ORIGINAL ARTICLE

Received: January 2012
Accepted: May 2012

The Effect of Semi-sitting Position on Chemotherapy-induced Nausea and Vomiting in Women with Breast Cancer

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ABSTRACT

Background: Chemotherapy is recognized as a primary cancer treatment method, but despite its benefits, it causes side-effects. The most important of these side-effects are nausea and vomiting. Given the simplicity of use of non-medicinal methods such as semi-sitting position, which can be performed by the patient alone, with the least effort and no side-effects, this method can be utilized to improve quality of life in women with breast cancer in hospitals and oncology clinics.

However, there is little information about the effectiveness of non-medicinal methods mostly used by nurses. Thus, this study aimed to compare the effects of non-medicinal interventions on nausea and vomiting induced by chemotherapy in women with breast cancer.

Methods: This study was a clinical trial, with a statistical population consisting of women with breast cancer undergoing treatment with three medicines; Cyclophosphamide, 5-fluorouracil, and Adriamycin. To collect data, the Visual Analog Scale (VAS), and vomiting and nausea frequency questionnaire were used. Patients were randomly divided into two groups (30 each) of control and semi-sitting position. Intensity and frequency of nausea and vomiting were assessed and compared before, during, 8, 16, and 24 hours after the inception chemotherapy.

Results: Descriptive statistics (mean and standard deviation), and t-test were used to assess the differences between the two groups. The significance level was considered less than 0.05. The results showed that the frequency and intensity of nausea in the control group were 14.43 and 3.09, respectively, and in the semi-sitting group 5.68 and 1.38, respectively. Also, the frequency and intensity of vomiting in the control group were 11.03 and 2.45, respectively, and in the half sitting group 4.8 and 1.10, respectively.

Conclusion: The study indicated the effectiveness of semi-sitting method in women with breast cancer undergoing chemotherapy. Ease of use, inexpensiveness, and lack of side-effects make the widespread use of this method much more practical.

Keywords: ***Chemotherapy, Nausea, Vomiting, Semi-sitting position, Breast cancer.***

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BCCR
2012; 4(3&4): 18-22
www.bccrjournal.com

Introduction

Women comprise half the population of the country, and their health, in addition to being health of the half of the society, means maintenance and promotion of health of the family and consequently of the whole society.[1] Women's health relates to all issues in their lives, and not just to reproductive issues. Therefore, the promotion of women's health requires a holistic, coherent, and systematic approach that is in line with the aims of women's health in the society. [2]

In 2009, the prevalence of breast cancer in Iran was reported 17 cases in 100000 women population, with the mean age of 51.3 years.[3] Currently, more than 40000 women are diagnosed with breast cancer, and with the annual addition of 7000 new cases. Thus, it has become the number one women's disease in Iran. The breast cancer rate in Iran is 1 to 35, whilst in America it is 1 to 8 and in Europe 1 to 12. These figures indicate very high statistics of this disease, and show the necessity of attention to this disease in Iran.[4] The rates in different countries vary due to the following reasons: geographical location, lifestyle, obesity, higher marriage age etc. These are considered predisposing peripheral factors to breast cancer.[5] There are many conventional methods for treating breast cancer, and in different stages of treatment, different treatments such as surgery, radiotherapy, chemotherapy, and targeted treatments may be used.[6] Cancer and its treatments can lead to reduced quality of life in women undergoing treatment. Today, one of the most effective treatments after surgery is chemotherapy, with nausea and vomiting as its most common complication.[7] Complications are different, depending on the type of medication, and people's reactions to chemotherapy vary.[8]

The increasing incidence of cancer, the intensive use of chemotherapy for cancer patients, the prevalence and severity of nausea and vomiting complications in patients undergoing chemotherapy and lack of effectiveness of drugs in controlling these complications are considered threatening factors to cancer patients' health, and as a result, risk factors in community health. These complications restrict the use of chemotherapy as a preferred cancer treatment method, with adverse health consequences for the community.[9] Anti-nausea and vomiting drugs reduce these complications, but they do not fully cure the problem. Thus, a combination of non-medication treatments with medication-based treatments is recommended for reducing chemotherapy-induced nausea and vomiting.[10] Numerous non-medication treatments for reducing nausea and vomiting include acupuncture, relaxation, distraction, guided imagery, aromatherapy, music therapy, and use of herbal medicines such as ginger.[11] Among non-medication treatments, music therapy, due to the simplicity of use, lack of side-effects, inexpensiveness, time-saving for nurses, and ability to be performed by patients, has been the subject of many studies.[12]

Material and Methods

This was a randomized clinical trial, conducted at Reza (A) Clinic in Mashhad, affiliated to the Cancer Patients' Support Society. The university ethics committee's approval was obtained and the study was registered at the Iran Clinical Trial Center (IRCT), with the code number of 201203086918N4. The Icd-10 code for this study was C00-d48. Study population comprised 20-60 year-old women with breast cancer undergoing only chemotherapy with three drugs including Cyclophosphamide, 5-fluorouracil, and Adriamycin, and the anti-nausea drug Granistrone (Cateril). The Visual Analog Scale (VAS) with 0-10 range was used to measure the intensity of nausea, and the 4-option measuring scale with the range of 0-3 was used to measure the intensity of vomiting. For blinding the study, data were collected by a project colleague nurse. For a random division of patients into semi-sitting and control (ward routine) groups, www.RANDOM.org random table was used. For both groups, serum therapy began after canulating a peripheral vein, and then the anti-nausea drug Granistrone (Cateril 3mg) was injected in bolus. First, Adriamycin and then 5-flourouacil (5-fu) were injected by syringe pump in bolus without dilution, and cyclophosphamide was infused in the remaining 200cc serum. Chemotherapy was performed for both groups in the morning shift. A preliminary study was conducted on 5 patients at Reza Clinic in Mashhad. With the consideration of α=0.05 and power=0.9, the mean and the standard deviation were found for intensity of vomiting (the lowest difference between the frequency and intensity of nausea and vomiting in the groups) and the effect size of 0.45, the sample size of 22 was determined,

but later increased to 30. After data collecting and coding, data were analyzed with SPSS-13 software using descriptive statistics (mean and standard deviation) and t-test to assess differences between the two groups. Significant level was considered less than 0.05.

Results

Study results showed that majority of patients were married housewives, with the mean age of 50-59 years, and most had no history of hypertension, hormone use, diabetes, or any family history of with breast or any other type of cancer.

According to table 1 which presents mean frequency and intensity of nausea and vomiting at different times of chemotherapy, the results reveal that the frequency and intensity of these complications in both groups increased, but this trend was less observed in the intervention group than in the non-intervention group.

