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Research Article

Determination of the Influence of Peripheral Neuropathy Symptoms on Quality of Life in Breast Cancer Patients: A Cross-Sectional Study with Four Follow-Ups

Berna Kurt[1], Zeynep Sipahi Karslı[2], Berna Ömür Çakmak Öksüzoğlu[2], Emine Öztürk[2], Neslihan Demirörs[2], Osman Dağ[3]

[1]Department of Internal Medicine Nursing, Hacettepe University, Faculty of Nursing, Ankara, Turkey
[2]Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital, Ankara, Turkey
[3]Department of Biostatistics, Hacettepe University, Ankara, Turkey

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Abstract

AIM: This study aims to evaluate the impact of peripheral neuropathy symptoms throughout with monthly follow-ups during 4 months of paclitaxel treatment.

METHODS: This prospective cross-sectional study was conducted with 79 patients. The study population consisted of female patients with breast cancer between August 2018 and January 2019. ''Chemotherapy-Induced Peripheral Neuropathy Assessment Tool'' and ''EORTC C30 Cancer Quality of Life Questionnaire'' were applied with four follow-ups. The study was undertaken in accordance with the STROBE checklist for cross-sectional studies.

RESULTS: The Chemotherapy-Induced Peripheral Neuropathy Assessment Tool except for the general activity subdimension were statistically significant in the ratings of second, compared to first; third compared to first and second; fourth compared to first, second, and third follow-up periods. The overall mean of the EORTC C30 Cancer Quality of Life Questionnaire, functioning, symptom, and global health status were statistically significant in the evaluations of second, compared with first; third compared with first and second; fourth compared with first, second, and third follow-up periods.

CONCLUSION: Findings from this study suggest that the increase in neuropathy symptoms during cures negatively affects the quality of life.

Keywords: Breast cancer, cross-sectional study, peripheral neuropathy, quality of life

Introductıon

The paclitaxel treatment regimen is frequently on the structural and functional areas of the nervous system causing chemotherapy-induced peripheral neurotoxicity (CIPN) (Jue, 2022; Loprinzi et al., 2020; Patel et al., 2022; Van et al., 2022). The incidence of CIPN ranges from 61 to 92% due to the toxic impact of paclitaxel, an antineoplastic agent, on sensory neurons (Colvin, 2019; Patel et al., 2022). Sensory, motor, and autonomic symptoms are observed in CIPN associated with paclitaxel. Stabbing-burning pain, burning, weakness, impaired walking and balance, constipation, sexual dysfunction, tingling, numbness, and increased sensitivity to heat/cold are among the symptoms (Dorsey et al., 2019). Furthermore, sensory neuropathy induces complaints of sensory defects in the patient's extremities, defined as "as if wearing socks and gloves" (Kösemen & Akın, 2016). Symptoms usually begin in the fingertips and progress distally to proximally (Diaz & Schiff, 2020). Because these symptoms cause functional interference with activities of daily life, they negatively affect patients' physical, social, emotional, and functional health and reduce their quality of life. Patients treated every 21 days were assessed before and after at least six treatment sessions in a study analyzing sensory symptoms due to peripheral neurotoxicity results related to the paclitaxel regimen, and symptoms were found to appear after the third cycle of treatment (Oh & Cho, 2020). Support systems or treatment adherence play a significant role in diagnosis, treatment, the transition from illness to recovery, biopsychosocial adjustment, and patients' future expectations (Bao et al., 2016; Winters-Stone et al., 2016). Effective detection of neuropathy causing possible trauma in patients receiving paclitaxel therapy is very important for treatment adherence and improvement of patients' quality of life. Therefore, it is necessary to effectively detect CIPN in its early stages (Winters-Stone et al., 2016). By defining CIPN and taking the precautions required in the early stages, patients, nurses, and caregivers can monitor patients' quality of life and prevent the worsening of symptoms.

