Modulated Electro-Hyperthermia in Oligometastatic Cancer Patients: initial experience and clinicopathologic evaluation

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[#]1st Department of Pathology and Experimental Cancer Research, Budapest, Hungary; Cancer Center, Semmelweis University, Budapest, Hungary

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Intoduction

Modulated electro-hyperthermia (mEHY) has gained support in the treatment of cancer patients as **supplementary method** besides the standard treatment or for those who exhausted conventional treatment.

Patients and methods

Seventeen eligible patients were recruited based on clinical rounds decision since SEP-2, 2016.
Primary tumors of patients originated from the locations as follows: 7 pancreas, 4 colorectal, 3 breast, 2 lung and 1 kidney.
Patients who attended one treatment occasion and multiple primary tumors were excluded.
EHY-2000 instrument (Oncothermia Ltd., Budaörs, Hungary) was used and initial power of 60-150 W was applied.
The increments were set to 5-10 W in 5 minute steps.
Tumor markers CEA and CA19-9 and imaging studies were reviewed in light of duration of mEHY therapy.

Results

The patients' data was evaluated on APR-7, 2017.
Average number of metastases of the tumors were 2 (Figure 1).
Various chemotherapeutic protocols were administered to the patients as per guideline recommendations.

Average treatment time of each mEHY occasion was 59.5 minutes.
From the initial power to the final power on average 50W power increment was reached.
The patients underwent 18.7 cycles on average (range: 2-45).

Eight patients (4 pancreas, 1 colon, 1 breast and 1 kidney) had to discontinue the therapy due to progression, especially hydrothorax, ascites and severe pain, their treatment lasted on average 58.6 days.
Upon analyzing pancreatic tumor patients' data, elevated CEA but not CA19-9 levels correlated with progression of disease as confirmed by CT scans and eventual outcome.
The pancreatic cancer patients had an average of 130.6 days on mEHY treatment (Figure 2).
There was no significant difference in the duration of mEHY treatment between those possessing elevated CEA level and subsequently going into progression and those who remained free of symptoms and staying on mEHY therapy.

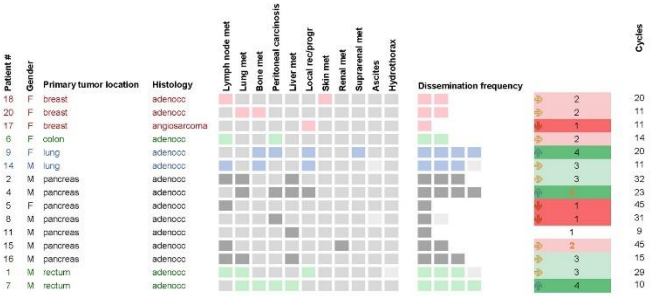

Figure 1. The patients included in the study, and their primary tumors with metastases upon inclusion in the mEHY therapy. Number of occasions of mEHY are listed on the right.

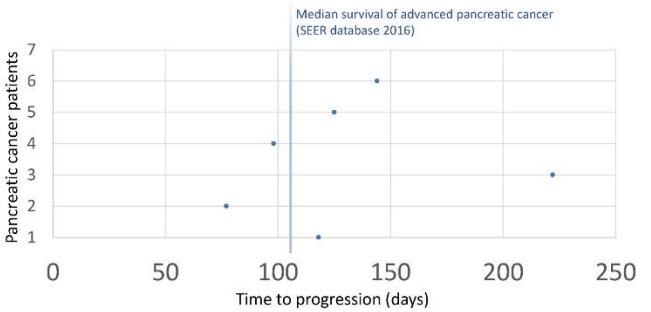

Figure 2. The period of pancreatic cancer patients included in the study spent with mEHY treatment. Three of them have still ongoing mEHY therapy.

Conclusion

Seventeen patients were treated at our mEHY therapy unit, which was established in the past months.
Patients with oligometastatic/inoperable tumors are likely the target population of this treatment approach, especially supplementing systemic therapy.
CEA and CA19-9 levels in pancreatic cancer patients are not predictive for response to mEHY therapy (yet patient numbers are low), thus, identification of better biomarkers is warranted.
In the next phase, we plan to recruit pancreatic cancer patients and identify predictive markers for response to mEHY therapy combinations.

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