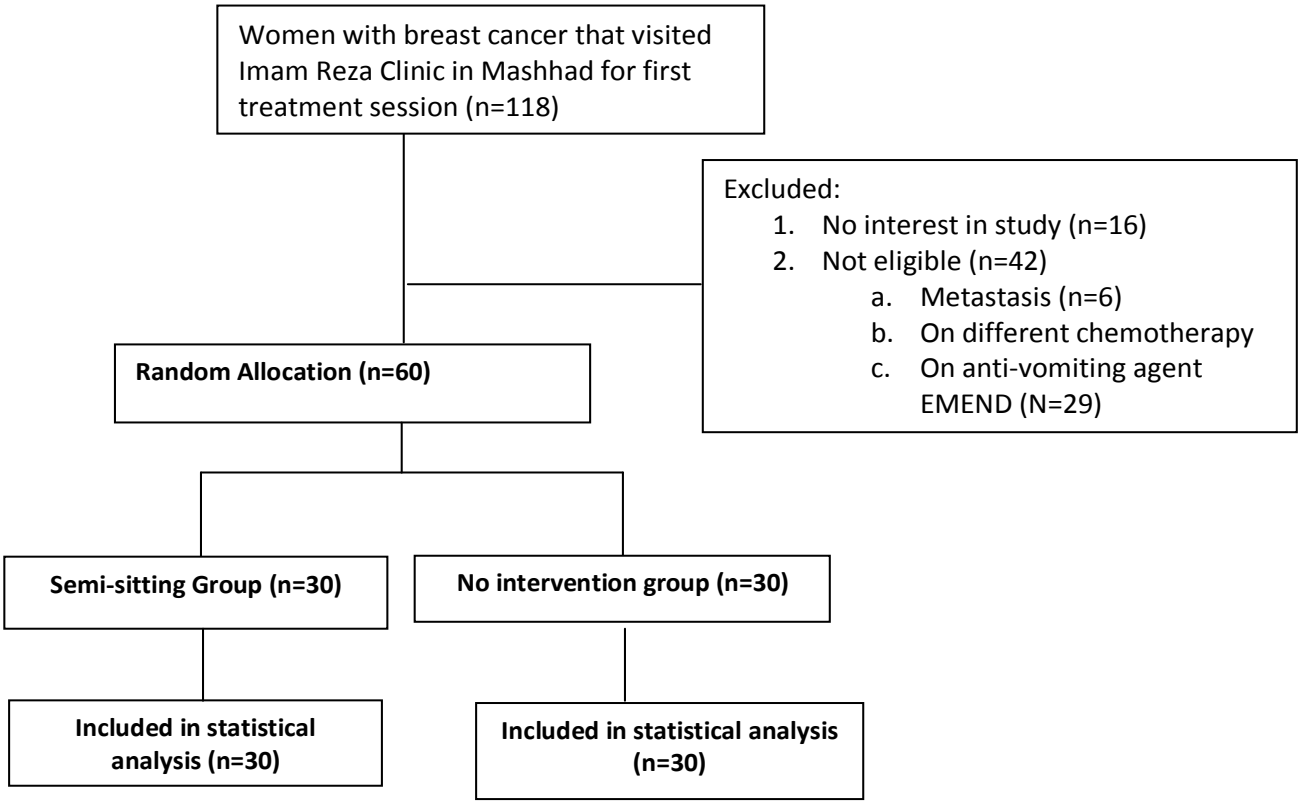
Discussion and conclusion

In total accordance with its aims and hypotheses, the results of this study were analyzed and show that non-medication interventions cause a reduction in frequency and intensity of nausea and vomiting induced by chemotherapy.

Khan (2010) in his review study concluded that, if cancer patients were aware of non-medication techniques for treatment of side-effects, they would benefit from lower costs compared to medication treatments.[13]

A study by Firoozkoohi (1999) titled "effect of sitting position during chemotherapy on nausea and vomiting in cancer patients", showed that the incidence and intensity of nausea was less in the intervention group compared to the control group.[14]

The researcher was not able to find directly relevant articles on the subject of this study in the data banks, and no homegrown study was found, either. Thus, studies vaguely relevant to nausea and vomiting were considered.



Flowchart of the clinical trial

Table 1: Mean frequency and intensity of nausea and vomiting at different chemotherapy times in study groups								
Groups	**Times Frequency and intensity**	**Before chemotherapy**	**During chemotherapy**	**8 hours after chemotherapy**	**16 hours after chemotherapy**	**24 hours after chemotherapy**	**F**	**P-value**
Non-intervention	Frequency of nausea	0.68 (0.1)	0.83 (0.12)	3.4 (0.022)	5.32 (0.24)	5.58 (0.26)	137.725	<0.001
	Frequency of vomiting	0.41 (0.08)	0.53 (0.09)	2.42 (0.22)	4.11 (0.22)	4.37 (0.23)	111.075	<0.001
	Intensity of nausea	0.81 (0.14)	1.02 (0.16)	3.9 (0.26)	5.77 (0.27)	6.37 (0.36)	105.407	<0.001
	Intensity of vomiting	0.23 (0.04)	0.32 (0.05)	1.18 (0.08)	1.96 (0.08)	2.02 (0.09)	139.39	<0.001
Semi-sitting position	Frequency of nausea	0.02 (0.05)	0.11 (0.04)	0.43 (0.07)	2.74 (0.15)	2.45 (0.16)	153.394	<0.001
	Frequency of vomiting	0.12 (0.004)	0.22 (0.05)	0.46 (0.06)	2.16 (0.13)	2.09 (0.15)	109.655	<0.001)
	Intensity of nausea	0.11 (0.05)	0.13 (0.05)	0.67 (0.11)	3.07 (0.18)	3.19 (0.2)	140.730	<0.001)
	Intensity of vomiting	0.09 (0.05)	0.14 (0.03)	0.32 (0.04)	1.2 (0.06)	1.14 (0.06)	129.722	<0.001

Table 2: Comparison of mean frequency and intensity of nausea and vomiting in study groups			
	Method	**Mean**	**Standard deviation**
Frequency of nausea	**Control**	14.4389	8.44778
	Semi-sitting	5.6833	4.39206
Intensity of nausea	**Control**	3.0972	1.89409
	Semi-sitting	1.3833	1.05220
Frequency of vomiting	**Control**	11.03	7.547
	Semi-sitting	4.80	4.056
Intensity of vomiting	**Control**	2.4528	1.50923
	Semi-sitting	1.1083	.90895

Robertson et al.'s research (1980), patient's body positioning after lumber myelography with metrizamide, conducted at the neuroradiology complex in Toronto, found that most frequent vomiting occurred in supine position and least in bending positions of 45 ° and group with mobility, and incidence of nausea was also less observed in these positions compared to the supine position.[15]

A study by Arakawa in 1997 entitled "muscular relaxation for reducing chemotherapy-induced nausea and vomiting showed that muscular relaxation changes nausea and vomiting patterns.[16]

Based on the above studies, use of non-medication interventions alongside other complimentary care methods cause reduction in chemotherapy-induced nausea and vomiting. However, despite the recommendations for use of non-medication interventions, and due to the lack of

sufficient evidence, this method has not yet entered treatment and care guidelines.

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