RELAPSED HIGH GRADE GLIOMAS TREATED WITH CAPACITIVE HYPERTHERMIA AND TEMOZOLOMIDE: PRELIMINARY RESULTS IN 14 PATIENTS

Dall'Oglio S.[1], Baronzio G.[2], Gramaglia A.[2], D'Amico A.[1], Maluta S.[1]
[1]Radiotherapy Department, University Hospital of Verona, Italy, Telephone: +390458122478, E-mail: stefano.dalloglio@azosp.vr.it; [2]Radiotherapy Department, Policlinico di Monza, Italy

Background:

High grade gliomas - glioblastoma multiforme (GBM) and anaplastic astrocytoma (AA) - are characterized by a very dismal prognosis due to the high rate of relapses after standard therapy (surgery plus radio-chemotherapy). The efficacy of alkylating agents such as Temozolomide (TMZ) is enhanced by heat, so that hyperthermia (HT) - TMZ association could be a valid option. Capacitive HT in brain gliomas has been used in some Institutions; in our Departments, we performed tests on a phantom before starting with clinical use.

Methods:

From January 2005 to September 2007, 14 patients (4 women and 10 men, median age 54, range 40 - 70) were referred to our Institutions for relapsed high grade gliomas (13 GBM, 1 AA). The 13 patients with GBM were previously submitted to resection (12 patients) or biopsy (1 patient) and then underwent conformal radiotherapy (28 - 66 Gy in 2 - 2.5 Gy fractions), plus TMZ chemotherapy. The patient with AA had only a MRI diagnosis and underwent whole brain irradiation (30 Gy in 3 Gy fractions) and then TMZ chemotherapy. Median time from surgery/biopsy to relapse was 7 months (range 2 - 21). HT was performed with a couple of capacitive antennas, with a frequency of 13.56 MHz and a power of 600 W. The patients underwent 4 - 20 HT sessions, once daily to once weekly according to the physician prescription; the duration of the session was 20 - 60 minutes. TMZ was administered with a 1 week on/1 week off schedule; TMZ dose was chosen individually for each patient considering previous TMZ treatments.

Results:

No HT-related toxicity was observed. After a median follow-up of 8 months (range 2 - 24) following the completion of HT, the patient with AA had a no-change of the disease; a grade 1 neutropenia was observed. Among the 13 GBM patients, 5 had a MRI-proven progression of the disease and their general conditions got worse rapidly, requiring medical care; 3 of them died; the other 8 patients had a MRI-proven no-change of the lesion, and they are in satisfactory general conditions; about TMZ, they had no haematological toxicity.

Conclusions:

HT-TMZ is well tolerated. Larger studies are needed to investigate beneficial effects on patients outcome.