

Local chemotherapy for malignant brain tumors using methotrexate-containing fibrin glue. [Japanese]

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Publication Date: 1995

Abstract:

Fibrin glue (FG) is an agent developed for achieving hemostasis and the adhesion of living tissue during surgical operations. Incorporation of a drug into FG may be expected to have a sustained local release. In the present study, methotrexate (MTX) included in FG (FG-MTX) was used. The release of MTX into human plasma and cerebrospinal fluid was studied by in vitro study to confirm the sustained release effect of this preparation, by in vivo study, in which the antitumor effect of FG-MTX was assessed in rats bearing 9L-gliosarcoma subcutaneously; and clinically, FG-MTX therapy was attempted in patients with malignant brain tumors. The in vitro study showed that MTX levels rapidly decreased over 1 to 3 days, but was still detected on days 7 and 14. The results showed the sustained release effect of MTX. The in vivo study showed that in the FG-MTX group, all tumors began to decrease soon after administration and disappeared in four out of five animals (80%) on about day 10. In the clinical study, sustained release for more than one week was found, and tumor decrease occurred in the case of a malignant brain tumor. Thus, FG-MTX appears to provide an effective local chemotherapy.