Symposium
Modern Hyperthermia

Kraków - Hotel Sheraton, 14 listopada 2015 r. - godz. 9:30-18:00

Abstracts 2015

Organizatorzy:

PTH POLSKIE TOWARZYSTWO HIPERTERMII

Polskie Towarzystwo Hipertermii

Deutsche Gesellschaft für Hyperthermie e.V. DGHT

Deutsche Gesellschaft für Hypertermie e.V.

Małopolskie Centrum Hipertermii

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Program sympozjum Modern Hyperthermia

9:30 - 10:00 Welcome

Dr med. Andreas-Hans Wasylewski (Kraków-Berlin) PL
Prezydent Polskiego Towarzystwa Hipertermii

Prof. Dr med. Gerard van Rhoon (Rotterdam) NL
President European Society for Hyperthermic Oncology

Dr med. Stephan Wey (Lauf) D
Vorstand der Deutsche Gesellschaft für Hyperthermie

Session I - Chair Prof. Dr med. Rudolf Klimek (Kraków) PL
Vice-Prezydent Polskiego Towarzystwa Hipertermii

10:00 - 10:30
Prof. Dr med. Beata Śpiewankiewcz (Warszawa) PL
Rozwój Hipertermii w Polsce. (Hyperthermia Evolution in Poland)

10:45 - 11:15
Prof. Dr med. Gerard van Rhoon (Rotterdam) Nl
Role of hyperthermia in modern Oncology.

11:30 - 12:00
Prof. Dr med. Niloy Ranjan Datta (Aarau) CH
Hyperthermia and proton irradiation in unresectable soft tissue sarcoma, first result from HYPROSAR study.

12:30 - 13:30 Lunch

Session II - Chair Prof. Dr med. Beata Śpiewankiewicz (Warszawa) PL

13:30 - 14:00
Dr Bettina Weigelin (Nijmegen) NL and (Houston) USA
Activating serial killers of cancer cells with artificial fever: hyperthermia as supporting strategy for immunotherapy of cancer.

14:15 - 14:45
Dr Alexander von Ardenne (Dresden) D
Non-Oncological Application of Whole-Body Hyperthermia.

15:00 - 15:30
Dr med. Friedrich Migeod (Bad Bergzabern) D
Thermo-Chemotherapy as a third-line-treatment or metastasized colorectal carcinomas.

15:45 - 16:15
Dr med. Markus Notter (Bern) CH
Experiences in re-irradiation and wIRA-hyperthermia in recurrent breast cancer.

16:30 - 17:00
Dr med. Stephan Wey (Lauf) D
Evaluation of the fever therapy in the Oncology.

17:15 - 17:45
Dr med. Wulf-Peter Brockmann (Hamburg) D
Viro-chemo-radio-thermo therapy.

Wykłady będą prowadzone w języku angielskim i polskim.
Tłumaczenie symultaniczne.

Rozwój hypertermii w Polsce

Prof. Dr med. Beata Śpiewankiewicz

Hypertermia jako metoda lecznicza w przypadkach onkologicznych w Polsce pojawiła się dopiero w początkach XXI wieku. Początkowo stosowano ją w leczeniu skojarzonym łącznie z brachyterapią, a następnie chemioterapią (2010 r.). Pierwsze aparaty (typu Celsius) umożliwiły stosowanie leczenia lokalnego. Dopiero od 2014 roku zaczęto stosować hypertermię całego ciała.
Obecnie metoda ta dostępna jest w czterech dużych miastach. Wydaje się, że pomimo licznych oporów, dostępność do procedur hipertermii będzie się stale zwiększała. Obecnie w Polsce zabiegi hipertermii w monoterapii i w skojarzeniu z leczeniem systemowym nie są refundowane przez Narodowy Fundusz Zdrowia. Fakt ten powoduje, że wszystkie aparaty do terapii całego ciała dostępne są w ośrodkach prywatnych – co siłą rzeczy – ogranicza do nich dostęp (bariera finansowa).
Od 3 lat w Centrum Onkologii w Warszawie są wykonywane procedury HIPEC – głównie w przypadkach raka jajnika. Do chwili obecnej wykonano ponad 170 takich operacji – uzyskując obiecujące rezultaty. Stosowanie tej metody możliwe jest tylko w wysokospecjalistycznych ośrodkach dysponujących nie tylko kosztownym sprzętem, ale i odpowiednią kadrą.
Wydaje się, że upowszechnienie hipertermii w przypadkach onkologicznych przyczyni się do poprawy zarówno wydłużenia okresu remisji, jak i poprawy przeżyć całkowitych.

