Araştırma Makalesi (Research Article)

Determination of the Factors Affecting the Frequency and of Chemotherapy-Induced Alopecia and Methods of Coping with Alopecia

Kemoterapiye Bağlı Alopesi Sıklığı ve Hastaların Baş etme Yöntemleri

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Özet

Amaç: Kemoterapiye bağlı saç dökülmesinin sıklığı ve hastaların saç dökülmesi ile baş etme yöntemlerinin belirlenmesidir.

Gereç ve Yöntemler: Araştırma, Aralık 2019-Ocak 2020 tarihleri arasında İstanbul'da iki özel hastanenin kemoterapi ünitesine başvuran 240 hasta ile tanımlayıcı olarak yapıldı. Veriler; araştırmacılar tarafından literatür doğrultusunda geliştirilen hasta bilgi formu ile toplandı.

Bulgular: Kadınların %85.7'sinin saçlarda dökülme sorunu yaşadıkları farkın cinsiyetlerine göre anlamlı olduğu belirlenmiştir (p=0.00). Genitoüriner sistem kanseri hastalarının %92.0'ının meme kanseri hastalarının %88.5'inin saçlarda dökülme sorunu yaşadıkları, farkın istatistiksel olarak anlamlı olduğu, anlamlılığın bu kanser türlerinde saç dökülme sorununun diğer kanser türlerine göre daha fazla yaşanmasından kaynaklandığı saptanmıştır (p=0.007). Bir yıldan az süredir kemoterapi alanların %82.5'inin, daha uzun süredir kemoterapi alan hastalara göre istatistiksel olarak anlamlı olacak şekilde saçlarda dökülme sorununu daha fazla yaşadıkları belirlenmiştir (p=0.031). Evre IV kanser hastalarının %69.7'sinin saçlarda dökülme sorunu yaşadıkları diğer evre hastalarına göre istatistiksel olarak anlamlı olacak şekilde saçlarda dökülme sorununu daha az yaşadıkları belirlenmiştir (p=0.040). Hastalar ailesine meme kanseri öyküsüne göre tanı zamanı açısından incelendiğinde, ailesinde meme kanseri öyküsü olanların %43.6'sının, ailesinde meme kanseri öyküsü olmayanlarınsa %63.8'inin hastalığın II. evresinde teşhis konuluğu belirlendi. Hastaların kanser tanı zamanlarının dağılımı ailede meme kanseri öyküsü olup olmamasına göre istatistiksel olarak anlamlıydı (p=0.000). Ailesinde meme kanseri öyküsü olanların %28.2'sinin, ailesinde meme kanseri öyküsü olmayan hastaların %21.0'i kitleyi ilk kez kendi meme muayenelinde fark etmiştir. Ailede meme kanseri öyküsüne göre kanser tanı süresinin dağılımı ve memedeki kitleyi fark etme şekli istatistiksel olarak anlamlıydı (p=0.000, p=0.014). Saçlarda dökülme sorunu yaşayan hastaların %61.0'ının peruk-bone kullandığı (p=0.00), saçlarda dökülme sorunu yaşama ile yaş, medeni durum, meslek, yaşanılan yer, gelir durumu, sosyal güvence olma durumları arasında istatistiksel olarak anlamlı farklılık olmadığı belirlenmiştir.

Sonuç: Alopesi kadınlarda daha fazla görülmüştür. Saç dökülmesini genitoürüner sistem ve meme kanseri olan hastalar diğer kanser hastalarına göre daha fazla yaşamışlardır. Kadınların yarısından fazlası bone ve peruk kullanmıştır. Eğitim düzeyi arttıkça kadınların bone ve peruk kullanma durumları artmıştır.

Anahtar Kelimeler: Alopesi, Baş etme stratejileri, Cinsiyet, Kanser,Kemoterapi

Abstract

Objective: The aim of this cross-sectional descriptive study is to determine the chemotherapy-induced alopecia and the patients' coping methods with alopecia.

Materials and Methods: This descriptive study was conducted with 240 patients who applied to chemotherapy unit of two private hospitals in Istanbul between December 2019 and January 2020. The data were collected using a patient information form developed by the researchers upon the literature review.