In breast cancer patients, paclitaxel therapy is administered in weekly doses. The studies that assessed the patient quality of life and peripheral neuropathy in the literature reviews were evaluated as single-cycle follow-ups (Önsüz & Can, 2020). Globally, there have been few studies assessing the impact of peripheral neuropathy on quality of life. Moreover, there were no mentioned studies using this neuropathy scale to evaluate

Corresponding Author: Berna Kurt
E-mail: bernacolakoglu85@gmail.com,bernacolakoglu@hacettepe.edu.tr

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in detail and over a period of approximately 4 months throughout the treatment course. Therefore, this study aims to evaluate the impact of peripheral neuropathy on the quality of life of breast cancer patients throughout with monthly follow-ups during 4 months of paclitaxel treatment. Transferring the study results to the clinical setting will allow the management of the symptom of peripheral neuropathy experienced by patients from the beginning to the end of treatment, and an effective nursing process can be implemented.

Research Questions

1. How does the quality of life change in breast cancer patients during the paclitaxel regimen?
2. How do the peripheral neuropathy symptoms and quality of life change between courses in breast cancer patients during the paclitaxel regimen?

Method

Study Design

The study was conducted in a descriptive design with four prospective follow-ups.

Sample

The study population consisted of female patients with breast cancer who received paclitaxel-based chemotherapy treatment in the outpatient chemotherapy department at Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital between August 2018 and January 2019. This study was executed and reported in accordance with the STROBE Statement: guidelines for reporting cross-sectional studies. Initially, 238 patients were evaluated for compliance with the study criteria; 155 were not included in the study because they did not meet the criteria for the study [patients were having diabetes mellitus (DM), uremia, and thyroid disease, over 65 years old, and did not want to participate in the study]. For the study sample size, a pilot study was conducted with 20 breast cancer patients who had received four follow-up treatments with paclitaxel and completed the entire treatment process. It was determined that at least 72 patients should be included with a power of 80%. The sample size at the beginning of the study was 83 patients, we completed the study with 79 patients because one patient left the study, the treatment of two patients was delayed due to blood values, and one patient wanted to move to a different city and receive the treatment in her hometown.

Inclusion Criteria

Eligible patients were, aged 18–65 years; had a diagnosis of breast cancer; received a single paclitaxel treatment in the chemotherapy protocol; on the first cycle of paclitaxel an antineoplastic drug from the taxane group; receiving weekly paclitaxel therapy; without any communication disability; without lymphedema; not using vitamin supplements. Patients who do not accept the study, change their treatment regimen; discontinue treatment; treated for less or more than 12 weeks; with known neuropathy; with DM, uremia, thyroid disease; patients with systemic diseases causing polyneuropathy, and patients who had previously taken drugs causing neuropathy, such as paclitaxel, were excluded from the study.

Data Collection

After obtaining ethics committee and institutional approvals, data were collected face-to-face by the researchers using the "Patient Information Form (PIF),""EORTC C30 Cancer Quality Of Life Questionnaire (EORTC C30 QLQ)," and "Chemotherapy-Induced Peripheral Neuropathy Assessment Tool (CIPNAT)" patients who met the study criteria arrived at the institution where the study was conducted.

The investigators interviewed patients who met the study inclusion criteria before the first cycle of the paclitaxel regimen on day 0 = F1. They were informed of the importance and purpose of the study and the patients' rights and that they could withdraw from the study at any time. The first interview lasted an average of 30–45 minutes, while the other interviews lasted 25–30 minutes. The first interview took place on F1 immediately before the paclitaxel regimen. Subsequent interviews were conducted after the end of the (F2 (second follow-up) = fourth cycle of paclitaxel chemotherapy regimen; F3 (third follow-up) = eighth cycle of paclitaxel chemotherapy regimen; F4 (fourth follow-up) = 12th cycle of paclitaxel chemotherapy regimen) after the paclitaxel infusion ended.

Data Collection Tools

Patient Information Form: The PIF, which the researcher created by scanning the literature, consists of two parts. The first part consists of eight questions, including age, body surface area (BSA), treatment (dose/mg), marital status, number of children, education, and career. The second part consists of six disease-specific questions, including cancer presence in the family, a medication used outside of chemotherapy, the status of having another disease, symptoms occurring, symptoms to time to experience, and manage chemotherapy symptoms. Each patient's data collection on the form took 10–13 minutes.

