

WHOLE BODY HYPERTHERMIA IN ADVANCED AND REFRACTORY CHILDHOOD CANCER

Ismail-zade R. S., Zhavrid E.A., Istomin Y.P.

Center for Pediatric Oncology and Hematology. N.N Alexandrov, Institute of Oncology and Medical Radiology, Minsk, Belarus

Purpose

The treatment strategies in the majority of modern protocols in advanced solid tumours which included intensive chemotherapy, surgery and/or radiotherapy produced a higher CR rate than previously observed schemes. However, despite the high response rate, the outcome is disappointing and there is an urgent need for novel treatment strategies in these patients. We used whole body hyperthermia (WBH) as an adjuvant to standard chemotherapy cycles for overcoming drug resistance in this very poor prognostic group of pediatric patients.

Methods

Since 1994, 55 children (girls-29, boys-26) with a median age of 12, 5 (range 6-16) years, have been treated with chemotherapy cycles and WBH (3-4 procedures for every pts). In 27 pts WBH was administered as an adjuvant to standard chemotherapy. In all pts were diagnosed high risk (HR) and metastatic malignant solid tumors: soft tissue sarcoma (STS)-8, Ewing s sarcoma (ES)-6, Osteosarcoma (OsS)-5, renal cell carcinoma (RCC)-5, others-3. In 28 pts with refractory and early relapsed diseases, WBH was used as a salvage therapy with second line chemotherapy (STS-11, OsS-5, ES-3, others-6). WBH (41-43°C, 3 hours) with hyperglycemia (21-26 mmol/l) procedures induced by 13, 56 MHz EM under the general anesthesia. Eight pts in addition to chemotherapy, were given IL-2 (0, 5-1, 0 mln. U/m²) during WBH and the following days (in total of three i.v. infusion) as well as chemotherapy. In case of severe hyperthermia regimens (42, 5-43°C) Cystamine was used for blocking thermal proteolysis.

Results

All pts well tolerated WBH and no treatment-related complication observed. Overall 5-years survival (OS) for all of 26 pts is 61%. These results are considerably better than at the standard therapeutic approach. As a salvage therapy WBH in 28 pts with refractory and relapsed tumors resulted in 11% OS.

Conclusion

WBH is one of the possible ways for increasing tumor sensitivity to chemotherapy and therefore may be used for poor prognostic groups of pts. Further clinical studies are necessary for optimizing temperature regimes, therapy schemes with WBH and cytokines.