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[Isolation and culture of tumor stem cells from human brain glioma tissues]

[Article in Chinese]

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OBJECTIVE: To isolate and culture tumor stem cells from glioma tissues obtained at surgical operation and to study their biological characteristics. METHODS: Glioma tissues obtained from surgically resected specimens of 8 patients were fully chopped, trypsinized, and filtered to prepare single cell suspensions. The cells were cultured in serum-free medium with EGF, LIF and bFGF. CD133(+) cells were purified by magnetic cell sorting, and cultured continuously in vitro to obtain tumor cell spheres. Tumor stem cells of the 5th passage were induced to differentiate with 10% FBS, and expression of cell differentiation markers such as Nestin, MAP2, GFAP was evaluated with immunocytochemistry techniques. RESULTS: CD133 (+) cells were successfully separated and cultured from one anaplastic mixed astrocyte-ependymocyte type glioma specimen. These cells maintained a sphere-like growth status in vitro (3 months, 14 passages), and can self-renew, proliferate and conditionally differentiate into MAP2(+) and GFAP(+) cells. However, CD133(-) cells did not possess these properties. CONCLUSION: Glioma tissue contains tumor stem cells. Those cells can be cultured and passaged in vitro for a long term, and therefore to offer new approaches for studying cellular and molecular biology of glioma.

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