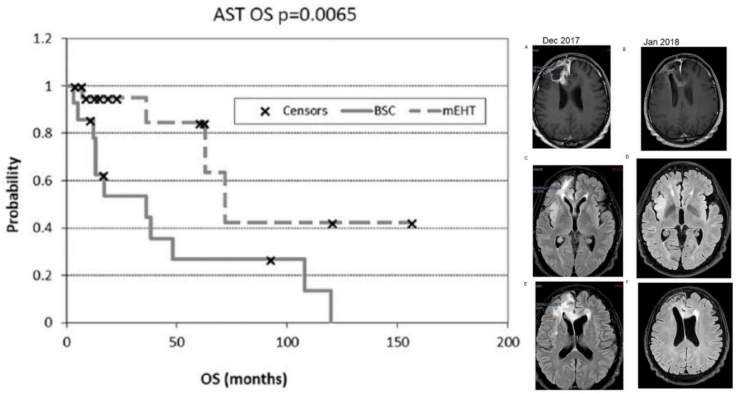
Hypertermia Treatment for Brain Cancer

Abstract from Clinical Trials

Modulated Electrohyperthermia in Integrative Cancer Treatment for Relapsed Malignant Glioblastoma and Astrocytoma: Retrospective Multicentre Controlled Study

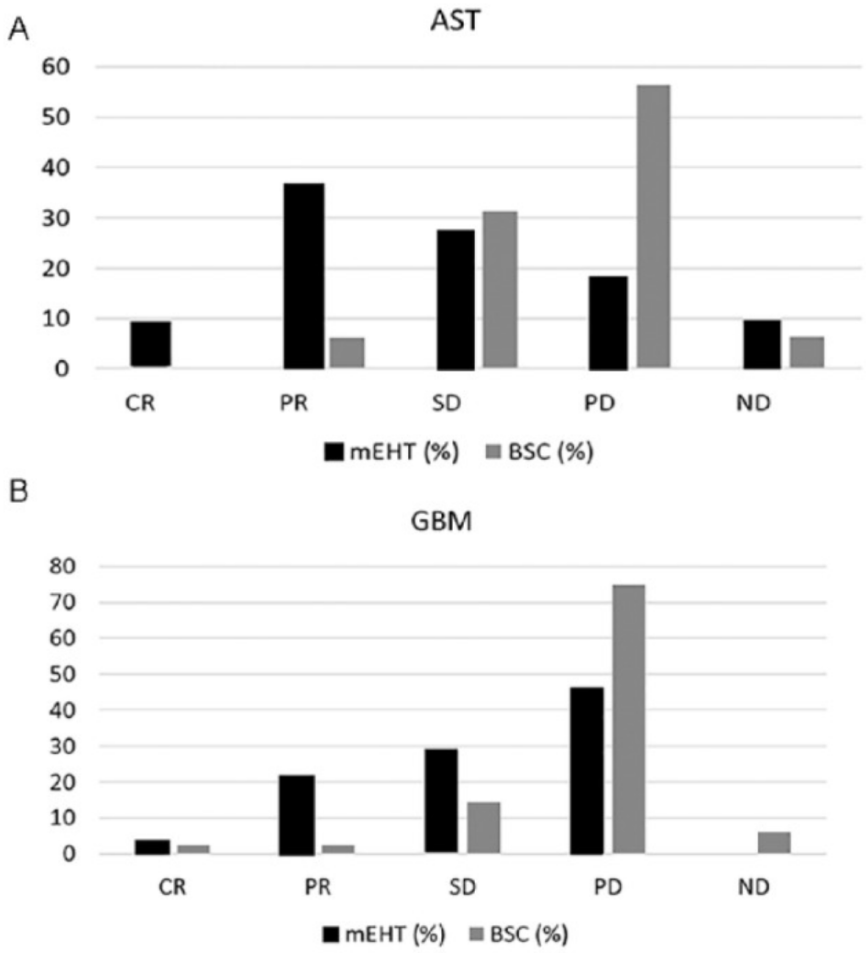
Background: There are interesting studies on glioma therapy with modulated electrohyperthermia (mEHT), which combines heat therapy with an electric field. Clinical researchers not only found the mEHT method feasible for palliation but also reported evidence of therapeutic response. Purpose: To study the efficacy and safety of mEHT for the treatment of relapsed malignant glioma and astrocytoma versus best supportive care (BSC). Methods: We collected data retrospectively on



Tumor response at the 3-month follow-up was observed in 29% and 48% of GBM and AST patients after mEHT, and in 4% and 10% of GBM and AST patients after BSC, respectively.

The survival rate at first and second year in the mEHT group was 77.3% and 40.9% for AST, and 61% and 29% for GBM, respectively.

The 5-year overall survival of AST was 83% after mEHT versus 25% after BSC and 3.5% after mEHT versus 1.2% after BSC for GBM.



Response rates of (A) astrocytoma (AST) and (B) glioblastoma multiforme (GBM). mEHT, modulated electrohyperthermia; BSC, best supportive care; CR, complete response; PR, partial response; SD, stable disease; PD, progressive disease; ND, non detected.

Cost vs Clinical Efficacy

Modulated electro-hyperthermia is not an expensive modality in comparison to radiotherapy, chemotherapy and surgery and the additional cost of the treatment could prevent costs associated with residual disease post-treatment in the event of treatment failure.

Clinical and economic evaluation of modulated electrohyperthermia concurrent to dose-dense temozolomide 21/28 days regimen in the treatment of recurrent glioblastoma: a retrospective analysis of a two-centre German cohort trial with systematic comparison and effect-to-treatment analysis

"Effect-to-treatment analysis (ETA) suggests that mEHT significantly enhances the efficacy of the ddTMZ 21/28 days regimen (p=0.011), with significantly less toxicity (no grade III-IV toxicity vs 45%-92%, p<0.0001). An estimated maximal attainable median survival time is 10.10 months (9.10-11.10)."

"Cost-effectiveness analysis suggests that, unlike ddTMZ 21/28 days alone, ddTMZ+mEHT is cost-effective versus the applicable cost-effectiveness thresholds US$25 000-50 000/quality-adjusted life year (QALY). Budget impact analysis suggests a significant saving of 8 577 947/$11 201 761 with 29.1-38.5 QALY gained per 1000 patients per year. Cost-benefit analysis suggests that mEHT is profitable and will generate revenues between 3 124 574 and $6 458 400, with a total economic effect (saving+revenues) of 5 700 034 to $8 237 432 per mEHT device over an 8-year period."

Conclusions: Our ETA suggests that mEHT significantly improves survival of patients receiving the ddTMZ 21/28 days regimen. Economic evaluation suggests that ddTMZ+mEHT is cost-effective, budget-saving and profitable.

References

Fiorentini G, Sarti D, Milandri C, et al. **Modulated Electrohyperthermia in Integrative Cancer Treatment for Relapsed Malignant Glioblastoma and Astrocytoma: Retrospective Multicenter Controlled Study.** Integrative Cancer Therapies. 2019;18. doi:10.1177/1534735418812691

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