Role of hyperthermia in modern oncology

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The use of heat to kill tumor cell goes back to ancient history with the first written reference found 3000BC in the Edwin Smith surgical papyrus. Since then potential benefits of hyperthermia have been reported with frequently, but in general concerned observation of spontaneous regression in patients suffering from infectious fever. It took until the end of the 19th century before hyperthermia in the temperature range of 40-44°C was applied to patients using external heating devices. From the 1960-ties the great potential of hyperthermia to sensitize tumor tissue for radiotherapy and chemotherapy was demonstrated. This resulted in a great enthusiasm and multiple phase III trials were initiated to investigate the clinical benefit of adding hyperthermia to radiotherapy. A number of randomized trials by ESHO and RTOG showed positive results and demonstrated the potential benefit of hyperthermia in large and recurrent tumors. In addition, there were also two RTOG trials showing no benefit which was blamed to inadequate heating technology. Further, hyperthermia was considered labor intensive. At the same time innovation in radiotherapy boomed and many promising drug were introducing causing a rapid declining interest in hyperthermia.

Two decades and several positive new phase III trials later a slow recovery of the interest in hyperthermia is noticed. The Dutch Deep hyperthermia triali (DDHT) was the first study to show that adding hyperthermia to radiotherapy in the treatment for locally advanced cervical cancer resulted in a doubling of the 3yrs overall survival (OS). Other studies followed demonstrating survival gain in tumor pathologies. For patients with peritoneal carcinomatosis of colorectal cancer treated with hyperthermic intraperitoneal chemotherapy (HIPEC) disease specific survival increase from 12 to 22 months. For patients with intermediate-/high-risk non-muscle invasive bladder cancer adding hyperthermia to MMC increased the 3yrs OS from 40% to 83%. For nasopharyngeal tumors adding heat showed in one studyii a 10% absolute increase (63% vs 73%) in 5yrs progression free survival (PFS) and another studyiii showed 19% increase in 3yrs OS. At the last ECCO Issels et al.iv reported that adding hyperthermia to the standard treatment of localized high-risk soft tissue sarcoma improved the 5yrs OS from 51% to 63%. These good results have tempted two public reactions. In an editorial in Radiotherapy and Oncology, Overgaardv states that the time has come for a third round in hyperthermia taking advantage of the improved ability to focus radiation as well as hyperthermia. This should challenge us to apply simultaneous radiation and heat. In a letter to the editor of Lancet Oncology, Januszewski and Stebbingvi state that “the few, but impressive trials are evidence that hyperthermia is not just an anecdotal technology, but one that warrants continued investment and investigation”. The letter of the Ludwig Boltzmann Institute is in strong contrast and state that the benefit of applying adjuvant hyperthermia has not been convincingly demonstrated.

It is at this point that our quest for recognition of hyperthermia starts. At the same it is extremely important that we will not repeat recent mistakes. The future of hyperthermia is critically dependent on our ability to extend the clinical evidence that adding hyperthermia to radiotherapy or chemotherapy increase survival. Such new trials must be carefully designed, taking care that the trial has sufficient power, i.e. adequate number of patients, proper endpoints and having excellent monitoring of the treatment quality. With excellent monitoring, the quality of treatment could even be used as a categorizing factor in analyzing treatment outcome.

Besides additional randomized trial, studies should be performed to investigate whether the recently demonstrated biological effects of hyperthermia, e.g. BRCA2 degradation, enhanced immunological response, improved oxygenation after 24 hrs, will also occur at the thermal dose reached during clinical treatment. In combination with thermosensitive liposome hyperthermia may also be very functional for targeting drug delivery to the tumor. Here, again multiple mechanisms might be exploited, e.g. enhanced extravasation, higher drug concentration, sensitization.

Finally, innovative heating technology should provide better controlled and more focused delivery of hyperthermia, a cascade of effects might be triggered, i.e. higher temperatures, further improved treatment outcome, shorter treatment times, higher acceptance of hyperthermia by patient, clinician and health insurance, etc.

Working together, we should be able to realize many of the above challenges. It will also enable hyperthermia to have a distinct role in modern oncology. As explained in chemotherapy hyperthermia will aid targeted drug delivery, while in modern hypo-fractioned radiotherapy hyperthermia will be needed to eradicate the hypoxic tumor cell population.

Hyperthermia and Proton Irradiation in Unresectable Soft Tissue Sarcoma: First Result from "HYPROSAR" Study

N. R. Datta[1], E. Puric[1], R. Schneider[2], D.C. Weber[2,3], D.Marder[1], O.Timm[1], G.Studer[3], A.Meister[1], B.Fuchs[4], S. Bodis[1,3]

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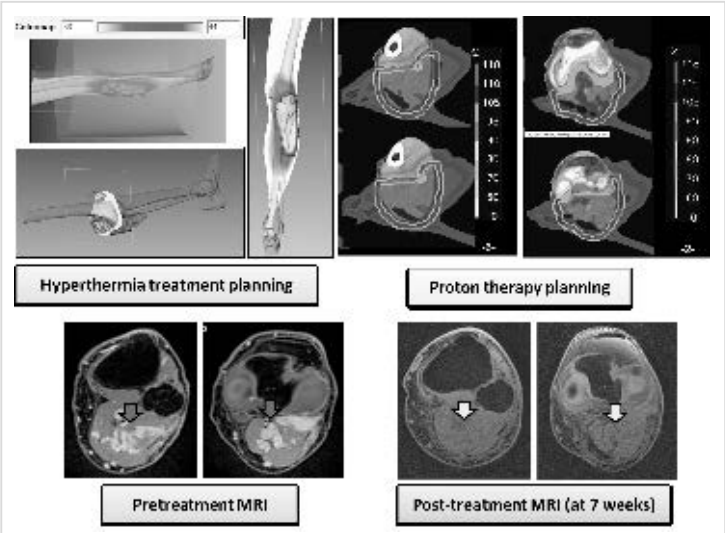
INTRODUCTION

"HYPROSAR", a phase I/II study was launched to examine the feasibility and the efficacy of a combination of hyperthermia (HT) and proton therapy (PT) in unresectable soft tissue sarcoma (STS) [1]. It was based on the rationale that (a) PT with their superior dose distribution profiles could significantly reduce dose to underlying and adjacent structures, thereby minimising integral dose. This could translate into lower radiation morbidity and wound complications and (b) HT has unique radiobiological properties, resembling that of high LET radiations. Thus, a physical and radiobiological advantage of HT and PT could mimic a ^{12}C ion therapy and should be safe, feasible and effective for unresectable STS [2]. We report herein the outcome of the first patient treated with this novel approach.

METHODS

A 79 year old man was referred to us after a partial excision (R2) of a myxoid fibrosarcoma of the left calf muscle. The tumour was staged as T2N0M0G2. At presentation, MRI confirmed the presence of gross residual tumor of 4.7 x 1.1 x 8.6 cm involving the left gastrocnemius and soleus muscles. The tumor was infiltrating the neurovascular compartment and involving the popliteal artery and the peroneus nerve. In view of the above, it was considered unresectable and hence taken up for HYPROSAR study protocol.

Accordingly, the patient received 6 weekly fractions of local HT (at KSA) after PT (at PSI). A total dose of 70 Gy RBE at 2 Gy (RBE)/fr was delivered with protons over 7 weeks. The temperature and proton dose profiles are depicted in the figure.



RESULTS

Patient tolerated both the treatments well, except for dry desquamation at the popliteal region (grade III), which healed completely within two weeks of completion of PT and HT. A repeat MRI at 7 weeks post treatment showed near total response. Patient has no discomfort with any movements at the knee joint and is on regular follow-up.

CONCLUSION

To the best of our knowledge, this is the first patient of STS treated with HT and PT globally. With the very encouraging response, we hope for similar outcomes in future patients recruited in this novel study, HYPROSAR.