Chemotherapy-Induced Peripheral Neuropathy Assessment Tool: Tofthagen et al. (2011) developed it to evaluate peripheral neuropathy induced by chemotherapy. The scale consists of two sections. The first section concerns nine symptoms; the severity of these symptoms, the possibility of an emotional problem occurring, and the incidence rate of these symptoms are evaluated. The first six questions in this section constitute the sensory symptoms, and the seventh, eighth, and ninth questions constitute the subdimensions of motor symptoms. In the second section, 14 (sensory and motor) activities were evaluated, including whether they were affected by the symptoms, and how they were affected by the symptoms. These affected activities consisted of fine motor activities and general activities. While the activities of dressing, writing, picking up objects, and holding onto objects were included in the fine motor subdimension, other activities were evaluated as general activities.

The following items were included: Experiencing peripheral neuropathy symptoms (1 = Yes, 2 = No), The severity of the symptom (1 = Not at all severe, 10 = Extremely severe), and distressing. (emotionally upsetting) induced by the symptom (1 = Not at all distressing, 10 = Extremely distressing), Frequency of the symptom (1 = Never, 10 = Always), and peripheral

neuropathy symptoms limiting the activities (1 = Not at all interfering, 10 = Completely interfering). The presence (0–1), severity (0–10), incidence (0–10) of the symptom, and emotional problems (0–10) induced by the symptom were evaluated with the first nine items. The total score to be obtained from the scale is between 0 and 279. High scores indicate severe symptoms, a high rate of incidence, many emotional problems, and limitations on daily life activities. Turkish validity of the scale was done by Kutlutürkan et al. (2017).

EORTC C30 Cancer Quality of Life Questionnaire: Aaronson et al. developed the EORTC C30 QLQ, which consists of 30 questions. Güzelant et al. adapted the EORTC C30 QLQ into Turkish and evaluated the validity and reliability of cancer patients in Turkey. The Cronbach's alpha coefficient of the scale was determined to be ≥ 0.70 (Guzelant et al., 2004).

The EORTC QLQ-C30 consists of 30 items covering five functioning scales (physical, social, emotional, role, and cognitive), nine symptom scales (fatigue, nausea/vomiting, pain, dyspnea, sleep disturbances, appetite loss, constipation, diarrhea, and financial impact), and a global health status scale. Referring to a recall period of 1 week (except for physical function, which does not refer to a recall period at all), patients indicate their answers on a 4-point Likert scale. Linear converted scale scores range from 0 to 100. Higher scores on the functioning scales and on the global health status scale indicate better functioning, whereas higher scores on the symptom scales indicate greater symptom burden (Guzelant et al., 2004).

Statistical Analysis

Analyses were performed with Statistical Package of Social Sciences 25.0 software (IBM SPSS Corp., Armonk, NY, USA). Descriptive studies were presented as means and standard deviations for quantitative data, while categorical variables were described using frequency and percentage for qualitative data. In case of a statistically significant difference in the changes between the scale scores repeated measure was used by analysis of variance in the study according to the courses, and the advanced post hoc test (Bonferroni test) was used to determine the evaluation time (F1, F2, F3, and F4) where the difference originated. A value of $p < 0.05$ was considered statistically significant.

Ethical Considerations

Before answering the questionnaire, the researchers informed the patients of the study's purpose, their rights, and the fact that they could withdraw from the research at any time. All eligible participants provided informed consent before they completed the questionnaire. This study was approved by the University of Health Sciences Sciences Clinical Research Ethics Committee (KA-2018-08/129) before data collection began. All interventions were carried out in accordance with institutional ethical standards and the national research committee, including the 1964 Declaration of Helsinki and subsequent amendments. The PIT was administered to the patients who gave written and oral consent on the first day of the study. A written interview was performed with every patient individually.

Results

The demographic characteristics and disease information of the patients ($n = 79$) participating in the study are shown in the following table with frequency and percentages. Characteristics of the sample are as follows: the average age of patients is 46.10 ± 0.85, the BSA is 1.70 ± 0.01, 57% of them are 46 years and older, 60.8% are married, and 50.6% of them have one to two children. While 75.9% of patients had a primary school degree, 64.6% were housewives. While 58.2% of patients have a family history of cancer, 70.9% are not taking any medication other than chemotherapy and have no history of any other disease (Table 1).

For the overall average of neuropathy, sensory, and motor symptoms, F2, F3, and F4 the follow-up scores were significantly higher than F1 ($p < 0.05$). For the subdimensions of general activity, the mean scores of F2 follow-ups were significantly higher compared to F1 ($p < 0.05$), while the mean scores of F3 and F4 follow-ups were significantly lower ($p < 0.05$) (Table 2).

In the comparison of neuropathy according to the F1, F2, F3, and F4, except for the general activity subdimension, the mean values of the increasing symptom subdimensions were statistically significant ($p < 0.05$) in the ratings of F2 compared to F1, F3 compared to F1 and F2, F4 compared to F1, F2, and F3 (Table 3).

The change in the quality of life and its subdimensions depending on the cycle at the F1, F2, F3, and F4; the general average of quality of life, functioning, symptom, global health status, and the mean scores of follow-ups F2, F3, and F4 were significantly lower than F1 ($p < 0.05$) (Table 4).

The comparison of quality of life according to follow-up periods; the overall mean of quality of life, functioning, symptom, and global health status in the evaluations of F2 compared with F1; F3 compared with F1 and F2; F4 compared with F1, F2, and F3, it was found that the mean values of symptom that decreased gradually were statistically significant ($p < 0.05$) (Table 5).

Discussion

Chemotherapy-associated peripheral neuropathy is a common and serious consequence of cancer treatment. Because it is often the main reason for treatment reduction or discontinuation, it may affect survival by limiting the effectiveness of treatment. As noted in the introduction, screening for CIPNs will facilitate intervention in patients' daily lives (Argyriou et al., 2014). Furthermore, while 15% of breast cancer survivors were treated with docetaxel, there was a significant relationship between peripheral neuropathy symptoms observed 1–3 years after treatment (Eckhoff et al., 2015). Because of no study data in the literature covering all four follow-up processes similar to our study, the follow-ups were evaluated individually. In our study, the duration of the neuropathy-related symptoms was found that they lasted no more than 1–3 days in F2 and no more than 3–7 days in F3 and F4. These times are thought to be dependent on a 7-day (weekly paclitaxel) cycle of treatment.

Table 1.
Characteristics of the Sample (N = 79)

Variable	N	%
Age (M ± SD)	46.10 ± 0.85	
≤45	34	43.0
≥46	45	57.0
BSA (M ± SD)	1.70 ± 0.01	
Treatment, dose/mg		
125	30	38.0
135	20	25.3
136	1	1.3
139	1	1.3
140	4	5.1
144	2	2.5
145	10	12.7
148	3	3.8
150	3	3.8
160	5	6.3
Marital status		
Married	48	60.8
Single	31	39.2
Number of children		
0	18	22.8
1–2	40	50.6
3–4	21	26.6
Education		
Primary education	60	75.9
High school	15	19.0
University	4	5.1
Career		
Unemployed	51	64.6
Officer	25	31.6
Retired	3	3.8
CA presence in the family		
Yes	46	58.2
No	33	41.8
Medication used outside of chemotherapy		
Yes	23	29.1
No	56	70.9
Status of having another disease		
Yes	23	29.1
No	56	70.9

Note: Values are presented as mean ± SD, number (%).
BSA = body surface area; SD = standard deviation; CA = Cancer

Table 2.
Change of Neuropathy and Subdimensions According to Cycles

Neuropathy Subdimensions	F1 M ± SD	F2 M ± SD	F3 M ± SD	F4 M ± SD	p
Sensory symptoms	0.00 ± 0.00	86.1 ± 14.3	126.3 ± 10.3	147.8 ± 7.4	**0.001***
Motor symptoms	0.00 ± 0.00	35.4 ± 4.1	47.6 ± 4.5	53.7 ± 3.0	**0.001***
General activity	0.00 ± 0.00	31.3 ± 3	62.8 ± 2.5	62.0 ± 3.6	**0.001***

Note: Values are presented as mean ± SD. Repeated ANOVA test, *$p < 0.05$.
ANOVA = analysis of variance; F1 (first follow-up) = day 0 of chemotherapy; F2 (second follow-up) = fourth cycle of chemotherapy; F3 (third follow-up) = eighth cycle of chemotherapy; F4 (fourth follow-up) = 12th cycle of chemotherapy; SD = standard deviation.

