

BOOK REVIEW

MODERN TREATMENT FOR LYMPHOEDEMA

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The book has been drawn up as a syllabus primarily for the physical treatment of lymphedema. The first 39 pages comprise anatomy and physiology. Except for asserting that there are lymphatics in the sclera of the eye (there are none), the text and figures are in accordance with modern concepts. The next 30 pages accurately explore pathophysiology and etiology, although to regard hematoma as a variant of edema (p. 40) is imprecise. Diagnosis and differential diagnosis are examined superficially in the following 5 pages. One searches in vain, however, for guidelines when a therapist should have the patient consult a physician, an issue which I pursue later.

A number of inaccuracies appear throughout the text. For example, the following statement appears on page 71: "Typically lymphoedema first involves the foot but may start up the arm". In fact, only primary lymphedema of the leg typically appears first on the foot. Secondary lymphedema particularly those occurring after treatment of genital cancer and even primary lymphedema with complex truncal dysplasias characteristically start on the thigh and on the ipsilateral lower

quadrant of the trunk and descend gradually. Moreover, in discussing the "blue-dye" test, it is misleading to state that the injected dye "moves [in lymphedema] much more slowly than normal". The typical clinical finding is that epifascial lymph vessels are rarely colored but there is considerable dermal backflow. It should also be emphasized that the dye test is unreliable because of numerous false-positive and false-negative studies. Indeed, because of the danger of fatal anaphylaxis and occasionally skin necrosis, this technique should be restricted to perioperative usage where visualization of lymphatics and leakage at operation is required.

It seems overly demonstrative to claim that patients if "self-aware" detect "big lymphatic trunks and their limb becoming tightly full" ((p21). On page 161, they claim lymphedema causes muscle wastage. Not only is this uncommon but many lymphedema patients because of heaviness of the limb actually display muscle hypertrophy as part of the extra work required for limb motion. Muscle atrophy with disuse is usually the consequence of other events (e.g., radiation neuritis, postmastectomy frozen shoulder) separate from the accompanying lymphedema.

According to the authors, lipedema or obesity of the limb is "much rarer" than lymphedema. More likely the reverse is the case. Moreover, so-called lymphedema is usually soft swelling not hard. On page 74, the pseudoscientific concept is promulgated that "the most common form of primary lymphedema which occurs at puberty (more frequently in females)" is due to the fact that "the body simply outgrows the lymphatic system". A more reasonable assessment is that the subnormal transport capacity of the lymphatic system may be a consequence of "dysplasia" under the influence of "estrogens" or the result of a "cyclic-idiopathic" abnormal microvascular filtration which overburdens a restricted transport capacity of regional lymphatics.

Should therapists properly "study carefully" lymphangiograms (p. 74), or is that

an area better left to physician-lymphologists and experts in nuclear medicine?

A considerable part of the book is devoted to statistical analysis of data (i.e., the change in lymphedema over time; physiotherapeutic treatment and the effect of benzo-pyrones) often supplied by their former trainees (i.e., therapists who both treated the patients and performed the limb measurements). But there is a danger here. In *Betrayers of the Truth*, Broad and Wade write (1) "Self-deception is a problem of pervasive importance in science. The most rigorous training in objective observation is often a feeble defence against the desire to obtain a particular result ... time and again, an experimenter's expectation of what he will see has shaped the data he recorded, to the detriment of truth ... the double-blind experiment ... has become standard practice ... because of the powerful effects of the ... expectancy." Are these limb circumferential measurements, accordingly, entirely objective? It seems wrong to maintain as the Casley-Smiths do (p. 186) that "is difficult to conceive of meaningful double-blind trials on massage, exercises or compression." At our clinic in Hinterzarten, Germany, 35 physiotherapists are employed, and an additional 2 technicians routinely perform daily patient limb measurements *without being aware of the therapy or who the therapist is!*