Results: It was determined that 85.7% of the women experienced alopecia problem and the difference was significant according to their gender (p=0.00). Ninety two percent of patients with genitourinary system cancer and 88.5% of breast cancer patients experienced alopecia, the difference was statistically significant, and the significance was caused by experiencing alopecia more in these cancer types than the other cancer types (p=0.007). It was determined that 82.5% of the patients, who were receiving chemotherapy for less than a year, statistically significantly experienced alopecia more compared to the patients who were receiving chemotherapy for a longer period (p=0.031). It was also found that 69.7% of patients with Stage IV cancer experienced alopecia but they experienced alopecia statistically significantly less compared to the other stage patients (p=0.040). When the patients were examined in terms of diagnosis time according to family history of breast cancer, it was determined that 43.6% of those, who had family history of breast cancer, and 63.8% of those, who had no family history of breast cancer, were diagnosed in the stage II of their disease. The distribution of the cancer diagnosis time of patients according to having breast cancer history in the family was statistically significant (p=0.000). It was determined that 28.2% of the patients who had family history of breast cancer and 21.0% of the patients, who had no family history of breast cancer, noticed the lump for the first time in their regular self-breast examination. The distribution of duration of cancer diagnosis based on family history of breast cancer and the way of noticing the lump in the breast were statistically significant (p=0.000, p=0.014). It was also determined that 61.0% of the patients experiencing alopecia used a wig-bonnet (p=0.00) and there was no statistically significant difference between experiencing alopecia and age, marital status, occupation, place of residence, income status and social security.

Conclusion: Alopecia was seen to be more common in women. Patients with genito-urinary system and breast cancer experienced alopecia more than other cancer patients. More than half of the women used bonnets and wigs. As the education level increased, women's status of using bonnet and wig increased as well.

Key words: Alopecia, Cancer, Chemotherapy, Coping strategies, Gender

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INTRODUCTION

Cancer is one of the important life-threatening diseases in our age. While it was at the bottom of diseases causing death all over the world in early 20th century, it is ranked as the second after heart diseases today (1). The cancer rate in Turkey is 246.8 per hundred thousand for men and 173.6 per hundred thousand for women. Tracheal, bronchus, and lung cancer in men (52.5/100000 people) and breast cancer in women (43.0/100000 people) are the most common cancer types (2). In addition to surgical treatment in cancer treatment, chemotherapy, radiotherapy and hormonal treatment are applied together to prevent the risk of metastasis of the disease in the same area or distant organs (3,4). In adjuvant chemotherapy whose main principle is to stop the growth and metastasis of tumor without damaging the healthy cells of the patient, various anti-neoplastic agents are used in different combinations (3). However, while chemotherapy treatment prevents the development and metastasis of cancer cells and thus damages them, it negatively affects normal healthy cells, too (1). Side effects such as nausea, vomiting, mouth sores, neutropenia, changes in the nails, and alopecia (hair loss) may occur as a result of negative affection of healthy cells. Type and incidence of these side effects vary according to the chemotherapeutic type applied, the application method and individual characteristics of the patient (5,6).

Alopecia is the most common chemotherapy-induced side effect experienced on skin. Hair follicles are areas with high blood circulation. Therefore, any medication that enters the body quickly reaches the hair follicle through the circulation. If the medication taken reaches to hair root for a long time and intensely, diffuse alopecia may occur by losing all hair. Generally, alopecia starts one to three weeks after the first dose of chemotherapy and complete alopecia occurs within one to two months (7-9). Unexpected alopecia is generally associated with the disease and it also shapes the person's perception about him/her identity, him/herself and environment. The new appearance turns the person from a health individual to a cancer patient and stigmatizes him/her. Therefore, patients see alopecia as one of the most severe and exhausting side effects of chemotherapy (10,11). Although alopecia that arises during treatment is not life threatening, it can negatively affect the physical appearance, body image, sexuality and self-esteem of the patient. Alopecia disease and aging process are linked by the community with attractiveness, an embarrassing condition, and loss of sexuality and personality (8-12).

Changes in body image due to alopecia in patients receiving chemotherapy may negatively affect the coping power of patients with the disease and their adaptation. Alopecia, which is seen insignificant due to the changes it causes on body image, can be devastating for the person. Nurses can assess the possible negative effects of alopecia, prepare cancer patients about alopecia both in clinic and during home care services after chemotherapy and they can give information about coping methods. Thus, they can provide optimum care to patients receiving chemotherapy and enhance their quality of life.

This study is important in terms of contributing to limited information about alopecia that may occur due to chemotherapy in cancer patients and coping methods.

MATERIALS AND METHODS

Research Design

This study has descriptive design.

Study Setting

This study was conducted in two oncology hospitals in Istanbul city in Turkey.

Subjects

The study was conducted with 240 patients who applied to the chemotherapy units of a private hospital in Istanbul between December 2019 and January 2020.

Tools of the study

The data were collected through the patient information form prepared by the researcher in accordance with the literature information. (8,10-11) Patient Information Form consists of two parts:

Part (I) consisting of 9 questions questioning socio demographic characteristics including age, gender, education, marital status, occupation, place of residence, people with whom they live, income level and social security status.

Part (2) is composed of a total of 24 questions including 5 questions for determining patients' characteristics related to their diseases (cancer type, time, stage, status of receiving information about disease), effect and side effects of chemotherapy and 10 questions for determining their status of experiencing alopecia, severity and coping methods.

Methods of Study

The study was carried out with 240 patients who applied to chemotherapy unit and agreed to participate in the study without using sample selection. The patients, who received at least two cycles of chemotherapy, could communicate, speak Turkish, were 18 years old and older, literate, had no visual or hearing problems, had no other chronic disease, knew their diagnosis and agreed to participate in the study, were included in the study. The data were collected by the researcher through face-to-face interview method in a room of the hospital during the resting period of the patients. Before the collection of data, a pilot application was carried out. For the questions of the questionnaire, opinions were obtained from two experts concerning the subject.

Ethical Consideration

In order to conduct the study, permission (Decision No: 97/Date: 31.10 2019) was obtained from the Ethics Commit-

tee of Marmara University Faculty of health Sciences. The patients to be included in the study were informed that this interview was held for scientific research purposes and the obtained data would not be shared with third parties outside the scope of the study. Afterwards, their verbal consents were obtained.

Statistical Design

The data were evaluated on the computer environment. For descriptive information, number and percentages were used. The status of having alopecia and diagnostic behaviors were assessed by using chi-square. The relationship of predictors for the status of having alopecia was assessed by logistic regression analysis.

This study strengths and limitations

This study showed that patients with low education level should be monitored and informed about coping with alopecia. At the same time, gives an idea to other researches to investigate the reasons why male patients use less coping methods with alopecia. This study didn't use the sample selection method. Therefore this research results are only for these patients.

RESULTS

It was determined that the mean ages of the breast cancer patients was 59.46±11.78 years, 61.3% were female, 33.3% were secondary school graduates, 94.6% were married, 35.0% were housewives, 60.4% were living in a district, 61.3% had an income less than their expenses, 33.3% were living with their spouse and children and 97.9% had social security **(Table1)**.

It was determined that 77.9% of the patients receiving chemotherapy had alopecia due to chemotherapy and the difference was statistically significant (p=0.00), 85.7% of the women had alopecia and the difference was significant according to gender(p=0.00). Also, 92.0% of the patients with genitourinary system cancer and 88.5% of breast cancer patients had alopecia, the difference was statistically significant and the significance in these cancer types was caused by the fact that alopecia was experienced more in these cancer types compared to the other cancer types (p=0.007). 82.5% of those who received chemotherapy for less than a year experienced alopecia statistically significantly higher than the patients who received chemotherapy for a longer time (p=0.031). 69.7% of IV stage cancer patients experienced alopecia but they experienced alopecia statistically significantly less than the other stage patients (p=0.040) **(Table 2)**.

It was determined that 77.9% of the patients receiving chemotherapy had alopecia due to chemotherapy and the difference was statistically significant (p=0.00), 85.7% of the women had alopecia and the difference was significant according to gender (p=0.00). Also, 92.0% of the patients with genitourinary system cancer and 88.5% of breast cancer patients had alopecia, the difference was statistically significant

Table 1. Descriptive characteristics of patients

Descriptive characteristics		n	%
Gender	Female	147	61.3
	Male	93	38.8
Age Mean±SD: 59.46±11.78	29-40 age	15	6.3
	41-50 age	57	23.8
	51-60 age	53	22.1
	61-70 age	74	30.8
	70-84 age	41	17.1
Education	Literate	25	10.4
	Primary education	66	27.5
	Secondary	80	33.3
	University	69	28.8
Marital Status	Married	227	94.6
	Single	13	5.4
Job	Housewife	84	35.0
	Officer	34	14.2
	Free	63	26.3
	Retired	59	24.6
Living place	Province	63	26.3
	District	145	60.4
	Put	32	13.3
Income status	Income Expense less than	147	61.3
	Income is equal to Expense	93	38.8
Who is Experiencing at Home	Alone	57	23.8
	With spouse	77	32.1
	With spouse and children	80	33.3
	Other family members	26	10.8
Social security	Yes	235	97.9
	No	5	2.1
Cancer Type	Cancer of gastrointestinal system	75	31.3
	Cancer of hematological system	9	3.8
	Cancers of the genitourinary system	25	10.4
	Breast cancer	78	32.5
	Lung cancer	53	22.1
Cancer Duration	Less than 1 year	166	69.2
	1-5 years	66	27.5
	5 years and over	8	3.3
Cancer Stage	I. Stage	28	11.7
	II. Stage	61	25.2
	III. Stage	42	17.5
	IV. Stage	109	45.4
Getting information about the disease	Yes	238	99.2
	No	2	0.8
Knowing the effects and side effects of chemotherapy	Yes	230	95.8
	No	10	4.2
Alopecia	Yes	187	77.9
	No	53	22.1