Sensory, motor, and autonomic symptoms are observed in CIPN associated with paclitaxel. These symptoms include stabbing-burning pain, burning, weakness, difficulty walking, balance, constipation, sexual dysfunction, tingling, numbness, and increased

Table 3.
Comparison of Neuropathy according to Follow-Up Times

Variables		SS	p	MS	p	GA	p
F1	F2	−86.1	**0.001***	−35.4	**0.001***	−31.3	**0.001***
	F3	−126.3	**0.001***	−47.6	**0.001***	−62.8	**0.001***
	F4	−147.8	**0.001***	−53.7	**0.001***	−62.0	**0.001***
F2	F3	−40.2	**0.001***	−12.1	**0.001***	−31.4	**0.001***
	F4	−61.7	**0.001***	−18.2	**0.001***	−30.6	**0.001***
F3	F4	−21.5	**0.001***	−6.1	**0.001***	0.7	0.865

Note: Repeated ANOVA test, *$p < 0.05$.
ANOVA = analysis of variance; F1 (first follow-up) = day 0 of chemotherapy; F2 (second follow-up) = fourth cycle of chemotherapy; F3 (third follow-up) = eighth cycle of chemotherapy; F4 (fourth follow-up) = 12th cycle of chemotherapy; GA = general activity; MS = motor symptoms; SS = sensory symptoms.

Table 4.
Change in Quality of Life and Subdimensions Depending on the Cycle

Quality of Life Subdimension	F1 M ± SD	F2 M ± SD	F3 M ± SD	F4 M ± SD	p
Functioning Scale	1.0 ± 0.0	0.6 ± .0	0.4 ± 0.0	0.323 ± 0.0	**0.001***
Symptom Scale	1.0 ± 0.0	0.7 ± 0.0	0.5 ± 0.0	0.357 ± 0.0	**0.001***
Global Health Status	0.7 ± 0.1	0.4 ± 0.1	0.4 ± 0.0	0.1 ± 0.0	**0.001***

Note: Values are presented as mean ± SD. Repeated ANOVA test, *$p < .005$.
ANOVA = analysis of variance; F1 (first follow-up) = day 0 of chemotherapy; F2 (second follow-up) = fourth cycle of chemotherapy; F3 (third follow-up) = eighth cycle of chemotherapy; F4 (fourth follow-up) = 12th cycle of chemotherapy; SD = standard deviation.

Table 5.
Comparison of Quality of Life According to Follow-Up Periods

Variables		FS	*p*	GHS	*p*	SS	*p*
F1	F2	.356	**0.001***	.270	0.281	.281	**0.001***
	F3	.510	**0.001***	.277	0.445	.445	**0.001***
	F4	.676	**0.001***	.565	0.643	.643	**0.001***
F2	F3	.154	**0.001***	.007	0.163	.163	**0.001***
	F4	.320	**0.001***	.295	0.362	.362	**0.001***
F3	F4	.166	**0.001***	.288	0.198	.198	**0.001***

Note: Repeated ANOVA test, *$p < 0.05$.
ANOVA = analysis of variance; F1 (first follow-up) = day 0 of chemotherapy; F2 (second follow-up) = fourth cycle of chemotherapy; F3 (third follow-up) = eighth cycle of chemotherapy; F4 (fourth follow-up) = 12th cycle of chemotherapy; FS = Functioning Scale; GHS = Global Health Status; SS = Symptom Scale.

sensitivity to heat/cold (Dorsey et al., 2019) Furthermore, sensory neuropathy causes complaints of sensory disturbances in the patient's extremities, defined as "as if wearing socks and gloves" (Kösemen & Akın, 2016). Symptoms usually begin at the fingertips and progress from distal to proximal (Diaz & Schiff, 2020). Because these symptoms cause functional disorders in daily activities, they have a negative impact on patients' physical, social, emotional, and functional health and their quality of life (Uçar, 2017). The another study, which reported that more than 60% of patients experienced more or less severe symptoms of CIPN after the first month following the completion of chemotherapy, and these symptoms lasted for a long time (Seretny et al., 2014). Our study, when comparing the symptom subdimensions according to the general average, sensory symptoms, and motor symptoms increasing mean values of the symptom subdimensions were found in the ratings from F2 compared to F1, F3 compared to F1 and F2, F4 compared to F1, F2, and F3, which were statistically significant. We believe that these progressive changes in neuropathy subdimensions in recent cycles are due to the dose increase.

In the Arabic version of the assessment tool for CIPN, patients most frequently reported numbness in the fingers/feet and numbness in the fingers/hands as severity, distress, and frequency of symptoms (54.1% and 51.1%, respectively), followed by muscle or joint pain and tingling in the feet/toes (43.7% and 42.2%, respectively) (Obaid et al., 2020). According to our study, in the subdimensions of general mean, sensory symptoms, and motor symptoms in the evaluations of F2 compared to F1, F3 compared to F1 and F2, F4 compared to F1, F2, and F3, the increasing mean scores of symptom subdimensions were found to be statistically significant, which is consistent with the literature.

The study, which evaluated the patients' responses to the frequency of symptom interaction items, indicates that neuropathic symptoms affected walking, sleep, and usual housework in more than 40% of participants treated with neurotoxic chemotherapy. Neuropathic symptoms impaired enjoyment of life, exercise, participation in hobbies or recreational activities, and writing in more than 30% of participants treated with neurotoxic chemotherapy, with the least discomfort occurring during driving (18.5%) (Obaid et al., 2020). In our study, the smallest effect was in part about driving. We attribute this to the educational level of breast cancer patients (75.9% in primary school) and, accordingly, the proportion of drivers.

The relationship between patient-reported outcomes and quantitative sensory testing to measure long-term neurotoxicity in breast cancer survivors treated with adjuvant paclitaxel chemotherapy reported that 81% of 50 breast cancer patients reported numbness in the hands or feet in the last week and 27% of these symptoms occurred in the hands, while 25% of them reported severe symptoms in the feet (Hershman et al., 2014). Considering that the first six questions of the Chemotherapy-Induced Peripheral Neuropathy Assessment Tool (CIPNAT) scale, included sensory symptoms in our patient group, their severity and frequency gradually increased throughout the treatment period in processes F2, F3, and F4. This situation is thought to improve progressively depending on the dose of the paclitaxel treatment regimen.

The association between age and taxane-based chemotherapy, and treatment-related neurotoxic effects was reported to increase with age in elderly female patients with a mean follow-up of 8.5 years (Lichtman et al., 2012). In our study, it was found that the mean values during the four follow-ups (F1, F2, F3, and F4) were not statistically significant. The inconsistency of age and neuropathy symptoms with the literature is because the mean age of patients in our treatment group was 46.10 years, and the percentages under 45 years and over 46 years were 43.0% and 57.0%, respectively.

Considering the cumulative doses of taxane-based drugs that cause peripheral neuropathy grades 2–4 peripheral neuropathy has been reported to occur due to paclitaxel treatment at an average dose of 715–1500 mg/m^2 (Ewertz et al., 2015; Guzelant et al., 2004). The study that potential risk factors for falls in people with CIPN, including cumulative dose and number of cycles, the severity of loss of balance, the severity of muscle weakness, self-reported impairment in walking or driving, number of neuropathic symptoms, the severity of CIPN, and performance (Tofthagen et al., 2012). Also, patients who had fallen scored significantly higher on the CIPNAT, including the number of symptoms, symptom life items, and intervention items, than patients who had not fallen (Tofthagen et al., 2012). In our study, the mean BSA was 1.70 ± 0.01 and according to the neuropathy-related changes in the CIPNAT scale during the patients' paclitaxel regimen, the frequency of the motor symptoms subdimension and the mean of the F2, F3, F4 follow-ups are significantly higher than the F1 ($p < 0.05$).

Examining the studies in the literature to manage peripheral neuropathy and improvement of patients' quality of life, exercise is reported to reduce motor deficits in peripheral neuropathy, (tingling, numbness, and sensitivity to cold/heat) and neuropathic pain scores (Dhawan et al., 2020; Duregon et al., 2018; Greenlee et al., 2017; Zimmer et al., 2018). In a pilot study examining the effect of a somatic yoga and meditation intervention (SYM) on functional outcomes and quality of life, SYM was performed twice weekly for a period of 8 weeks; the intervention was found to contribute positively to functional

measures of quality of life in patients with CIPN (Galantino et al., 2019). A randomized controlled study that included an individualized 6-week moderate-intensity progressive home walking and resistance exercise program reported that patients receiving taxane chemotherapy had decreased symptoms of CIPN, and an exercise program was recommended for these patient groups (Kleckner et al., 2018). In the study which examined the association between CIPN and quality of life in colorectal cancer survivors 2 to 11 years later, it was reported that patients had neuropathy-related symptoms, particularly sensory symptoms in the lower extremities. Because neuropathy symptoms negatively affect the quality of life, the importance of screening for these symptoms is particularly emphasized (Mols et al., 2013). In our study the symptoms that occurred during the cycle of paclitaxel and the data on the management of symptoms associated with neuropathy were examined, it was found that they used religious practices, movement exercises, and rubs (massages) in the nonpharmacological applications in F2, F3, and F4 and took paracetamol to manage neuropathy in the pharmacological methods in F2, F3, and F4. Although the data are consistent with the literature, the CIPNAT scale and quality of life scale indicate no complete success in management. Also, the relationship between peripheral neuropathy and quality of life in our study shows the results of the symptom subdimension according to neuropathy-related changes in the CIPNAT scale and the symptom subdimension according to changes in the EORTC C30 QLQ during patients' paclitaxel regimen. According to the results of correlation analysis in both scales, the CIPNAT scale increased in evaluations F2 compared to F1, F3 compared to F1 and F2, and F4 compared to F1, F2, and F3, while the dimensions of EORTC C30 QLQ statistically decreased. In addition, when the relationship between the neuropathy subdimension of manual dexterity in the CIPNAT scale and the functional subdimension of the EORTC C30 QLQ was examined, it was found that the mean scores during F2 and F4 were statistically significant. Thus, it was found that the increase in neuropathy symptoms negatively affects the quality of life. It was found that there was a negative relationship between sensory, motor, and hand skills and quality of life. This result of our study is consistent with the literature.

Study Limitations

Our findings should be interpreted in the context of some limitations. In this study, patients were all from only one center a single-center study, and results should not pretend generalization beyond the study population. Therefore, multi-center studies should be conducted to further validate the findings and ensure generalizability. Also, during the study, some potential participants expressed reluctance and dropped out of the study. Furthermore, given these limitations, future research should consider alternative approaches for recruiting more complying and accessible participants.

Conclusion and Recommendations

This study demonstrates the general mean score of the paclitaxel regimen according to the CIPNAT neuropathy scale, sensory symptoms, motor symptoms, symptom frequency, duration, and severity of manual dexterity activities. These results emphasize that when conducting clinical research to the importance of evaluating the practices that nurses should consider while conducting peripheral neuropathy for breast cancer patients receiving paclitaxel therapy. This study shows that nurses should pay more attention to the fact that the quality of life of patients with peripheral neuropathy will be affected. In particular, the diagnosis of peripheral neuropathy symptoms should be made in detail with the help of a scale during all treatment courses. The oncology nurse should comprehensively evaluate the patients who are scheduled to receive paclitaxel treatment and provide counseling to the patients during these specific weeks.

Ethics Committee Approval: Ethics committee approval was received for this study from the by the Clinical Research Ethics Committee of University of Health Sciences (2018-08/129)

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