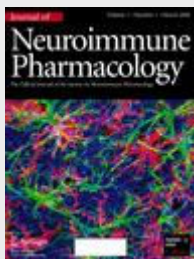


Journal Article



Immunotherapy of Human Neuroblastoma Using Umbilical Cord Blood-Derived Effector Cells

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Abstract Tumors of the nervous system, including neuroblastoma and glioblastoma, are difficult to treat with current therapies. Despite the advances in cancer therapeutics, the outcomes in these patients remain poor and, therefore, new modalities are required. Recent literature demonstrates that cytotoxic effector cells can effectively kill tumors of the nervous system. In addition, we have previously shown that umbilical cord blood (UCB) contains precursors of antitumor cytotoxic effector cells. Therefore, to evaluate the antitumor potential of UCB-derived effector cells, studies were designed to compare the *in vitro* and *in vivo* antitumor effects of UCB- and peripheral blood (PB)-derived antigen-nonspecific and antigen-specific effector cells against tumors of the nervous system. Mononuclear cells (MNCs) from UCB were used to generate both interleukin-2 (IL-2)-activated killer (LAK) cells and tumor-specific cytotoxic T lymphocytes (CTLs). UCB-derived LAK cells showed a significant *in vitro* cytotoxicity against IMR-32, SK-NMC, and U-87 human neuroblastoma and glioblastoma, respectively. In addition, the CTLs generated using dendritic cells primed with IMR-32 tumor cell lysate showed a selective cytotoxicity *in vitro* against IMR-32 cells, but not against U-87 or MDA-231 cells. Furthermore, treatment of SCID mice bearing IMR-32 neuroblastoma with tumor-specific CTLs resulted in a significant ($p < 0.01$) inhibition of tumor growth and increased overall survival. Thus, these results demonstrate the potential of UCB-derived effector cells against human neuroblastoma and warrant further preclinical studies.

Key words neuroblastoma - cord blood - LAK cells - dendritic cells (DCs) - cytotoxic T lymphocytes

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References secured to subscribers.

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