REFERENCES

1. Hyperthermia and proton therapy in unresectable soft tissue sarcoma (HYPROSAR). ClinicalTrials.gov identifier NCT01904565, Available at https://clinicaltrials.gov/ct2/show/NCT01904565, Accessed con April 14, 2015.
2. Datta, N.R., Puric E, Schneider R, Weber D, Susanne R, Bodis S. Could hyperthermia with proton mimic carbon ion therapy? Exploring a thermo-radiobiological rationale. Int J Hyperthermia 2014;30:524-30.

Activating serial killers of cancer cells with artificial fever: Hyperthermia as supporting strategy for immunotherapy of cancer

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Activation of the immune system, the body's own anti-cancer defense, is a promising approach for a range of cancer types and has the potential to raise a specific, adaptive and long-lasting anti-cancer protection. The main effector cells of an antitumor immune response are cytotoxic T lymphocytes (CTL), which kill cancer cells in a highly-specific manner by inducing a cell-intrinsic suicide program. Besides activation and expansion of tumor-specific CTL, successful tumor elimination requires an efficient infiltration of CTL into the tumor lesion and stable CTL- tumor cell contact formation. We developed novel in vitro models which mimic the 3D tissue organization and in vivo imaging approaches to visualize immune effector cells within live melanoma lesions. Monitoring CTL function at single-cell level deep within a living tumor shows how CTL cooperate to kill tumor cells and identified resistance niches in the tumor core.

Thus, to further improve anti-cancer immune reactions we studied the effects of moderate local hyperthermia on CTL function. Fever is an evolutionary conserved response which boosts our immune system to fight infections. The immune-stimulating effects of fever combined with the observation that spontaneous remission of cancer in patients is often preceded by a fever period provide a rationale to exploit artificially induced fever to support anti-cancer immunotherapy. significantly increased CTL killing efficiency. The observed accelerated killing rates were due to enhanced CTL migration speed and stabilized CTL – tumor cell contacts combined with direct negative effects on the viability of the melanoma cells.

In summary, kinetic imaging and intravital microscopy were successfully applied to deepen our mechanistic understanding of immune cell function within the tumor microenvironment which forms the basis for improved, rationale design of immunotherapies.

Non-Oncological Application of Whole-Body Hyperthermia

Dr. rer. nat. Alexander von Ardenne
Institute of Applied Medical Research, Dresden, Germany

In ancient Greece and Rome hot water bathes alias whole-body hyperthermia (WBH) were already applied as remedy. In the middle of last century some scientific monographs from experts of physical medicine were published, discussing the use of hot water bathes for alleviation of different illnesses on the basis of large experiences with patients, e. g. by H. Lampert. For many decades non-oncological diseases were in the center of interest. In the 60th it was recognized that hot water bathes for increasing the body-core temperature of cancer patients is physically demanding for the heart-circulatory system. The search for another more tolerable and simple method to increase the body-core temperature was successful in the middle of the 80th. A high tolerable water-filtered infrared-A heat radiation was used for extreme WBH up to body-core temperatures of 42.2 oC. But, in the mid-90th only the first WBH system for mild and moderate WBH until 40.5 oC body-core temperature was designed and realized for clinical application which uses exclusively water-filtered infrared-A heat radiation for the treatment of oncological and non-oncological diseases.

The aim of the presentation is focused to treatments of those non-oncological diseases, which are supported by studies. Such are hypertension, chronic back pain, fibromyalgia syndrome, psoriatic arthritis, ankylosing spondylitis, systemic scleroderma and regeneration in sports medicine. A short look to the activation of some immune cells will be given also.

Combination of Hyperthermia and Chemotherapy as a Third Line Therapy in Metastasizing Colorectal Carcinoma

Dr. med. Friedrich Migeod
BioMed-Klinik Bad Bergzabern

The colorectal carcinoma is one of the most frequent malignant tumors in both genders. Also it is the most frequent gastro-intestinal carcinoma. Pathology reveals in over 90 % an adenocarcinoma, mostly deriving from colon polyps of different grades of dysplasias. The metastasizing stage usually is not curable, though removing the primary tumor. There are palliative possibilities with chemotherapy drugs such as 5FU, blocking the thymidylate synthesis by Calcium or Sodium Folinate, Irinotecan, Oxaliplatin, by the antiangiogenesis blocker Bevacizumab and the EGFR-antibodies such as Cetuximab and Panitumumab. The median survival has improved hereby from 6.9 (5FU mono therapy) on to 23.5 months. Nevertheless there is no accepted third line regimen. Nitrosamines (CCNU) have lost their importance. Regorafenib (Stivarga) still has to prove its efficacy. As a possible option as a third line therapy after FOLFOX and FOLFIRI there is the combination of loco-regional deep hyperthermia with capacitive coupled devices onto the metastasizing areas in a frequency of 13.56

MHz with different mechanism of efficacy, in combination with a chrono-modulated therapy with 5FU/Calcium Folinate, improvement by Magnesium and Sodium Selenite, for G0 rest of the cell cycle with alpha-Interferon, a COX2 blocker (Indometacin, Celecoxib or Etoricoxib) and the chemotherapy drug Mitomycin C. In a surveillance study 23 patients were treated with the above mentioned combination, all with normal first and second line therapies in different amount. 7 out of 23 patients showed a further progression, 8 had a no change or minimal remission, 9 of them had a partial remission and 1 patient with a complete remission. The complete and partial remission showed a time to progression of 6.4 months (variant 4.2 - 20.3). The improvement of median survival in this group was significantly above 23.5 months, some of the patients with long time survival with 49+ months. The specificity of the chrono-modulated ChronoFLIM-Regimen was the application of 5FU between midnight and 6.00 am, according the biorhythm of tumor cells and benign tissue. Side effects of the modified ChronoFLIM-Regimen were low, mostly diarrhoea, nausea/emesis WHO II, fatigue and low appetite. A minor suppression according WHO II was in 20 %, thrombopenia WHO II in 34 %. A limiting side effect of the ChronoFLIM-Regime was the haemolytic-uremic syndrome when surpassing the Mitomycin C whole doses of 60 mg/m2 body surface.

Conclusion:
The combination of regional hyperthermia with the modified ChronoFLIM-Regimen is not easy according the application and so only should be given in hospitals. The advantage is a significant prolongation of survival up to having partial and complete remissions with a low rate of side effects and improve of quality of live.

Experiences in re-irradiation and wIRA-hyperthermia in recurrent breast cancer

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Purpose: Local recurrent breast cancer remains a therapeutic challenge and reirradiation is in most situation only possible with limited doses. The addition of superficial hyperthermia enhances the radiation effects and increases the rate of local control. So far micro wave hyperthermia (mw-HT) systems have been the most frequent used devices. wIRA-hyperthermia (wIRA-HT) is another technical option to achieve superficial in contact free manner.
Methods: Comparison in a retrospective intra-institutional analysis former results of mw-HT with recent wIRA-HT always combined with radiation therapy (RT). Micro wave system: Siemens Siretherm®, 2 applicators, max. field size 8 cm, frequency: 434 MHz, max. out put 150 watts, temperature measurements with probes on the surface, “patch work technique”. wIRA system: Hydrosun ® 750, 2 applicators, max field size 14 cm, 950 – 1400 nm, max. out put 200mW/cm2, temperature measurement noninvasive with superficial thermography (Variocam®), computer controlled (Heatcontrol®). Hyperthermia performance: 45-60 minutes of application, normal surface temperature 42 – 43°C, always before RT, 1x/week (2x/week in case of patch work technique). RT: hypofractionated, within 1 – 4 min. after hyperthermia, SD 4 Gy, TD 20 Gy, 1x/week. In case of patch work hyperthermia: SD 2.5 Gy 2x/week, TD 20 Gy.

Results: 4/2005 – 8/2009: 18 patients treated with micro wave hyperthermia (25 volumes), 16 had previous RT, 5 presented lymphangiosis. 9/2009 – 12/2014: 69 patients with wIRA-hyperthermia (107 volumes), 51 with intensive previous RT, 41 with lymphangiosis. Remission rates: CR: mw-HT 60%, wIRA-HT 64%; PR: mw-HT 24%, wIRA-HT 30%; NC mw-HT 8%, wIRA-HT 4%; PD: mw-HT 8%, wIRA-HT 2%. Re-recurrences: mw-HT 36%, wIRA-HT 31%. Acute side effects: thermal burnig (blisters): mw-HT 22%, wIRA-HT 0%. Chronic side effects: distinct hyperpigmention: mw-HT 33%, wIRA-HT 28%, new teleangiectasia: mw-HT 6%, wIRA-HT 4%. No side effects: mw-HT 61%, wIRA-HT 68%.
Conclusions: In this retrospective comparison equal clinical results are obtained up to now, but in the wIRA-HT group much more extended recurrences with unfavorable prognosis (lymphangiosis etc.) were included. The results are compatible with literature (mw-HT technique). wIRA-HT offers very large treatment fields, is well tolerated, is a safe technique. Thermography controlled steering reduces side effects and protects from overheating of normal tissue, no thermal necrosis /injuries were observed . Treatment performance is much improved and out-patient basis maintained. Advantages for mw-HT: nodular manifestations > 3cm. Advantages for wIRA-HT: extended recurrences with superficial spread (lymphangiosis). wIRA-HT technique should be investigated furthermore.

Evaluation of the fever therapy in the Oncology

Dr. med. Stephan Wey

In the concept of biological cancer therapy fever therapy or the whole body hyperthermia play an important role, but mostly in palliative situation. In the early adjuvant setting, there are only few data.

The presentation gives an overview on the immunological significance of fever that cancer patients have not experienced often many years before the disease. In the context of spontaneous fever approximately 33% of well-documented spontaneous remissions in cancer have been triggered.

In recent years, compresses the explanation of these phenomena from the research on fever or hyperthermia-induced tumor perfusion, changes of immunological effector cells (NK cells, dendritic cells, tumor-infiltrating cells) and the strong production of heat shock proteins towards an explanatory model of years observed forecast improvement of hyperthermia treated patients.

After the immunological versions therapy-relevant data to be referenced and explained the procedure to the fever whole-body hyperthermia in a practical therapeutic concept.

Since practice office in early 2002 a group of patients is (most recently evaluated in September 2014: n = 72 - the largest group mamma carcinoma, n = 41) observed, that was treated adjuvant at most high risk constellation after R0 resection with at least two full-body hyperthermia or fever and complementary based therapies. The follow-up shows a tumor-free 5-year survival or "no evidence of disease" (NED) of 86,7%.

In the tumor follow up this approach of meaningful complementary basic therapy in combination with fever therapy or infrared whole-body hyperthermia should be more appreciated and evaluated.

Immuno- Chemo- Radio- Electro- Thermotherapy an oncological therapy concept without severe side effects within three steps

Brockmann, W.P.
Institute OncoLight®-Hamburg

Oncothermia, integrated into very well tolerated local, locoregional and systemical combined therapies.

The most important aim of the Electrohyperthermia resp. Oncothermia is to let cancer patients not only survive but to let them take an active part on life without side effects by those combined therapies.
But without additional possibilities this aim is for the oncothermia alone pure illusion and the pharmacooncological or radiooncological physician can´t be content with some days or month more for longing the life of his patients as an end in itself.
He has to reach his success by shrinking of tumors or metastases and by a simultaneously decreasing of increased serum tumor markers within a very good quality of life.

Therefor his mission must become an ambitious overall concept

- in **the first step** with regard to a local problem like an inoperable tumor(-relapse) or a limited number of metastases. This problem must be delated definitively.
- **The second step** would refer the cervical, thoracical or abdominal regions of malign tissues on similar ways with the same aim.
- **The third step** – an immunotherapy – has to hinder a relapse resp. to longer remissions and to get eventually in some cases just cured patients.

This shows, that a radio oncologist might be the mostly suitable colleague to reach this aim and perhaps not so strictly every pharmacooncologist, if he only wants to distribute polychemotherapy drugs to systematically spread maligne neoplasmas.

The combination of one hour long deep locoregional electrohyperthermia (EHT) with radiotherapy (RT) or chemotherapy (CT) possibilities allows the application of significant decreased dosages within those methods.
That is the absolute precondition to avoid severe side effects of these both columns of oncology.

