Systemic endothelial/lymph therapy with systemically active “BEMER® physical vascular therapy”

“BEMER® physical vascular therapy” acts systemically. The technology is patented and the therapy is based on the endothelium-mediated effectiveness of processes that depend on nitric oxide (NO) (1). Supported by scientific evidence, reduced vasomotion frequency of small and very small precapillary arteriolar vessels is thus improved, with significant improvements in the capillary microcirculation networks (2). In recent years, dysfunction in the area of microcirculation has been recognized as causal and scientifically confirmed for an increasing number of relevant disease patterns. Among these are diabetes mellitus, overweight, high blood pressure, aging processes, inflammatory bowel diseases, dementia, rheumatological disease patterns, ischemic heart diseases, nicotine abuse, and many more. (3). These also and particularly include pathological disorders in the entire lymphatic system (4).

What is the endothelium?
The endothelium is a single-layer cell complex that lines the interior vessel walls of arteries, capillaries, lymphatic vessels and veins.
The endothelium operates as a biological network system (biosensor and biotransducer) in reaction to internal and external influences and it is jointly responsible for the adequate supply of energy to approximately 80 trillion cells.
In view of its coordinated overall functioning, the endothelium is a systemic organ.
Its functional integrity is vital for development and differentiation in the entire vascular and lymphatic system.
The main functions of the endothelium include:
• Regulation of hemostasis (coagulation and anticoagulation)
• Immunomodulation
• Regulation of vessel width
• Vascular growth processes
• Vascular impermeability
• Remodelling and apoptosis processes (5)
Furthermore, the integrity of the endothelium is largely determined by its protective layer - the glycocalyx (6).
Today, the key pathophysiological processes leading up to arteriosclerosis are localized in the area of glycocalyx dysfunction (7).

With chronic lymphatic diseases, initial endothelial processes are also affected (8, 9).
Early scientific data on the systemic effectiveness of the BEMER® signal configuration in the area of the lymphatic system can be found in “Mikrozirkulation im Fokus der Forschung” (Microcirculation in the Focus of Research) (10). The scientific data is condensed as follows:
“The functionality of the vascular smooth muscles in the lymphatic system is its key role.
This intrinsic contractile quality of the vascular smooth muscles - the “inner lymph pump” - represents the main mechanism for generating adequate lymph flow drainage...and this process can be influenced by “physical signal frequencies” (9).
In the context of my scientific therapy work at the Wittlinger Lymphedema Clinic in Walchsee/Tirol, the data that was available led me to the following question:
Is there any NO-mediated improvement in vasomotion or edema reduction in patients with lymphedema of the leg through use of the “BEMER® physical vascular therapy”?
We investigated this based on 10 patients in a pilot study in 2015.
Question: “Does BEMER® physical vascular therapy influence the reduction of edema in addition to established lymph therapy (CLT) during a 3-week intensive therapy period?” Findings: Yes, it shows significant influence for all of the parameters studied:
√ Lymphedema volume reduction
√ HADS score (Hospitality Anxiety and Depression Scale)
√ Laboratory data: CRP, interleukins IL6, IL8, TNF alpha (11).
These findings led us to conceive the first lymph study in the world to verify the positive effects of the BEMER® therapy on the diseased lymphatic system.
This “BEMER® lymph study” is conceived as a randomized, double-blind, placebo-controlled study with 208 patients, and it has been approved by the Innsbruck ethics committee.
Summary:

- The endothelium is an organ that operates systemically.
- The integrity of the endothelium depends on the integrity of the glycocalyx – the endothelial protective layer.
- The success of the systemic “BEMER® physical vascular therapy” as an adjuvant therapy is based on the systemic endothelium-mediated effectiveness of processes that depend on nitric oxide (NO).
- Significant improvements with “BEMER® physical vascular therapy” in patients with leg lymphedema were studied and verified in the first “BEMER® lymph study”, which was initiated in June 2016 at the Wittlinger Lymphedema Clinic in Walchsee/Tirol.

Author's address:
Dr. med. Rainer Pawelke
Wittelsbacher Str. 20
82319 Starnberg
r.pawelke@wittlinger-therapiezentrum.com
+43 (0) 5374 5245 0

References:
(1) W. Bohn, L. Hess, R. Burger: jcim-2013
(2) Informational Dynamics of Vasomotion in Microvascular Networks: A review ACTA Physiologica Volume 201, Issue 2, February 2011
(5) Endothelial Signaling in Development and Disease: Springer 2015
(9) Contractile Physiology of Lymphatics: Lymphatic Research and Biology; Volume 7, Number 2, 2009
(10) Dr. med. R. Klopp: Mikrozirkulation im Fokus der Forschung (Microcirculation in the Focus of Research), Issue 2008
(11) Dr. med. R. Pawelke: Unpublished data: pilot study 2015

Images:
Wittlinger Lymphedema Clinic, Walchsee, Austria
Vessel cross-section - endothelium
Nitric oxide (NO)
Leg lymphedema stage II