Survival Difference of Advanced-Stage Cervical and Ovarian Cancer Patients Treated with Concomitant Modulated Electro-Hyperthermia in Comparison to Classic Treatment Modalities: Results of a Pilot Study and Meta-Analysis

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Abstract

Background: Modulated electro-hyperthermia (mEHT) is one of the latest advancements in the field of oncological hyperthermia. Previous studies investigating mEHT revealed that it is safe and effective, however, no meta analysis was conducted either in cervical or ovarian cancer.

Methods: A single-institute pilot study and a meta-analysis was conducted. Advanced stage cervical and ovarian cancer cases were included. In the pilot study, mEHT treatments were conducted using the Oncotherm EHY-2000+ and the EHY-2030 devices with 2-3 treatment sessions per week.

Results: For the meta-analysis, a total of 5 studies were identified with 160 and 31 cervical and ovarian cancer patients, respectively. In addition, 175 standard-of-care treated cervical cancer patients were also identified as controls. The 1- and 2-year survival rate of the cervical cancer patients treated with mEHT was 87.61% [95% confidence interval (CI): 71.31% – 100%] and 78.13% (95% CI: 53.02% – 100%). Compared to the controls, the 2-year survival rates (78.13% vs. 58.86%) were significantly better in the mEHT treated cohorts (odds ratio: 0.4143, $p = 0.0441$; hazard rate: 0.6607, $p = 0.0103$). The 1- and 2-year survival rate of ovarian cancer patients was 45.46% (95% CI: 5.97% – 84.95%) and 32.83% (95% CI: 0% – 79.57%), respectively. The result of our institutional data strengthened the results of the meta-analysis.

Conclusions: Using mEHT, significantly higher 2-year survival rate can be achieved in cervical cancer. In this setting, wider testing/application of the modality is warranted. In the case of ovarian tumors, the available knowledge is minimal, and applicability and efficacy studies are urgently needed.

Keywords

Cervical cancer, concomitant therapy, modulated electro-hyperthermia, ovarian cancer, meta-analysis.