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Research Article

Evaluation Of Compression Garment Compliance Factors İn Breast Cancer Patients

Meme kanseri hastalarında kompresyon giysisi uyum faktörlerinin değerlendirilmesi

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Abstract

Aim: Complete decongestive therapy (CDT) is the standard treatment of postmastectomy lymphedema. Our study aimed to determine the factors that impair compliance with the compression garment, one of the main phases of CDT, and to reduce the limiting effects of lymphedema by increasing the treatment compliance of lymphedema patients.

Material and Methods: In this prospective study, demographic and clinical information of the patients were recorded. The stage of lymphedema (International Society of Lymphology (ISL)) and whether they had received lymphedema treatment before were questioned. The experience of pressure garment use was evaluated with a 5-point Likert-type scale questionnaire covering factors affecting patient compliance.

Results: The mean age of 71 postmastectomy lymphedema patients was 56.3±8.6 years. 29 patients (40.8%) used their compression garments regularly every day, while 42 (59.1%) patients did not use them regularly. Regarding the mean score values, the top 3 reasons for limiting factors impairing compliance with the pressure garment were as follows: the patients had the most problems putting on and taking off the garment (3.94±1.30), had difficulty in housework in daily life (3.92±1.36), and had difficulty in participating in sports and hobby activities (3.84±1.41).

Conclusion: Patients' specific characteristics, lifestyle, and history are important in the selection of compression garments. It is important to identify factors that impair compliance with the compression garment, to inform patients about lymphedema preventive measures, and to enable them to better adapt to daily life with the compression garment may improve self-treatment management and reduce the need for caregivers

Keywords: Postmastectomy lymphedema, complete decongestive therapy, compression garment, night compression bandage

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Öz

Amaç: Kompleks dekonjestif tedavi (KDT) postmastektomi lenfödemin standart tedavisidir. Çalışmamızın amacı KDT'nin ana aşamalarından biri olan kompresyon giysisine uyumu bozan faktörleri belirlemek ve lenfödem hastalarının tedaviye uyumunu artırarak lenfödemin sınırlayıcı etkilerini azaltmaktır.

Gereç ve Yöntem: Bu prospektif çalışmada, hastaların demografik ve klinik bilgileri, Lenfödem evresi (International Society of Lymphology (ISL)) ve daha önce lenfödem tedavisi alıp almadıkları sorgulandı. Kompresyon giysisi kullanım deneyimi ve kompresyon giysisi kullanımında hasta uyumunu etkileyen faktörler; 5'li Likert tipi ölçekli bir anket ile değerlendirildi.

Bulgular: Postmastektomi sonrası 71 lenfödem hastasının yaş ortalaması 56.3±8.6 yıldı. Hastaların 29'u (%40.8) kompresyon giysilerini her gün düzenli olarak kullanırken, 42'si (%59.1) düzenli olarak kullanmıyordu. Ortalama puan değerlerine bakıldığında, kompresyon giysisine uyumu bozan kısıtlayıcı faktörlerin ilk 3 nedeni şöyleydi: hastalar en çok kompresyon giysisini giyip çıkarmakta sorun yaşıyordu (3,94±1,30), kompresyon giysisini kullanırken günlük yaşamda ev işlerini yaparken (3,92±1,36) ve spor ve hobi aktivitelerine katılmakta zorlanıyorlardı (3,84±1,41).

Sonuç: Hastaların spesifik özellikleri, yaşam tarzı ve öyküsü kompresyon giysilerinin seçiminde önemlidir. Kompresyon giysisine uyumu bozan faktörleri belirlemek, hastaları lenfödem önleyici tedbirler hakkında bilgilendirmek ve kompresyon giysisi ile günlük yaşama daha iyi uyum sağlamalarını sağlamak, kendi kendine tedavi yönetimini iyileştirebilir ve bakıcılara olan ihtiyacı azaltabilir.

Anahtar Kelimeler: Postmastektomi lenfödem, kompleks dekonjestif tedavi, kompresyon giysisi, gece kompresyon bandajı.

Introduction

Postmastectomy lymphedema is a progressive chronic condition in breast cancer survivors that has psychological effects related to the physical condition and therefore may have social implications. Complete decongestive therapy (CDT) is the proven standard treatment of postmastectomy lymphedema [1]. CDT is a set of treatment modalities including manual lymph drainage (MLD), multilayer bandaging, compression garments (CG), exercise, and skincare. CDT consists of 2 phases. The first phase is the intensive treatment phase and aims to reduce the maximum lymphedema volume. When maximal volume reduction is achieved and a plateau is reached in the measurements, phase 2 is started[2].

