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RESEARCH ARTICLE

RESULTS OF OUR COMPLEX DECONGESTIVE THERAPY IN SECONDARY LOWER EXTREMITY LYMPHEDEMA

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ABSTRACT

Background: Lymphedema is a chronic, progressive disease that affects the quality of life of the patient and is difficult to treat. If untreated, it may diminish the quality of life by affecting the patient's home, work and social life. Therefore, its treatment is of great significance. In our study, we evaluated the results of complex decongestive treatment in patients with lower extremity secondary lymphedema. **Methods:** 23 patients with secondary lymphedema in their lower extremity in the Cardiovascular Surgery Clinic of Kayseri City Hospital were included in the study. Phase-1 complex decongestive treatment was applied for 4 weeks and subsequently, phase-2 complex decongestive treatment was applied for 2 months. Pre-and post-treatment total circumference difference (TCD), body mass index, lower extremity function scale (LEFS), short form-36 results were compared. **Results:** 23 patients who were admitted to our clinic were included in the study retrospectively. 17 (73%) of the patients were female and 6 (27%) were male. The mean age was 49 (36-67). The BMI of the patients decreased from 30.78 +/- 2.54 to 28.54 +/- 1.94. TCD (Total Circumference Difference) decreased from 41.84 +/- 7.93 to 22.75 +/- 5.65. The SF-36 quality of life assessment scale increased from 35.56 +/- 4.38 to 45.47 +/- 4.53. LEFS increased from 24.34 +/- 3.47 to 47.08 +/- 5.47. The differences between the values were statistically significant. ($p<0.01$). **Conclusion:** Complex decongestive therapy is a highly effective and reliable treatment modality for lower extremity secondary lymphedema patients.

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INTRODUCTION

Lymphedema is a chronic, progressive disease that affects the patient's quality of life and is difficult to treat. The main pathology in the development of the disease is the inadequate drainage of the lympathic vessels for any reason. Inadequate drainage is due to two reasons. Congenital aplasia, hypoplasia and hyperplasia are all decisive in primary lymphedema. Secondary lymphoedema develops due to trauma surgical interventions, infection, filariasis, malignancy and drugs (Kerchner, 2008). Symptoms in lymphedema occur due to the increased volume of extremity it is in. It may result in cosmetic deformities, functional losses and psychological disorders. It can reduce the quality of life by affecting the patient's home, work, social and sexual life. Therefore, the early diagnosis and the treatment of lymphedema are very crucial. Today, the most commonly used technique for the diagnosis of lymphedema is lymphoscintigraphy. Complex decongestive therapy (CDT) is a two-phase treatment approach for the treatment of lymphedema.

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In the first phase of the intensive treatment, the volume of the limb with lymphedema is reduced while in the second phase maintenance of the acquisitions in the first phase is ensured. The aim of CDT is to shrink lymphedema with the use of intact lymphatics, to prevent recurrence, to eliminate complications and to improve quality of life (Ozcan, 2016). In our study, accordingly, we investigated the efficacy and safety of the complex decongestive therapy applied to the patients admitted to the Cardiovascular Surgery Clinic of Kayseri City Hospital for secondary lymphedema.

MATERIALS AND METHODS

Twenty-one patients who were admitted to the Cardiovascular Surgery Clinic of Kayseri City Hospital between May 2018 - November 2018 and who were diagnosed with secondary lymphedema in the lower extremity by lymphosintigraphy were included in the study. Patients' files were browsed and their demographic characteristics (age, gender, height, weight) were recorded. Within the first phase of complex decongestive therapy, patients received manual lymphatic drainage (MLD) for 4 weeks, 5 days a week and at least 30 minutes for each session. Short tension bandage was applied to patients after MLD. Within the scope of phase-2 therapy, patients were

trained to be able to massage themselves. Treatment was continued with appropriate pressure garments according to the patient's size and degree of edema. All patients were referred to a dietitian and appropriate dietary recommendations were made. Extremity circumference measurements, quality of life assessment, body mass index and lower extremity functional scale measurements of all patients were compared before and in the third month of the therapy. Extremity diameter measurements were made by marking every 10 cm starting from ankle to the inguinal region. Total circumference difference (TCD) was calculated by summing the differences between the diameters of unaffected extremity and lymphedema extremities. This was compared with the TCD before the therapy and within the 3rd month of the therapy (FIGURE-1). In the evaluation of the quality of life, physical functionality parameters of the short form-36 quality of life scale were used.

