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## **The use of complex decongestive therapy in the process of rehabilitation in case of primary and secondary lymphatic insufficiency**

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## **Abstract**

The purpose of this study is to draw attention to the problems connected with the failure of the lymphatic system. In particular the primary and secondary swelling. The reference in this work to the scientific literature indicates a growing need for the development of Lymphology in Poland. It indicates a significant problem, which is the lack of specific standards and procedures of treatment and methods of treatment of disorders of lymph in the educational process of medical schools in Poland.

**Key Words: lymphedema, physiotherapy**

## **Introduction**

Diseases associated with the failure of the lymphatic system are among the diseases in which diagnosis and treatment are still struggling with not formally established method of prevention work and decongestants. It is also worth noting that the Polish nomenclature of medical specializations does not include Lymphology, which will determine the standards and procedures of treatment and methods of treatment of disorders of the lymph. As a not popularized area it is still struggling with not enough support of the medical services, which further lowers its essence in medical rehabilitation.

Lymphology in Europe is practiced in an unconventional way since 1936. Until its mode of action and therapeutic efficiency has been scientifically proven. It is proven by the popularity of specialized clinics, eg. In Germany (Hinteranter, Fachklinik für Lymphologie-Földi Klinik, Dr. Feldbergklinik Asdonk in the Black Forest). Lymphoedema treatment precursor was the Danish philologist, sociologist and later physiotherapist Dr Emil Vodder (1893-1986). He introduced the term „manual lymphatic drainage” (MLD- manual lymphatic drainage) (45). Also deserving recognition is German physician Dr. Johannes Asdonk (1910-2003). He enriched therapy by additional special grips and compression therapy. He published his results in 1972 and introduced the method of German clinics under the name „Physiotherapy edema By Asdonk and Barteczko”. The effectiveness of this method has been also shown by the work conducted by prof. Kuhnke Bonn thanks to them from 1974., rehabilitation of lymphatic insufficiency is recognized and reimbursed by the German health insurance funds.

Current situation of Lymphology in Poland also points to the growing interest in the discipline. This is proven by the analysis of medical publications conducted by the National Board of Physiotherapy (2). The first position on the market concerning the matter of Lymphology written by dr n. Med. Janusz Dosia entitled „Lymphology" also deserves credit(3). The author refers to issues related to disorders of the lymphatic system. He points to various factors of developing lymphatic insufficiency, diagnosis and the process procedure in the

reduction of disorders of lymph. Established in Chorzów Polish Society of Lymphology substantially affected the development of Lymphology in Poland. It is one of the most important centers of rehabilitation and training in our country. It also contributes to the development of new centers, ie. In Warsaw, Krakow and Poznan.

Despite such extensive resources for antioedema rehabilitation, there is a noticeable trend in education (at universities) directed only toward the side effects of mastectomy rather than the failure and diseases of the lymphatic system. Only interdisciplinary collaboration / and change in education can contribute to the consolidation of knowledge and development of Lymphology in Poland.

The lymphatic system is a semi-open system of vessels and ducts, in which lymph flows (3). The main source of lymph is the filtrate of the blood plasma (through the vessel wall), secretion of cells and the gastrointestinal tract. The composition of lymph is similar to blood plasma. It contains proteins, fats, water, minerals and large amounts of white blood cells (which shows the dense structure and slow movement). About 90% of the system is subcutaneous parenchyma, and only 10% of the deep vasculature system.

### **The pathophysiology of lymphedema**

Lymphedema is often defined as a chronic condition (3), which is the result of mechanical failure (aplasia, valvular dysplasia), dysfunctional vessels, or both. Mainly due to the accumulation of high protein fluid in parenchyma and lymphatic vessels. The migrating and resident immune cells, metabolic products, apoptosing cells cause, as a result of standstill, proliferation of keratinocytes, fibroblasts and thus collagen deposition (5,6,7,8) binding water molecules. Simplified pathophysiology of oedema, enabled their classification by dividing them into primary and secondary (3).

