PURPOSE: To review the role of amifostine (WR-2721) in ameliorating radiation-induced central nervous system (CNS) toxicity. MATERIALS AND METHODS: Literature review and presentation of preliminary animal experiments designed to test the efficacy of both intrathecal and subcutaneous application of amifostine. RESULTS: Despite its inability to cross the blood-brain barrier, amifostine appears promising because it protects blood vessels against radiation-induced damage. Vascular damage is one of the most important components in the development of CNS toxicity after radiotherapy. Furthermore, the increased permeability of the blood-brain barrier during fractionated radiotherapy might allow penetration of amifostine. Three animal studies with systemic administration found positive results after brain irradiation with different fractionation schedules, total doses and amifostine doses. One study where amifostine was given after radiotherapy showed no protection, suggesting that the timing of the drug application is crucial. Further data suggest that either intrathecal or systemic administration might protect the spinal cord as well. In our experience with spinal cord irradiation, systemic administration was more effective than intrathecal. Regarding CNS protection, the optimum dose of amifostine has yet to be determined. CONCLUSION: Several independent experiments provided preliminary evidence that
modulation of the radiation response of the CNS in vivo by systemic administration of amifostine is possible and feasible. Additional studies are warranted to investigate the protective effect with differing regimens of administration, more clinically relevant fractionation regimens and longer follow-up.

Zeitschriftentitel / Abkürzung:
Anticancer Res

Jahr: 2004
Band: 24
Heft / Issue: 6
Seiten: 3803-9
Sprache: eng
Print-ISSN: 0250-7005
TUM Einrichtung:
r RadioOnkologie und Strahlentherapie

Occurences:
- Einrichtungen > Fakultäten > Fakultät für Medizin > Kliniken und Institute > Klinik und Poliklinik für RadioOnkologie und Strahlentherapie > 2004

entries: