

## Treatment of a locally advanced triple negative breast cancer with oncothermia

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# Treatment of a locally advanced triple negative breast cancer with oncothermia

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## Background

Oncothermia (also known as modulated electro-hyperthermia, mEHT) is a current development among the conventional heating methods applied in oncology. mEHT can be considered as curative or palliative treatment for advanced stage, or elderly cancer patients with poor performance status and and/or multiple co-morbidities that otherwise limit the treatment options.

## Aim

Here we report the case of 73-year-old patient diagnosed with grade III triple negative breast cancer (TNBC) with 10% TILs who was successfully treated with mEHT and went into complete remission.

Patient presentation: Diagnosis was set up following PET/CT scan that showed breast tumor (18mm) with lymph node involvement (20mm) in left breast and axilla, that followed a core biopsy revealing grade III, triple negative breast cancer with 10% TILs in April and May 2017, respectively. Neoadjuvant platinum- and taxane-based chemotherapy was administered concomitantly with 24 sessions of mEHT at the Cancer Center of Semmelweis University with the instrument EHY-2000 (Oncotherm Ltd., Budaörs, Hungary). mEHT treatment was performed with power starting at 30-60 Watt with 5-Watt steps every 6 minutes to 50-105 Watt. In two sessions lower maximum power was achieved as the patient's skin showed signs for light burning. Effect of the treatment was clearly demonstrated first in June 2017 with tumor size shrinkage of 11mm and 16mm measured with ultrasound and mammography, respectively. A second ultrasound examination in October 2017 showed 10 mm tumor and the following PET/CT identified 8×3 mm lesion. In November, same year, pathological complete response (pCR) was achieved as no visible tumor was seen via mammography and after sector resection and axillary dissection as no tumor cells were detected by microscopic examination. Patient recovered well from chemotherapy side effects and operation.

Discussion: Complete pathological response was observed in a grade III, triple negative breast cancer after neoadjuvant platinum- and taxane-based chemotherapy and concomitant mEHT treatment. The highest proportion of breast cancer cases reaching pCR following neoadjuvant chemotherapy is in the TNBC subset. Relatively high amount of tumor infiltrating lymphocytes at time of core biopsy and lack of specific immune stimulating treatment might be a sign of the immune-involvement in the molecular mechanism underlying the positive effect of mEHT treatment. Further research is needed to make effects and mechanisms of mEHT treatment deeper understood and its application more accepted.

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