Primary oedema is frequently caused by genetic factors determining the abnormal growth of lymphatic vessels (97-99% spontaneous mutation; 1-3% change hereditary). This form is substantially asymmetrical and mostly concerns the lower limbs. Moreover, an oedema of parenchymatous organs (liver, lung, intestine) and CNS. Depending on the age of the patients clinical symptoms, characterized by the primary lymphatic insufficiency can be divided as follows:

- 1) Lymphoedema congenital - current clinical picture at birth or shortly after birth (up to 1 month of age).
- 2) The early lymphatic swelling - appeared before 35 years, most often affects people puberty.

### 3) Late Lymphedema swelling- appeared after 35 years

Secondary oedema mainly caused by damage to the lymphatic system. There is noticeable lack of information about frequency of lymphatic problems. It is estimated that 1.8% of the population (2% of women and 1.5% men) suffer from the lymphatic oedema. The main causes are:

1) Malignant tumors (approximately 4%) as a growing form of cancer usually causes stasis, of lymph and as a lead to intratissue exudates, such as: malignant melanoma, prostate cancer, malignant gynecological tumors (11)

2) Infection (bacteria, parasites, viruses, fungi) (9). Especially recurrent episodes of bacterial inflammation of the lymphatic vessels. The most common inflammatory pathogens include Streptococcus, nematodes (which cause filariasis). According to WHO, about 90 million of the people worldwide may be infected by nematodes (12,13,14,15,16).

3) Chronic skin diseases (acne rosacea, acne vulgaris, psoriasis, atopic dermatitis) (17, 18, 19,20)

4) Rheumatic diseases (rheumatoid arthritis, chronic articular and periarticular inflammations) by autoimmune destruction of lymph vessels. However, the etiological factor is unknown (21).

5) Tissue damage due to burns, crushing, fracture (22)

6) Iatrogenic damage caused by surgery, radiation (23, 24, 25, 26, 27, 28, 29, 30)

7) Vascular diseases (recurrent vasculitis syndrome, post-thrombotic syndroms (31, 32)

8) Pharmacotherapy, mainly as a side effect after hydrochloride pentazocine application. It can lead to lymph vessels sclerosis and obstruction (10).

9) Pregnancy, as a result of expanding uterus, and therefore the pressure on the vessel around the inferior vena cava and the iliac vein (33, 34)

In each sort of swelling (primary or secondary) is a huge noticeable impact on the physical and mental health of the patient. Chronic swelling significantly impedes the proper functioning and comfort. In the worst cases contributes to inflammation (erysipelas), structural changes within the osteoarticular system, vascular (felt stiffness, rest pain, local problem of mobility) (46, 47, 48).

Referring to the guidelines of International Society of Lymphology and the British Lymphology Society (BLS) (1) in the case of lymphatic insufficiency it is recommended to use the Complex Decongestive Therapy. Developed by renowned specialists include:

1. Manual Lymphatic Drainage- delicate hand-made system of tricks designed to activate lymphatic vessels, relaxation of interstitial fibrosis, thus affecting the aid penetration of the interstitial fluid to the lymphatic vessels (49).

2. Compression (multilayer bandage or use of compression). The use of external pressure is an essential component of the treatment of oedema. It supports preferably the effect of lymphatic drainage by increasing resorption of lymphatic vessels and veins. It is an essential component of work with edema in its initial stage of formation. Then replaced with a compression device designed individually for the corresponding pressure dependent upon the problem of lymphatic insufficiency (36,37,38).

3. Specialized kinesiotherapy. Exercises to improve lymph drainage - focusing on active work diaphragm (cardio-pulmonary exercises) and the mobilization of the muscle pump (for upper limb oedema) and triceps calf muscle (in the case of lower extremity edema). The literature indicates that these exercises are carried out with the appropriate compression products using a multilayer compression bandage or clothing (39,41) that reduce the risk of oedema recurrence. Particularly effective is the scientific progress taking into account the use of such forms of activity as PNF, Pilates, Yoga (40,42,43)

4. Patient education in the aspect of home care. It is an indispensable parameter therapy and thus is an element of cooperation of patient and therapist. It is based on substantive and practical preparation of the patient to work at home. The patient must be aware of the essence of his chronic disease, and must follow the basic principles relating to the skin care. Must protect his skin against damage, use appropriate clothing, cosmetics (44). This also applies to self lymphatic massage and home gymnastics.

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