ETOPOSIDE TOXICITY ON HUMAN NEUROBLASTOMA CELLS IN VITRO IS ENHANCED BY PRECEEDING HYPERTHERMIA

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KEYWORDS

neuroblastoma; etoposide; hyperthermia

BACKGROUND

Thermal enhancement has been proven in vitro for the cytotoxic effect of alkylants and platinum compounds, not, however, for etoposide, which acts synergistically to these drugs.

PROCEDURE

Our in vitro study on a neuroblastoma cell line confirmed previous results in other tumor models that the cytotoxicity of etoposide (12.8% as compared to untreated controls) is not enhanced by simultaneous heating to 40 or 42°C for 1 hr (11.9%), as judged by colony forming assay.

RESULTS

The same temperature applied 24 hr before the drug resulted in a significant decrease of colonies (6.1%). Double treatment with etoposide within a 24-hr-interval yielded a similar result (5.6%). The colony number could be further decreased by adding hyperthermia 24 hr before the second treatment (1.3%).

CONCLUSIONS

We demonstrate in vitro that the enhancing effect of increased temperature on the cytotoxicity of etoposide on neuroblastoma cells is not absent, but depends on scheduling. The temperature range used is achievable in total body hyperthermia. Thus, our results are relevant for possible treatment of disseminated neuroblastoma.
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