

Use of nanoparticles for cerebral cancer

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ABSTRACT

Nanoparticles made of poly(butyl cyanoacrylate) (PBCA) or poly(lactic-co-glycolic acid) (PLGA) coated with polysorbate 80 or poloxamer 188 enable the transport of cytostatics such as doxorubicin across the blood-brain barrier (BBB). Following intravenous injection to rats bearing intracranially the very aggressive glioblastoma 101/8 these particles loaded with doxorubicin significantly increased the survival times and led to a complete tumor remission in 20-40% of the animals. Moreover, these particles considerably reduced the dose-limiting cardiotoxicity and also the testicular toxicity of this drug. The drug transport across the BBB by nanoparticles appears to be due to a receptor-mediated interaction with the brain capillary endothelial cells, which is facilitated by certain plasma apolipoproteins adsorbed by nanoparticles in the blood.

Key words: nanoparticles, glioblastoma, doxorubicin, poly(butyl cyanoacrylate), poly(lactide-co-glycolic acid), apolipoproteins.

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