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Clinically relevant doses of chemotherapy agents reversibly block formation of glioblastoma neurospheres.

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Abstract

Glioblastoma patients have a poor prognosis, even after surgery, radiotherapy, and chemotherapy with temozolomide or 1,3-bis(2-chloroethyl)-1-nitrosourea. We developed an in vitro recovery model using neurosphere cultures to analyze the efficacy of chemotherapy treatments, and tested whether glioblastoma neurosphere-initiating cells are resistant. Concentrations of chemotherapy drugs that inhibit neurosphere formation are similar to clinically relevant doses. Some lines underwent a transient cell cycle arrest and a robust recovery of neurosphere formation. These results indicate that glioblastoma neurospheres can regrow after treatment with chemotherapy drugs. This neurosphere recovery assay will facilitate studies of chemo-resistant subpopulations and methods to enhance glioblastoma therapy. Copyright © 2010 Elsevier Ireland Ltd. All rights reserved.

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