

## **Astrocytomas glioblastomas Hyperthermia metabolic inhibitors. Some considerations**

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Astrocytomas and glioblastomas are a class of aggressive neoplasms that are resistant to convectional therapies. Recent studies have demonstrated that Temozolomide (TMZ) is a well tolerated chemotherapy for brain tumors and is active as single agent or in combination with radiotherapy. Several studies in vitro have demonstrated that hyperthermia plus chemotherapy has a higher cytotoxic effect than chemotherapy alone. We have studied 29 patients with aggressive brain tumors [11 glioblastomas (GBM), 6 Astrocytomas IV, 8 Astro II, 1 Oligoastrocytomas] 2 ependymomas and 1 medulloblastomas]. 25 of these patients have been treated with Conformal radiotherapy (CFRT) + TMZ+ capacitive HT and compared with a group treated with CFRT + TMZ. Patients treated with HT have demonstrated an increase in life survival compared to the group treated with CFRT + TMZ alone. Recently after Schwartz L studies we have introduced a combination of glycolysis inhibitors hydroxycitrate +  $\alpha$  lipoic acid (Metabloc) + TMZ at low dosage 20 mg day. Glioblastoma develop resistance to chemo and radiotherapy, in part as a result of a switch from mitochondrial oxidative phosphorylation to cytoplasmic glycolysis. A first patient with Astrocytoma IV operated and treated with chemotherapy, has reached disease stabilization and treated with metabloc for rejection of classic therapy. She is maintaining after six months the disease stabilization. The reasons for associating capacitive hyperthermia with glycolysis inhibitors is discussed as the differences between the patients treated with Oncotherapy (Fiorentini Group) and ours.