Table 2. Differences of patients according to their descriptive and disease characteristics according to their hair loss problem

	Alopecia		
	Yes n (%)	No n (%)	X^2 p
Gender			
Female	126 (85.7)	21 (14.3)	13.405
Male	61 (65.6)	32 (34.4)	0.00
	187(77.9)		
Cancer Type			
Cancer of gastrointestinal system	51 (68.0)	24 (32.0)	14.062
Cancer of hematological system	6 (66.7)	3 (33.3)	0.007
Cancers of the genitourinary system	23 (92.0)	2 (8.0)	
Breast cancer	69 (88.5)	9(11.5)	
Lung cancer	38 (71.7	15 (28.3)	
Cancer Duration			
Less than 1 year	137 (82.5)	29)17.5)	6.948
1-5 years	44(66.7)	22(33.3)	0.031
5 years and over	6(75.0)	2(25.0)	
Cancer Stage			
I. Stage	24 (85,7)	4 (14,3)	
II. Stage	53 (86,9)	8 (13,1)	
III. Stage	34 (81,0)	8 (19,0)	8.317
IV. Stage	76 (69,7)	33 (30,3)	0.040
Total	187(77.9)	53 (22.1)	45.500
			0.00

Table 3. Distribution of patients with alopecia problems according to their descriptive characteristics

	Coping methods				
	Not using the coping method	Using a wig-bone	Using scarves	Hair cutting	X^2 p
Gender					
Female	21 (16.7)	95 (75.4)	10 (7.9)	0 (0.00)	56.575
Male	33 (54.1)	19 (31.1)	0 (0.0)	9 (14.8)	0.00
Education					
Literate	3 (13.0)	12 (52.2)	8 (34.8)	0 (0.0)	54.993
Primary education	16 (33.3)	25 (52.1)	2 (4.2)	5 (10.4)	0.00
Secondary	17 (27.4)	41 (66.1)	0 (0.0)	4 (6.5)	
University	18 (33.3)	36 (66.7)	0 (0.0)	0 (0.0)	
Total	54 (28.9)	114 (61.0)	10 (50.3)	9 (4.8)	16.355
					0.00

Table 4. Evaluation of living alopecia by logistic regression

Independent Variables	β	SE	Wald	p	OR	95% CI	
Constant	0.645	0.218	8.736	1	0.003	-	-
Gender	1.147	0.321	12.740	0.000	3.148	1.677	5.908

[1 a]V[1 a]Variables included in the logistic model: Gender, The most significant model was formed in step 1.

***Nagelkerke R²**:0.082, **Model:** x^2= 13.117 p=0,00., *p<0,05 **p<0,01 **CI:** confidence interval, **OR:** odds ratio, **SE:** Standart Error*

and the significance in these cancer types was caused by the fact that alopecia was experienced more in these cancer types compared to the other cancer types (p=0.007). 82.5% of those who received chemotherapy for less than a year experienced alopecia statistically significantly higher than the patients who received chemotherapy for a longer time (p=0.031). 69.7% of IV stage cancer patients experienced alopecia but they experienced alopecia statistically significantly less than the other stage patients (p=0.040) **(Table 3)**.

In the prediction of the status of experiencing alopecia in patients receiving chemotherapy in the study, the variables for which statistically significant difference was determined in univariate analyses were evaluated using logistic regression analysis. The best model formed in step 1. Experiencing alopecia increased 1.147 times in females compared to the male gender (Nagelkerke Model R2=0.082, Model: x2= 13.117 p=0.00) **(Table 4)**.

DISCUSSION

This study is important in terms of providing contribution to the limited information on coping with alopecia that may occur due to chemotherapy in cancer patients. Before alopecia occurs, it is nurses' responsibility to inform patients, help them to be aware of alopecia and to know possible adverse conditions and coping methods, and have them get ready against alopecia at home and in clinical care. Alopecia is one of the most frequently reported and psychological complications of chemotherapy treatment (13). It was found in this study that 77.9% of the patients receiving chemotherapy had alopecia problem. In the study by Ateş et al., it was determined that 62.1% of the patients experienced alopecia problem (7-14). In the literature, no result has been found stating that alopecia is experienced more in women than men due to chemotherapy. However, it was found in the study that alopecia problem was experienced 1.147 times greater in women than men. In fact, there are studies stating that women are more sensitive to alopecia and alopecia has more negative effects on the quality of life of women (7-11). In their study, Carelle et al reported that female patients experienced more alopecia anxiety than male patients and even 11% of the women chose chemotherapy option according to this condition and only 4% of male patients chose chemotherapy option according to alopecia (15). This surprising result was due to the fact that women are more sensitive to alopecia than men, they attribute more meaning to alopecia in their lives than men, and the majority of patients who participated in the study were female (16).

