

Whole- body- thermochemotherapy: A treatment passing into silence?

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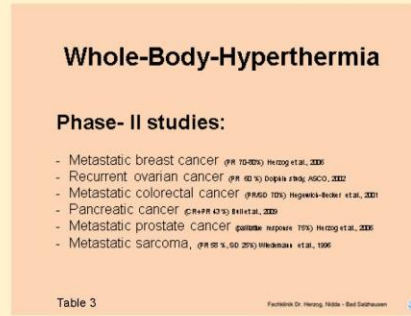
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Introduction:

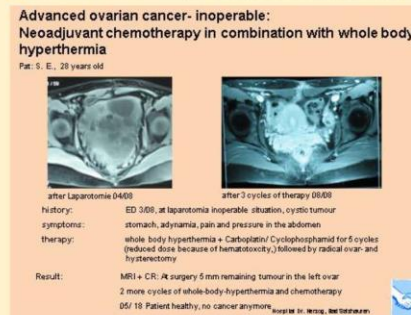
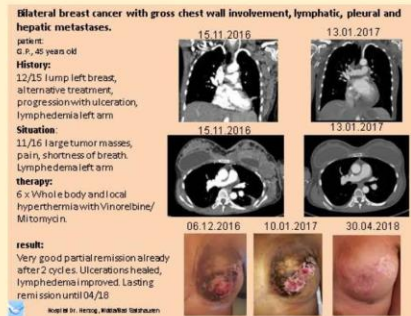
While on one side local hyperthermia as treatment for solitary tumors spreads over the world and becomes in some cancers standard therapy on the other side whole-body-hyperthermia is not researched sufficiently anymore (table 1). With whole- body-hyperthermia (devices: image 1) similar temperatures can be achieved and it can be combined with chemotherapy not only for solitary tumors but also for metastatic disease.



Discussion:

Whole-body hyperthermia shows all effects of local hyperthermia in particular increasing sensitivity of cancer cells against chemotherapy. Whereas local hyperthermia reaches only solitary tumors whole-body-hyperthermia reaches all cancer tissues spread over the body including circulating tumor cells. The temperature monitoring is simple compared to local hyperthermia as the body core temperature is the same in all cells of the body. Fever induced immune reactions may be of additional benefit (table 2).

There are promising phase II studies and also remarkable published case reports (table 3 and case report 1-3).



International use of whole-body- and local hyperthermia

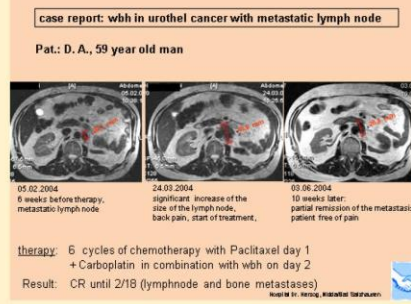
whole-body hyperthermia	local hyperthermia
no randomized studies	few randomized studies
no approval as standard therapy	National approval for few cancers (cervical, sarcoma)
only solitary institutions in few countries	worldwide several radiative devices and hundreds of capacitive devices
performed by medical oncologists	mainly performed by radiologists, capacitive also as complementary treatment

Table 1

Common characteristics and differences between whole-body and local hyperthermia

whole-body-hyperthermia	local hyperthermia
Temperature 41-42°C	Temperature 41-43°C
Uniform temperature distribution	Areas of sufficient temperature and hot spots possible
Simple temperature monitoring	Difficult and expensive temperature monitoring
Suitable for advanced and metastatic disease including circulating tumor cells	Only for localized tumors
Intensive care procedure with analgo-sedation	No major additional procedures
Duration > 4 hrs	Duration < 2 hrs
Additional fever induced immunological effects	Only local immunological effects

Table 2



Conclusion:

Whole body-hyperthermia fulfills the needs of precise temperature control with standardized distribution of the temperature in all tumor tissues. Results published up to now and repeated good experiences of users deserve further research in particular as the method is much cheaper and easier to set up compared to e.g. MRI guided local hyperthermia.