The second phase aims to maintain the current situation, that is, to prevent lymphedema from increasing again. For this purpose, in phase 2, compression garments[3] are worn during the day and compression bandages are applied at night. CG increases lymphatic flow and reduces accumulated protein, helping the limb to be more uniformly shaped and reduced in volume. It protects skin integrity and the extremity from potential trauma by increasing venous return. Regular use of the CG during the day is important for treatment effectiveness. Every patient with lymphedema should be educated to ensure safe treatment with appropriate CG[4].

Factors that are overlooked when planning CG may negatively affect the treatment of lymphedema. This can result in frustration for the patient. Believing that it will not get better, discontinuation of treatment, depression, and consequent social isolation and loneliness can occur.

The primary aim of our study was to determine the factors that impair compliance with compression garments in postmastectomy lymphedema patients. We also aim to provide valuable information on patient management that may benefit health practitioners and medical staff to increase patients' compliance with treatment, to help them better adapt to daily life, and to emphasize what needs to be done to improve their quality of life in the long term.

Material and Methods

This prospective study included 71 patients aged 18-75 years diagnosed with postmastectomy lymphedema in the Physical Therapy and Rehabilitation Clinic of the Ankara Dr. Abdurrahman Yurtaslan Oncology Training and Research Hospital between June 2021 and June 2022.

Patient Evaluation

Inclusion criteria; Patients presenting with unilateral upper extremity swelling, increased diameter, stiffness symptoms after breast cancer treatment (mastectomy, radiotherapy, chemotherapy).

Exclusion criteria: Patients with deep vein thrombosis, cellulitis, severe arterial disease, unstable heart disease, circulatory problems such as sensory and motor deficits, sensitivities or skin allergies, and septic venous inflammation.

Demographic and clinical information of the patients included

in the study, such as age, educational status, marital status, employment status, and duration of lymphedema, were recorded.

The stage of lymphedema (International Society of Lymphology (ISL)) and whether the patient had been treated for lymphedema before were questioned.

Staging of lymphoedema (ISL):

Stage 0: Subclinical state

Stage 1: Reversible edema is present,

Stage 2: İrreversible edema exists without tissue changes,

Stage 3: Fibrotic hard tissue, hyperkeratosis, papillomatosis, hyperpigmentation, increased skin folds[5]

The questionnaire was developed in close collaboration with an experienced lymph therapist;

Patients' opinions about the experience of using compression garments, factors affecting patient compliance, and conditions affecting quality of life depending on compression garments were questioned by a single doctor specialized in the field of lymphedema with a questionnaire created with a 5-point Likert-type scale. Descriptive questions designed from the Lymphedema Quality of Life Questionnaire (LYMQOL-Arm) [6]were included in this questionnaire. Questions are summarized in Table 1.

Table 1. Evaluating Factors Influencing Treatment Compliance in Compression Garment Usage
Have you ever felt an uncomfortable pressure point?
Did the compression garment restrict the movement of your fingers?
Did you have any problems with the fit of your finger?
Have you experienced any restrictions in the tactile sense of the fingers?
Have you experienced perspiration problem?
Did you have any problems putting it on and taking it off?
Did the compression garment restrict your wrist movement?
Have you ever had a hard time finding clothes in the right colour?
Has the compression garment limited your activities at work?
Have you had difficulty with activities that require personal care?
Have you ever experienced any difficulties in your daily housekeeping?
Have you felt depressed while wearing your compression garment?
Have you ever needed someone to help you with your daily activities?
Have you experienced any numbness or tingling with your compression garment?
Have you had any problems with sports or hobbies, when using your compression garment?
Scale ranges from 1 (Never), 2 (Rarely),3 (Sometimes), 4 (Often) to 5 (Always). N/A = not applicable

Statistics Analysis

The data analysis was performed using the BluskyStatistics 10.2.0 Package. The Kolmogorov- Smirnov test was applied to assess the normality of data distribution. Descriptive statistics were utilized to summarize the data, with continuous variables presented as mean ± standard deviation and, where appropriate, as median (minimum-maximum). Categorical data were expressed in terms of counts and percentages. Categorical variables were defined as percentage frequency distributions. Pearson $\chi 2$ test was used to compare demographic characteristics between groups. A significance level of $P < 0.05$ was considered to indicate statistical significance in the results.

