetal tissue. **Methods:** In this in vitro study, exosomes were isolated from the supernatant of Nalm6 cell line by centrifugation and identified by DLS, AFM and FE-SEM methods. Astrocytes were isolated from human fetal brain tissue cells and expanded and identified by GFAP antibody with immunocytochemistry. Astrocytes were treated with different concentrations of exosomes (i.e., 5, 10, 30, and 50 µg/ml). Proliferation and migration were assessed with Trypan blue staining and scratch methods, respectively. To define tumorigenesis changes in astrocytes treated by exosomes, the expression of MMP9, P53, and Cox2 genes were investigated by Real-Time PCR. **Findings:** According to the DLS results, the size of exosomes was about 130 nm. AFM and FE-SEM imaging indicated these exosomes have a spherical shape. Our results showed that the proliferation of astrocytes significantly increased when treated with 50 µg/ml of exosomes. Therefore, the concentration of 50 µg/ml was considered for further experiments. Astrocyte migration was significantly increased compared to the control group. Finally, our results showed tumorigenesis changes in astrocytes by increasing the expression of MMP9 and Cox2 and decreasing the expression of p53 at mRNA level. **Conclusion:** Based on our in vitro study, exosomes derived from ALL as a peripheral tumor can change the behavior of astrocytes as a target for metastasis. Further investigations on this topic are warranted to shed light on metastatic mechanisms.

کلمات کلیدی:

Leukemia, Exosome, Astrocyte, Tumorigenesis

لینک ثابت مقاله در پایگاه سیویلیکا:

