

The effects of whole-body hyperthermia on the immune system

The immune system represents the body's own defense system and is directed against external and internal threats to the organism. In case of weakening, the body's susceptibility to infections increases. The most frequently mentioned symptoms are fatigue, exhaustion, weakness, and lack of motivation.

There are a plethora of reasons for that. They range from stress, unhealthy diet, deficiencies, congenital immunodeficiencies, metabolic diseases, and use of medications to viral and bacterial infections. The causes and symptoms of diseases or weaknesses of the immune system are as diverse as the treatment options.



The immune system as the natural defense system of the human body. (Source: photocreo)

Whole-body hyperthermia ("WBH") is an effective, very well-tolerated, natural form of heat therapy. An artificial fever is induced in the patient by raising the body's core temperature using water-filtered Infrared-A radiation very similar to the sun. Like natural fever, the body's own defense system is stimulated, natural healing processes of the body are supported and thus the susceptibility to infections, chronic inflammations, pain, or states of exhaustion are mitigated.

Success while treating cancer patients

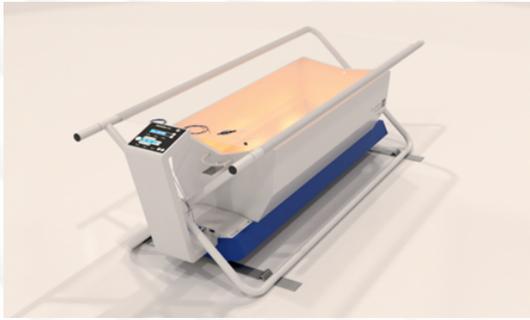
Promising results in the application of WBH have already been achieved in cancer therapy. The focus of scientific studies was primarily on patients for whom conventional oncology therapies brought no, or only limited success. It was shown that an accompanying treatment with whole-body hyperthermia often had a positive supportive effect on conventional oncological treatment. This is due to the fact that even a moderate increase in body temperature to 39.5°C significantly influences the tumor microenvironment. For example, heat shock proteins (HSP70) enter the surfaces of cancer cells and mark them for greatly enhanced attack by cytotoxic T cells of the body's immune system as a result of WBH heat stimulation [1]. Hyperthermia treatments thus activate and stimulate the immune system in a natural way, from which a significantly improved treatment prognosis can be derived for the patients.

In a study conducted in 2008 by Dr. Joan M. Bull at the University of Texas Medical School in Houston, USA, 37 patients with 15 different therapy-resistant, metastatic, or advanced tumors were systematically treated with moderate WBH plus conventional chemotherapy. As a result, nearly half of the cancer patients (43%) experienced at least 50% regression of their tumors - especially in pancreatic and neuroendocrine carcinomas. In addition, almost all patients who responded to the treatment also benefited from an evident improvement in quality of life, mainly in terms of pain, weight, and fatigue syndrome [2].

But also recently, the presentation of WBH application results was in focus of the 13th International Congress of Hyperthermic Oncology (ICHO) 2021, where Dr. Bettina Weigelin presented extensive results of her research group at the Werner Siemens Imaging Center (WSIC) of the University of Tübingen, including significant results on various effects of "fever-range" WBH on cytotoxic T-lymphocytes [3].

Thus, it is confirmed that after initial activation of an antitumor immune response, the stimulation of immune activity with WBH and thereby the effect enhancement of the therapy is considerable.

In summary, it can be stated that cancer tissue can be significantly damaged at temperatures in the fever range, whereas healthy tissue tolerates these temperatures well. Whole-body hyperthermia can even increase the efficiency of oncological treatment by a factor of four.



IRATHERM® 1000M - medical device for whole-body hyperthermia treatment of the Von Ardenne Institute of Applied Biomedical Research GmbH

Furthermore, mild and moderate WBH (e.g. with IRATHERM® 1000M) is also used for numerous non-oncological medical indications successfully. WBH supports a lot of patients with immune deficiencies in improving their quality of life and alleviating various symptoms.

If you are interested and have any further questions, please feel free to contact either the medical staff in one of the reference centers listed on our website (www.iratherm.de) or contact us personally by e-mail: info@ardenne.de or directly by phone: +49 (0)351 2637-400.

References:

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Further recommendations:

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