

## Evaluation of a Clinical Model of Breast Cancer-Related Lymphedema

To the Editor:

One current concern relates to the report of a multidisciplinary outpatient approach to treatment that adapted existing conducts.

Breast cancer-related lymphoedema results from impaired lymph drainage after axillary surgery (1). Destruction of the lymphatic system causes a progressive and chronic condition with functional impairment and disabilities, limiting patients in their daily activities and involving nearly all aspects of their quality of life.

The follow-up of the clinical treatment of 20 patients with breast cancer-related lymphedema was evaluated over a period of 3 years in the Godoy Clinic in São José do Rio Preto, Brazil. All patients were women with ages that ranged from 35 to 79 years old. Lymphedema was diagnosed by differences of more than 200 mL between the affected and normal arms as identified using water-displacement volumetry. All patients were assessed by a physician, psychologist, nutritionist, physiotherapist, occupational therapist, physical educator, and a professional seamstress. The treatment included manual lymph drainage using the Godoy & Godoy technique, active and passive exercising utilizing facilitating apparatuses developed for these patients, a compression sleeve made of "gor-gurão" (a cotton-polyester material) by the seamstress and programmed hydrogymnastics (2–6). Lymph drainage was performed one or two times weekly associated with cervical stimulation for 20 minutes followed by manual lymph drainage. The patients had two-one-hour sessions of hydrogymnastics per week during which they always used compression sleeves. These sessions included stretching exercises and walking around the swimming pool, group dynamics involving movements of the limbs without exertion that utilized

contraction and flexion of the elbow, lifting the shoulder, and adduction and abduction of the arm.

Passive exercising was carried out for 1 hour using an electromechanical device that causes flexion and stretching movements of the elbow. The active apparatuses were made from low-cost materials. Eight active apparatuses were developed that, during use, require flexion and stretching of the elbow and elevation, stretching and flexion of the shoulder. All the patients were assessed by water-displacement volumetry before and after using each of the apparatuses to identify the best results and make adaptations to the exercise program when necessary. The intensity and time of each exercise were evaluated for each patient based on volumetric changes. A dietary assessment was made at the start of the treatment program and every 30 days thereafter for individual support. The psychologic approach was in a group setting for 40 minutes on each treatment day although individual support was provided when found necessary.

The compression sleeves used were tailor-made depending on the size of each arm with readjustments essential at each treatment session. The sequence of treatment was hydrogymnastics, breakfast, and then each patient randomly chose active and passive exercises all of which were supervised by a member of the medical team. Following this manual lymph drainage was performed and finally a group therapy coordinated by the psychologist. The physician followed the progress of all patients on a weekly basis. Patients were immediately referred to the physician if any type of complication occurred.

In the last 40 minutes of the treatment session, the patients participated in group activities supervised by the occupational therapist. All the activities were assessed and adapted in respect to type, intensity, and repetition of movements. All members of the medical team evaluated patients when they started to participate in the service and every month thereafter. As a monthly control, all patients received a record card reporting on their evolution in order to compare their

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progress. The group sessions took place on Tuesdays and Thursdays totaling on average 4 hours, with the recommendation that patients who lived distant from the treatment center, when transportation was not always possible from their town of origin, should participate in at least one session per week. This study was approved by the Research Ethics Committee. Brazil. ANOVA was utilized for the statistical analysis with an alpha level of 5% (p-value < 0.05) being considered statistically significant.

The mean losses during each of the 3 years were statistically significant.

(p-value < 0.001) in the first year the loss was 58% of the volume of the lymphedema, in the second 82.2% and in the third 97.02%. The current study shows an evaluation of the evolution of clinical treatment of breast cancer-related lymphedema over a period of 3 years with significant reductions every year. Eleven patients had complete reduction of the edema, six patients had greater than 95% reduction, and three had greater than 90% reduction of the difference between arms.

Several options have been developed over the years that focused on underprivileged populations but which can be utilized for all social classes. The development of the exercising apparatuses aims at standardizing the types of exercises and the intensity so that the effort exerted by patients can be evaluated and reproduced. To reach this objective, the group of this study participated in all the evaluations necessary for the utilization of the apparatuses. Thus, it was possible to measure the loss of volume during exercising using specific apparatuses.

The transformation of day-to-day activities, associated with the use of a cotton-polyester compression sleeve, as a form of treating lymphedema evolved over the last few years. First variations in the working pressure of the main muscle groups of the upper limbs were assessed which served as a topic for research and guided the development of the active and passive apparatuses. Several activities were evaluated by volumetry in order to check the intensity and manner in which movements were performed to check that volume reductions were attained. Clinical studies assessing occupational activities while wearing compression sleeves as a form of lymphedema treatment in isolation

were carried out with their efficacy being proven (4). Hence, as well as developing clinical therapeutic methods for the treatment center, the conditions of the day-to-day life of patients was adapted.

The development of compression sleeves using a cotton-polyester material constitutes a great revolution in the treatment of lymphedema as, apart from their efficacy, they provide independence due to their simplicity of use (6). This material is inelastic across the textile but elastic along it and the resulting compression sleeves can substitute inelastic bandages due to their simplicity and independence of use. After total reduction of the edema, maintenance can be attained using these compression sleeves or elastic bandages.

This requires specific programs with a specialized healthcare team both for treatment and in the follow-up of patients. We suggest the creation of specialized treatment centers that provide constant support as this is a disease that debilitates in all aspects.

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