When it seems to be necessary to use a simultaneous radiotherapy we only use it as a hyperfractionated accelerated therapy with an intervall of 6-7 hours (single dosage 1.1 to 1.5 Gy, twice a day, ten times per week). The results are really no severe chronic side effects not even in pre radiated tissue and additionally higher toxic effects against malign cells.
The single dosage of chemo drugs can be reduced for instance to 5mg Mitomycin, 50 mg Carboplatinum, 10 mg Etoposide, 10 mg Fludarabine, 125 mg Gemcitabine etc. For chemo radiotherapy and intraoperative, hypertherme intraarterial stop flow perfusion therapies, using a heart lung machine and its chemo refiltration we choose drugs after chemo sensitivity tests following detecting tumor cells in periphere venous blood (Metavectum-Institute, Dr. Steffan, Hamburg) since 3 years with good success. Those tests are based on biomolecular /biogenetic expressions of the detected cells.

We use the combined therapy especially for therapies of very radiosensitive tissue like radiotherapy of the whole lung or liver, or when we have to treat the whole brain or long parts of the spine cord.

Do we want to get higher temperatures in our treated tumors than 39 degree Celsius, we start by a whole body hyperthermia for two hours until nearly 40 degree and let follow the oncothermia immediately without any delay.

Superficial tumor findings like a cancer en curasse we treat by water-filtered infrared lamps which are integrated into our whole body machine.
If the chemo radiotherapy is combined too with such a proceeding, the whole procedure remains without severe or only inconvenient side effects.

It seems to be possible, to get very good remissions and eventually healings of patients with great mamma carcinomas and their great lymphnode metastases in the cervical, axillary and mediastinal region. Even several little bone metastases of those patients could be eliminated on this way too.
But an essential prerequisite for this aim is a good immune system, not nearly damaged by poly chemotherapies.
If it is not attacked until using and intensifying it within this third step, we want to hinder micro metastases by Dendritic cell therapy and whole body hyperthermia to grow up - Step III of the whole concept.

HIPEC in the Treatment of Malignant Effusion and peritoneal carcinosis Symposium Modern Hypertermia

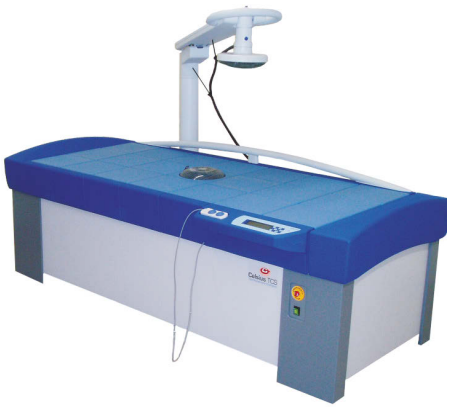
Kleef R, Nagy R. Vienna

Rationale and Background: HIPEC (hyperthermic intraperitoneal–intrapleural chemotherapy) HIPEC has been proven intraoperatively as a promising modality whereby surgeons flush the abdominal cavity directly after the primary operation with hot cytotoxic fluids which is also called HIPEC. Here we report about a new technique of HIPEC in an outpatient setting.

Methods: Patients with malignant pleural or peritoneal effusion received HIPEC in an outpatient setting ((Xi'an GD Medical Science Technology, Xi'an, China; CE certified). HIPEC with Cisplatin 20mg/m2 in combination with Taurolidine 2% 250 ml was given every 3 days for 3 times (one therapeutic course) after placing 2 surgical intracavitary catheters which stayed in the cavity for 7 days. Treatment consisted of 2 cycles repeated in a 4 week interval.

Results and Conclusion: We observed initial promising results in the first 8 patients treated (ovarian cancer n=5, primary peritoneal cancer n=1, cervical cancer n=1, fallopian tube cancer n=1). We will present one very successful HIPEC therapy for advanced fallopian tube tumor with inoperable omentum cake. We observed remarkably low side effects and very good patient compliance. Median follow-up time is too short yet to be able to draw conclusions and will be reported later. HIPEC seems to be a promising new modality and can successfully be realized in an outpatient setting.

www.hipertermia-krakow.pl



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