Influence of Etoposide on anti-apoptotic and multidrug resistance-associated protein genes in CD133 positive U251 glioblastoma stem-like cells.

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Abstract
It has been hypothesized that cancer stem cell is responsible for the refractoriness of glioblastoma therapy. This study is to observe the influence of Etoposide on anti-apoptotic and multidrug resistance-associated protein genes in glioblastoma stem-like cells. U251 glioblastoma cells were cultured and CD133 positive cancer stem-like cells were isolated and identified. Cell counting kit-8 assay, cell morphology and flow cytometry were employed for assaying cell survival condition. Real-time quantitative PCR was chosen for detecting mRNA expression of livin, livinalpha, livinbeta, survivin, MRP1 and MRP3. As results, after Etoposide intervention, the U251 stem-like cells showed more resistant property, more intact morphology and lower apoptotic rate than that in U251 cells (p<0.05). It could be found that the expression of livinbeta in U251 stem-like cells was significantly higher (p<0.05). After Etoposide intervention, only livinalpha was suppressed markedly (p<0.05), while livin expression was not notably decreased with livinbeta increased on the contrary (p<0.05). MRP1 and MRP3 in U251 stem-like cells was significantly higher than that in cancer cells, and after chemotherapy, the expression of MRP1 increased notably (p<0.05). But the expression of survivin and MRP3 did not show this features. In conclusion, after Etoposide intervention glioblastoma stem-like cells showed a stronger resistance to apoptosis and death, and the anti-apoptotic gene livinbeta showed more related with the high survival rate and MRP1 appeared to be more related with transporting chemotherapeutics out of glioblastoma stem-like cells. Copyright © 2010 Elsevier B.V. All rights reserved.

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