It was determined in the study that breast cancer patients and the patients who were receiving chemotherapy for less than a year experienced more alopecia and Stage IV cancer patients experienced less alopecia. Permanent alopecia is rare after chemotherapy; in most cases, alopecia followed the use of high-dose chemotherapy. The fact that alopecia is seen less in stage IV cancers may be due to the treatment approach related to dosage and duration and patients' better adaptation of coping methods to their lives. In the literature, similar to the result of the present study, there are convincing evidences on the presence of long-term and permanent alopecia after standard dose chemotherapy (especially depending on dose and duration) for breast cancer (12-14). It was concluded that the patients who will just begin chemotherapy should be prepared and continuously supported during their treatment in order for them to maintain a positive adaptation process to alopecia since patients experience more alopecia in the first year of the disease. In fact, it was pointed out in a study that the alopecia was one of the reasons for the termination of treatment (16). The effect of alopecia and potential alternative chemotherapy approaches should be discussed with each patient before starting treatment that can lead to alopecia. This preventive approach is important to minimize the emotional distress associated with alopecia (12,16-19). Although there are improvements to reduce many complications related to chemotherapy, alopecia is still considered as an issue that needs to be resolved expressed in their study that 45% of the patients experiencing alopecia wore scarf, cap, and hat on their heads (20,21). In other studies, the patients were determined to use methods such as wearing wigs headscarf, bandana or hats to close alopecia appearance (22). Similarly, it was found in the study that 61.0% of the patients tried to cope with the method of hiding alopecia by using wig-bonnet. It was also determined in the study that the women used more coping methods than men. In this study, more than half of men did not use any coping method. As mentioned above, this is thought to be caused by the fact that women had higher alopecia sensitivity and alopecia had more meaning in their lives and baldness in men is a more acceptable condition in the society.

In the study, women who had a higher education level preferred to use wigs and bonnets more. This situation suggested that women were able to adapt to the treatment or they were in coping efforts physically and psychologically. Similar to the results of the present study, it was reported in a study that women with high education level used wig/bonnet more (21). It was determined in the study that 28.9% of the patients did not use any method for alopecia. It was found in the literature that more than half of the patients did not do anything for alopecia (21,22). This pleasing result of the present study was thought to be related to pre-acquired knowledge about alopecia and readiness for alopecia. In their study, Ateş et al., expressed that wigs were useful tools in alopecia control (14). It is reported in the literature that using wigs helps to reduce the side effects of chemotherapy. Training and counseling of patients is one of the most important activities to be organized in order to raise awareness about cancer in the society. In the study, almost all of the patients reported that they received information about their diseases. It was seen that being informed positively affected the adaptation to disease and coping methods. However, a surprising result of the study was that despite this readiness, there was no finding for the ways to prevent alopecia. In the literature, scalp hypother-

mia method is emphasized to prevent alopecia (16-23). Automatic cooling devices are used in developed countries. This method enables to reduce chemotherapy to the scalp and also metabolic rate of follicle cell and cellular drug intake by providing local vasoconstriction of blood vessels. Although the evidence base is not very strong, it is noted in such approaches that it is important to protect patients from alopecia in cancers requiring long-term chemotherapy infusion containing solid tumors (9). In order to prevent alopecia formation, pharmacological interventions and a number of experimental methods are used other than scalp hypothermia method (4-17,24). It is interesting that there is no finding regarding the use of these methods. The study revealed the importance of conducting studies on alopecia protection methods.

As a conclusion in this study, alopecia was seen to be more common in women. Patients with genito-urinary, gastrointestinal system and breast cancer experienced alopecia more compared to the other cancer patients. More than half of the women used bonnet and wig to cope with alopecia. As the level of education increased, the use of bonnet and wig by women increased.

It is recommended to monitor patients with low education level in coping with alopecia about the difficulties they are experiencing about the side effects of chemotherapy and about coping processes, to inform them about this subject and encourage them to make their own choices, to provide health trainings on health screening and self-examination to raise awareness about cancer among health individuals with cancer history in their families, to investigate the reasons why male patients use coping methods less frequently, to provide consultation to patients in the process of adherence to therapy, to conduct studies about the side effects of alopecia with larger samples.

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