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[Glioma treatment strategies using mesenchymal stem cells].

[Article in Japanese]

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Abstract

Because of the growth characteristics of malignant gliomas that are highly invasive and deeply infiltrate the surrounding brain area; the surgical resection of these gliomas with preservation of neural functions is almost always noncurative. The residual tumor cells are usually resistant to standard adjuvant radiochemotherapy, and therefore, the tumors inevitably recur after a certain period and finally cause the death of the patients. Neural and mesenchymal stem cells have been extensively studied for the development of new strategies for treating malignant gliomas because of these cells possess the intrinsic property of homing toward tumor cells. By using neural and mesenchymal stem cells as vehicles for drug carriers, it is possible to deliver anticancer drugs to the tumor cells that infiltrate functioning normal brain tissue and are difficult to remove. Several cytokines and suicide genes have been tested, and promising results have been reported in animal brain tumor models. However, further studies involving safety issues such as secondary cancer formation are required before human trials of stem cell therapies. In the present paper, the author has reviewed the recent concepts involved in the treatment of malignant gliomas with stem cells, especially mesenchymal stem cells that are much easier to obtain from the patients themselves.

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