Results

The mean age of 71 postmastectomy lymphedema patients included in the study was 56.3±8.6 years. The sociodemographic and clinical characteristics of the patients included in the study are summarized in Table 2.

Table 2. Sociodemographic and clinical characteristics of patients (n=71)	
Age_years (mean ± SD)	56.3±8.6
Profession_n(%)	
Housewife	54(76.0)
Officer	15(21.1)
Worker	2(2.8)
Marital Status_n(%)	
Married	62(87.3)
Single	9(12.7)
Education Level --n(%)	
Elementary school	35(49.2)
High School	21(29.5)
University	15(21.1)
Lymphedema stage_n(%)	
Stage 1	12(16.9)
Stage 2	36(60.7)
Stage 3	23(32.4)
Duration of Lymphedema_n(%)	
<18months	15(21.1)
≥18months	56(78.9)
Previous lymphedema treatment_n(%)	
Yes	59(83.0)
No	13(17.0)
Unassisted self drainage_n(%)	
Yes	22(30.9)
No	49(69.1)
Night Compression Bandaging_n(%)	
Yes	9(12.6)
No	62(87.4)
Regular CG_n(%)	
Yes	29(40.8)
No	42(59.1)
CG: Compresion Garments ,SD: Standart Deviation	

29 (40.8%) of the patients who participated in the study stated that they used compression garments regularly every day, and 42 (59.1%) patients did not use them regularly.

There was no statistically significant correlation between educational level and regular use of compression garments (p=0.44).

When the lymphedema stages were compared with the regular use of compression garments; 7(24.1%) of 29 patients who used compression garments regularly were in stage 1, 15(51.7%) were in stage 2, and 7(24.1%) were in stage 3. Of the 42 patients who did not use compression garments regularly, 5 (11.9%) were in stage 1, 21 (50.0%) were in stage 2, and 16 (38.1%) were in stage 3. There was no statistical difference between patients who used compression garments regularly and those who did not in terms of lymphedema stages. (p=0.27) (table 3).

Table 3. The relationship between characteristic features and regular use of compression garments

	Regular CG users(29)	Not regular CG users(42)	p
Profession_n(%)			
Housewife	24(82.8)	30(71.4)	0.15
Officer	5(17.2)	10(23.8)	
Worker	-	2(4.8)	
Marital Status_n(%)			
Married	27(93.1)	35(83.3)	0.87
Single	2(6.9)	7(16.7)	
Education Level n(%)			
Elementary school	16(55.2)	19(45.2)	0.44
High School	9(31.0)	12(28.6)	
University	4(13.8)	11(26.2)	
Lymphedema stage n(%)			
Stage 1	7(24.1)	5(11.9)	0.27
Stage 2	15(51.7)	21(50)	
Stage 3	7(24.1)	16(38.1)	
Pearson's Chi-Square Test			

Regarding the mean score values, the top 3 reasons for the limiting factors that impaired compliance with the compression garment were: the patients had the most problems putting on and taking off the garment (3.94±1.30), had difficulty in doing household chores in daily life (3.92±1.36), and had difficulty participating in sports and hobby activities (3.84±1.41). Factors affecting appearance, such as finding clothes in the appropriate color (3.16±1.49), had the least impact on compliance (Figure 1).

The most common reasons for prescription renewal in the first 1 year were as follows: worn-out look and loss of elasticity in 44 (61.9%) patients, tight fit in 18 (25.3%) patients, and compliance problem in 7 (9.8%) patients.

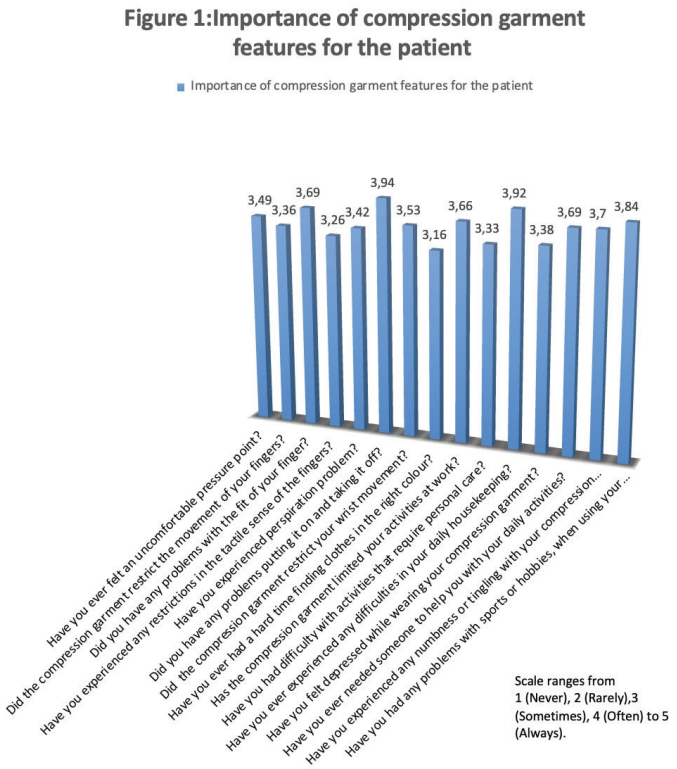

Figure 1. Importance of compression garment features for the patient

The most frequently reported sites of discomfort were between the fingers (53.5%), the elbow (28.1%), and the wrist (11.2%), respectively.

Discussion

In this study, 29 (40.8%) of the patients used pressure garments regularly every day, while 42 (59.1%) did not use them regularly. The first 3 reasons for the restrictive factors that impaired compliance with the pressure garment were as follows: patients had the most difficulty in putting on and taking off the garment, difficulty in daily housework, and difficulty in participating in sports and hobby activities.

Compliance with compression therapy is essential to ensure long-term treatment efficacy in CDT. An appropriate CG is essential for compliance with compression therapy. CG should be worn as regularly and daily as possible. Ill-fitting compression garments may cause complications such as pressure damage, cellulitis, and necrosis [7].

Compression-related problems in patients with lymphedema have a negative impact on the success of treatment. Problems that negatively affect the patient's daily life can lead to disability and psychological distress. After maximum volume reduction; custom-made garments that fit well, provide even pressure distribution, and do not restrict movement, keep the lymphedema stable at a reduced level [8].

In patients with a high-risk profile for lymphedema (axillary lymph nodes dissected, had≥5 sentinel lymph nodes removed, overweight), an early low-pressure (15-20 mmHg) compression garment is recommended even if no symptoms occur. Early diagnosis and treatment are important to prevent irreversible complications [9].

In our study, it was found that 59.1% of the patients did not use the pressure garment regularly every day. Lee and Wigg, 2013 et al. supported our study and found that patients often presented to therapists with ill-fitting clothes and often could not wear these clothes regularly because they found them uncomfortable [10].

In a randomized controlled study by Johansson et al, 15% of the compression cohort (16% at 6 months to 31% at 12 months) showed progression of lymphedema after they stopped using compression garments. According to this study, regular compression garments are recommended for 6 months postmastectomy [11]. In another randomized controlled study of 45 patients, at the end of 24 months, those who used prophylactic compression garments had less edema than the control group. Based on these studies, it is important to evaluate the factors affecting the regular use of compression garments. Patients should be educated to determine their measurements[12].

In our study, there was no statistical difference between patients with and without regular use of compression garments in terms of lymphedema stages. The systematic review by Singh et al. concluded that there was insufficient evidence to recommend or reject the use of CG regardless of stage[13]. In a study by Castell et al, patients who used CG for 8 hours a day in the first 3 months postmastectomy had a lower incidence of lymphedema within 2 years compared to non-users ($p = 0.02$). In the study, it was emphasized that patients could not wear the compression garment daily and could not tolerate it psychologically [14]. Patients at high risk of developing lymphedema need to be carefully selected.

Studies are showing that wearing compression garments in breast cancer-related lymphedema negatively affects the quality of life [15]. In a study by Johansson et al, it was shown that the poor fit of the compression garment and the patient's finding his/her appearance ugly emotionally were among the negative experiences secondary to CG [16].

Education level is important for CG compliance. Due to the complexity of lymphedema management, the patient's ability to understand and apply information affects treatment response. In a study by Baranski et al, it was stated that the physical and cognitive factors of the patient should be taken into consideration when applying CG [17]. In our study, there was no difference between the educational level of the patients and their regular use of the CG. We think that this is because our hospital is a specific institution in the field of oncology and that lymphedema education is provided by addressing the different learning needs and educational levels of individuals.

In our study, the most disruptive factor in compliance with CG was found to be the problem of putting on and taking off the garment. Patients should be trained on how to put on and take off CG in case they are replaced. Van Hecke et al. stated in a study that learning how to apply and remove compression garments increased the functional independence of patients [18].

Another factor that impaired compliance with the compression garment in the patients included in the study was difficulty in doing household chores in daily life. In previous studies, postmastectomy lymphedema patients reported fewer clothing-related problems when they used seamless compression garments. This is important in terms of improving self-treatment management of lymphedema patients, reducing the need for caregivers, and better adaptation to daily life [19].

Another factor that impairs treatment compliance in the study was evaluated as difficulty in doing sports and hobbies. This drawback will affect the treatment management of lymphedema unsuccessfully. A study conducted by Blom et al. supported our study and reported that patients with breast cancer-related lymphedema experienced discomfort and embarrassment (30%) while doing sports and hobbies with CG compared to the group not wearing CG (5%) ($p = 0.034$) [20].

In our study, the most common uncomfortable and ill-fitting area when using a compression garment was between the fingers. Inappropriate sutures of the sleeve may cause pain and pressure ulcers between the fingers. In their compression garment study, Vignes et al. showed that the friction of the sutures between the fingers can cause pain and even ulceration between the thumb and index finger, so it is clinically imperative to prevent compression garment-related complications [21].

In the literature, it has been observed that women who use compression garments in women treated for lymphedema have problems with clothes-wearing, self-esteem, confidence, and visibility [22, 23]. In our study, problems affecting external appearance, such as finding clothes in appropriate colors, were found to be the least disruptive factor in compliance. Offering compression stockings with different colors and patterns to patients with lymphedema may be supportive of treatment.

If the compression garment wears out, it will reduce its ability to provide the necessary compression due to the loosening of the elastic fibers. Wearing a worn compression garment may cause injury to the patient. If the CG used in phase 2 of CDT develops a loss of elasticity, a new garment should be prescribed. To prolong the life of CG, the garment should be hand washed, and harsh chemicals should be avoided [24]. In our study, which supports the literature, the most common reason for prescription renewal in postmastectomy lymphedema patients was wear and loss of elasticity in the pressure garment.

In the literature, the importance of night compression bandaging in the treatment management of lymphedema has become increasingly recognized. A night compression bandage is recommended for the effectiveness of CDT [25]. In our study, only 12.6% of the patients included in the study were able to perform compression bandaging at night. To prevent this situation, adjustable compression bandage devices are recommended in the treatment of lymphedema for patients who cannot perform compression bandaging at night [26]. Flat knit garments can eliminate the need for bandaging because they provide low resting pressure and higher working [27].

The main limitations of this study are the small sample size and short follow-up period.

Conclusion

The specific characteristics, lifestyle, and history of patients are significant factors in the selection of CG. The identification of factors that impair compliance with the garment, and informing patients about lymphedema preventive measures can enable them to take important steps in their health management. Enabling them to better adapt to daily life with the compression garment can reduce the need for caregivers by improving self-treatment management. By reducing the extent of these limitations faced by patients with lymphedema, a positive impact on quality of life can be achieved. Much more studies are needed to ensure this, to raise awareness among health professionals.

Ethical Approval

The Ankara Dr. Abdurrahman Yurtaslan Oncology Training and Research Hospital Ethics Committee approved the study in June 2021, with approval number 2021-06/1246. Informed consent forms were obtained from the patients. The study was conducted using generally accepted ethical principles for research stemming from the 1975 Declaration of Helsinki.

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Conflict Of Interest

The authors declare that have no conflict of interest

Availability of data and materials

Data will be provided upon request.

Author contributions

SKK: Conceptualization; Investigation; Writing- original draft; Writing- review & editing; Validation; Methodology; Software; Formal analysis; Project administration; Data curation; Supervision; Resources; Visualization.

LA: Writing- review & editing; Software; Formal analysis; Data curation; Writing- original draft; Supervision; Resources

Informed Patient Consent

Complete written informed consent was obtained from the patients for the publication of this study.

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