Statistical Analysis: Shapiro-Wilk test was performed to see whether the data had a normal distribution. Comparison between the data of pre-therapy and that of the third month was made through the paired t-test. To examine the correlation between different data, Pearson's correlation test was used.

RESULTS

23 patients admitted to our clinic with the diagnosis of lymphedema were treated with complex decongestive therapy. 17 (73%) of the patients were female and 6 (27%) were male. The mean age of the patients was 49 (36-67). 18 of the 23 patients were lymphedema patients who were receiving cancer treatment and 5 of them developed a surgery-induced secondary lymphedema. The body mass index of the patients was 30.78 +/- 2.54 in the pre-treatment period and decreased to 28.54 +/- 1.94 in the post-treatment period. The difference between the two values were statistically significant. ($p<0.01$). The mean of total circumference difference of in the lower extremity of the patients was 41.84 +/- 7.93, and at the end of the third month after the treatment it decreased to 22.75 +/- 5.65. And the difference between the values were found statistically significant. ($p<0.01$). Patients' lower extremity function scale increased from pre-treatment values of 24.34 +/- 3.47 to 47.08 +/-5.47 at the end of the third month after treatment. And the difference between the values were found statistically significant. ($p<0.01$). SF-36 physical functionality test to evaluate the quality of life of the patients was found 35.56 +/- 4.38 before the treatment and it increased to 45.47

Table 1.

	Before Treatment	3rd Month after the Treatment	P Values
TCD	41.84+/-7.93 cm	22.76+/-5.65 cm	<0.01
LEFS	24.34 +/-3.47	47.08 +/- 5.47	<0.01
BMI	30.78 +/-2.54	28.54 +/-1.94	<0.01
SF 36	35.56 +/- 4.38	45.47 +/- 4.53	<0.01

TCD: Total Circumference Difference, LEFS: Lower Extremity Function Scale, BMI: Body Mass Index, SF-36: Short Form-36

Figure 1. Physical appearance of the patient before and in the third month after the treatment

Figure 2. Physical appearance of the patient before and in third month after the treatment

+/- 4.53 in the third month after the treatment. The difference between the values were found statistically significant. ($p<0.01$). There were no complications encountered during the follow-up and treatment of the patients. The parameters before and after the treatment are given in Table 1.

DISCUSSION

The method still in use as the gold standard for the treatment of lymphedema is CDT(Complex Decongestive Therapy). CDT ensures a reduction in the volume of lymph fluid in many lymphedema patients along with the continuity of this decrease (Szuba, 1998 and Brennan, 2000). In our study, we examined the results of CDT in patients with secondary lower extremity lymphedema. We observed that total circumference difference and body mass index decreased significantly compared to pretreatment values, and that SF-36 and lower extremity function scale increased. In a study of 537 patients carried out by Vignes et. Al (5), CDT was applied to the patients and the patients were called for examination at the 6th and 12th months. At the end of the treatment, a significant reduction in the volume of lymphedema was ensured. In a study conducted by Johansson et al. (Johansson, 1999), one group was treated with CDT and another one was treated with compression bandage and at the end of the study it was calculated that there was more volume reduction in the group to which CDT was applied. In a study carried out by Didem K et al., standard physiotherapy was compared to CDT and a reduction in edema was observed in the group receiving CDT at the end of the follow-up period. In the study of Su-Fen Liao (Su-Fen Liao, 2016), as well, the volume of the extremity with lymphedema significantly decreased after CDT. In another study (Dayes, 2013), compression therapy and CDT were compared, yet the superiority of any of the two could not be demonstrated. However, there are criticized cases in the study in which the patient distribution is unbalanced and the number of patients is insufficient. In a prospective study by conducted Gohil et al. (10), CDT was also found to be highly effective in the treatment of post-filarial lymphedema. This is a proof of the efficacy of CDT in the treatment of lymphedema, even if the etiology is different. The limitations of our study are that it was retrospective and there were few patients in our study and short follow-up periods.

Conclusion

In conclusion, in this study, it has been observed that CDT improves quality of life and lower extremity functions by decreasing the extremity circumference and body mass index in patients with secondary lymphedema. CDT is a very effective and reliable treatment modality for secondary lower extremity lymphedema.

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