The Casley-Smiths have brought to the forefront the "value" of benzo-pyrones by a series of articles and lectures and by their monograph *High Protein Oedemas and Benzopyrones*. Although I was involved in the early work on benzo-pyrone treatment of lymphedema and even coined the term "benzo-pyrone", our group after considerable trial and error have abandoned their use in the management of lymphedema. The story behind benzo-pyrones is an intriguing one but too lengthy to outline in detail here. Suffice it to say that during experiments into lymphostatic encephalopathy (cerebroedema in conjunction with head and neck lymphatic blockade), we observed edema amelioration with vitamin complexes including flavonoids of which benzo-pyrones are a subgroup. In the

course of investigation we found that these agents failed to enhance the formation of lympho-lymphatic and/or lympho-venous anastomoses, nor did they decrease the permeability of blood capillaries or post-capillary venules, nor did they act as osmotic diuretics. By exclusion we assumed that they acted by inducing macrophages to increase activity concerning protein uptake by pinocytosis, protein storage, and proteolysis as propounded by Jancso (2), and supported by the observation that the activity of the mononuclear-phagocytic system could be significantly increased by the administration of the benzo-pyrones rutin and coumarin (3). The link between macrophage activity and lymphedema was confirmed by showing that if one poisoned the macrophages with silica particles, lymphedema worsened and benzo-pyrones lost their therapeutic effect (3).

Despite these promising studies, the following considerations should be taken into account before one blithely prescribes benzo-pyrones for patients. Clodius and Piller (4) showed that in postmastectomy lymphedema, benzo-pyrone treatment lasting one month decreased arm circumference by 5mm. Eighteen percent of the patients did not respond to treatment at all. Complex or combined physiotherapy (bandage-wrapping, manual compression, remedial exercises and application of a low stretch garment) by comparison is consistently much more effective. The dosage of coumarin (400-800 mg/day) as employed by Casley-Smith is seemingly very high. For example in Germany, the maximum allowable limit is 90 mg/day, but even with this low dosage, liver damage occasionally occurs and a warning along these lines has recently been publicized by German health authorities.

According to the Casley-Smiths, the "Modern Treatment of Lymphedema" consists in the combination of benzo-pyrone administration and complex physiotherapy. In point of fact, the principle of "modern" physiotherapy is ingrained in medical practice for over 100 years. Winiwarter in 1892 already described the tetrad of therapy to include skin care, compression and exercises (5). Certainly

skin care and compression treatment are nowadays more sophisticated than in 1892 although even then Winiwarter stressed that massage should be gentle and properly applied in a centrifugal manner (i.e., by starting at the root of the swollen limb).

Our group and others did not invent massage, bandaging or remedial exercises. Most patients with lymphedema often have a number of other disorders. These and the general condition of the patients necessitate individualization in physical therapy. Accordingly, if there is a "Földi method" it is properly defined as Combined Physiotherapy embedded into the disciplines of clinical lymphology and internal medicine.

Whereas the Casley-Smiths claim to have based their training methods on the Földiklinik, there are major differences. The training system supervised by us and others is regulated by an agreement between the national social security system in Germany and the professional associations of physiotherapists. Only licensed physiotherapists are permitted to take part in the training on treatment of lymphedema. The diplomas the enrollees obtain after passing a written examination which entitle them to treat patients and to be remunerated by the government is signed both by the medical director of the licensing school and by the deputy of the professional association. The graduating examination contains both a practical part in which the trainee must perform Combined Physiotherapy and a cognitive part which reviews the clinical signs and symptoms. The latter is meant to ensure that patients with arterial or deep venous disease, radiation injury, lymphangitic carcinomatosis, angiodysplasia syndromes, occult infection, and other complex disorders are not erroneously treated by Combined Physiotherapy. The program also reinforces the notion that physician supervision and patient preassessment by appropriate medical personnel is essential to proper care. In this regard, on p. 210-211, one reads about "setting up a *clinic* to treat lymphedema" (italics added). The authors state that the main thing necessary is a well-trained and enthusiastic

therapist. Other requirements include a treatment couch, wedge support for the limbs, measuring tape, sheets, pillows, floor mats, treatment and waiting rooms, shower and lavatory. These requirements, however, more accurately describe the essential ingredients for the practice of physiotherapy not a medical clinic to care for patients with disorders of the lymphatic system. The latter properly requires physician oversight including the availability of a clinical laboratory, access to diagnostic imaging facilities including ultrasound, computed tomography, lymphoscintigraphy where not only is the proper diagnosis rendered but associated disorders can also be appropriately evaluated and treated. Contrary to what the authors suggest, the training course of physiotherapy in Germany is not comparable to that in Australia. Whereas the fee for accurate diagnosis and supervision by a physician does somewhat raise the treatment cost in Germany, it is a small price to pay to ensure high quality and, I might add, ethical medical care for a heterogeneous group of patients often only united by a common complaint of tissue swelling.

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