

# **Modulated Electro-Hyperthermia As Additional Treatment Option In Oncology - Feasibility Study On Quality-Of-Life, Imaging And Biomarkers To Support Treatment Planning**

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**Background:** Hyperthermia is composed of a wide variety of treatment methods which ranges from physiotherapy to oncology and can have various physical and technical background. Modulated electro-hyperthermia (mEHT) is a new kind of hyperthermia in oncology.

**Methods and Aim :** We designed a thorough investigation on multiple aspects of mEHT cancer therapy. We present the design of our study. Our objective in this presentation is to summarize our experience on the first 20 patients enrolled in our study investigating imaging by PET/CT scans, blood-based markers of the immune system, quality-of-life questionnaires and patient outcomes.

**Results :** The essence of the clinical study design will be presented and the cohort will be reported with primary and metastatic tumors treated with mEHT (grouped into carcinomas of organ systems, and sarcomas of bone and soft tissues), FACS, QoL and radiographic findings in patient cohorts will be shown as starting points of this investigation.

**Conclusion :** Based on clinical studies, the method mEHT is a feasible hyperthermia technology for oncological applications. Concomitant utilization of capacitive hyperthermia is now supported by the outcome data and we look forward to adjust the treatment protocol and establish predictive markers from blood, tissue and other clinicopathological parameters.

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# Modulated electro-hyperthermia as additional treatment option in oncology : feasibility study on quality-of-life, imaging and biomarkers to support treatment planning



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## Background

Hyperthermia is composed of a wide variety of treatment methods which ranges from physiotherapy to oncology and can have various physical and technical background. Modulated electro-hyperthermia (mEHT) is a current development among the conventional heating methods applied in oncology. mEHT as a complementary treatment has gained support in the treatment of cancer patients as supplementary method besides the standard treatment or for those who exhausted conventional treatment.

## Aim and Methods

We designed a thorough investigation on multiple aspects of mEHT cancer therapy. We present the design of our study. Our objective in this presentation is to summarize our experience on the first 30 patients enrolled in our study investigating imaging by PET/CT scans, blood-based markers of the immune system, quality-of-life questionnaires and patient outcomes.

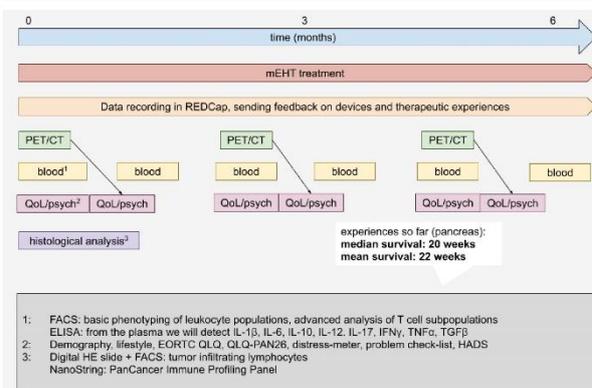


Figure 1. Study design

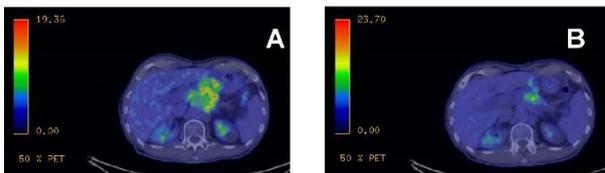


Figure 2. Pre (A) and post treatment (B) PET/CT scans

Effect of treatment is followed by multiple PET/CT scans. In this case the first scan (A) in January 2019 showed avid FDG-uptake in the primary pancreatic tumor (7,5 cm max diameter, SUVmax 9,6). The post treatment scan (B) in April 2019 showed moderate regression with decreased FDG-uptake and decreased size in the pancreatic lesion (3,6 cm max diameter, SUVmax: 8,3).

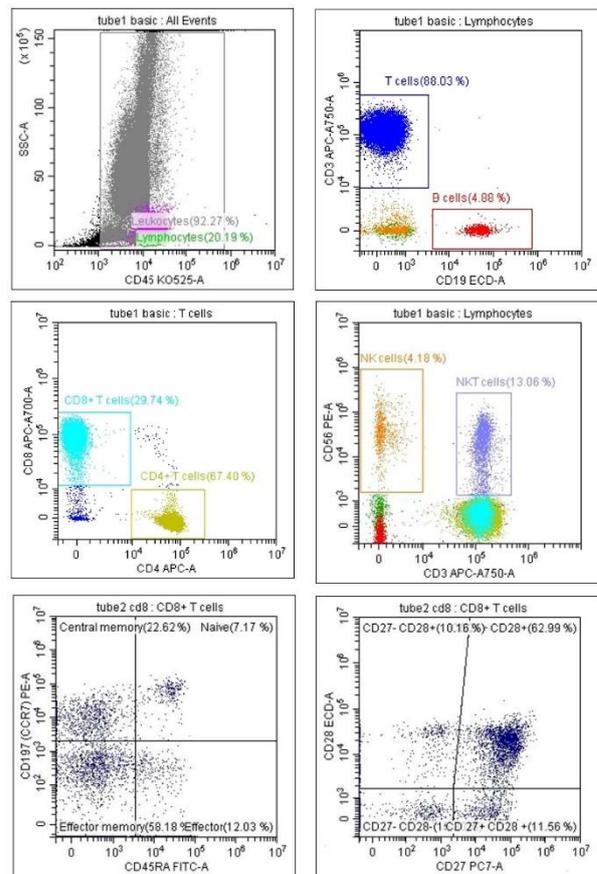


Figure 3. Flow cytometry immunophenotyping

## Results

The essence of the clinical study design will be presented and the cohort will be reported with primary and metastatic tumors treated with mEHT (grouped into carcinomas of organ systems, and sarcomas of bone and soft tissues), FACS, QoL and radiographic findings in patient cohorts will be shown as starting points of this investigation.

## Conclusions

Based on clinical studies, the method mEHT is a feasible hyperthermia technology for oncological applications. Concomitant utilization of capacitive hyperthermia is now supported by the outcome data and we look forward to adjust the treatment protocol and establish predictive markers from blood, tissue and other clinicopathological parameters.

## Acknowledgements

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