

Anxiety and Depression in pre-and-post-Hematopoietic Stem Cell Transplants in SCT Center, Shariati Hospital, Tehran, Iran

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Abstract

Introduction: In Iran along with other countries, as transplant technology progresses and advances, the number of patients undergoing transplantation is rising steadily. In order to make Stem-Cell Transplantation (SCT) safer and more effective, psychological distress of patients must be taken in to account. Patients are facing challenges pre- and post-transplantation. This study attempts to measure and compare the levels of anxiety depression before and after SCT.

Method and materials: The study includes 35 patients (21 male and 14 female; mean age 34.8, range 18-60 years, 10 Hodgkin's disease, 10 MM, 9 AML and 6 ALL) who met the inclusion criteria at the time of hospitalization were selected as candidates for SCT at Shariati Hospital-Tehran, Iran. Anxiety and depression were evaluated by Hospital Anxiety and Depression Scale (HADS). Questionnaires were filled out in two steps, once within 48 hours after hospitalization and the other one on the day of discharge.

Results: Level of anxiety and depression decreased from 8.64 ± 3.42 to 6.09 ± 2.84 and from 7.20 ± 3.49 to 6.00 ± 3.7 , respectively (both p-values < 0.001). Nobody has severe anxiety/depression pre- or post-SCT and only one patient had moderate anxiety/ depression before SCT that reduced to mild level thereafter.

Conclusion: The level of anxiety and depression in transplant patients has been reduced. The findings suggest that psychological distress (anxiety, depression) should be evaluated in patients at frequent intervals. Therapeutic treatment procedure, pharmaceutical and non pharmaceutical treatment should be carried out based on the results obtained from patients under study.

Keywords: Anxiety, Depression, Stem Cell Transplantation

Introduction

Bone marrow transplantation (BMT) is a relatively new medical procedure being used to treat disease once thought incurable. Since its first successful use in 1968, BMTs have been used to treat patients diagnosed with leukemia, lymphomas such as Hodgkin's disease, multiple myeloma, immune deficiency disorders and some solid tumors such as breast and ovarian cancer.(1) Bone marrow transplantation is an aggressive for cancer. BMT is an intense, specialized, and advanced medical procedure that utilizes high levels of chemotherapy to eliminate cancer cells within the body. The formation of healthy new blood cells develops in the stem cells that reside in a patient's bone marrow. Since BMT patients are unable to produce

new blood cells, a new source of stem cells must be introduced in the form of a BMT (autologous or allogeneic).(2) Many psychometric studies, using standardized instruments of measurement, have demonstrated emotional distress,(3) psychiatric symptoms(4).and affective disturbances such as anxiety/depression following BMT.(5, 6, 7) Booth-Jones et al, studied cognitive functioning following blood and bone marrow studied cognitive functioning following blood and bone marrow transplantation and found 51% had mild impairment and 28% moderate to severe impairment.(8) Psychosocial variables, such as depression and social support, may affect the outcome of BMT itself, as well as survival.(9)

There are emotional and psychological discomforts such as anxiety, anger, isolation and mental disturbances, as well.(10) Decreasing the level of anxiety may increase the survival rate and patient's cooperation which will result in the success of treatment in addition to improving his/her individual and social performances.(11) The present study attempts to measure and compare the levels of anxiety and depression in potential SCT candidates pre-and post-transplantation, in addition to exploring and examining the impact of demographic characteristics such as age, sex, social and economic levels, education and type of malignancy on incident of anxiety and depression of SCT candidates.

Patients and Materials

This cross-sectional study was conducted during the period one years from November 2009 to November 2010 at Blood Department, Hematology & Oncology Research Center, Shariati Hospital. Tehran. Patients once accepted for BMT by transplant physician, were enrolled in the study, if they fulfilled the inclusion criteria. Patients with history of previous psychiatric illness, history of alcoholism, drug abuse, organic cases associated with physical illness or drugs side effects, and those with age less than 18 years were excluded from the study. All patients provided signed informed consent as part of the inclusion criteria. Questionnaire was used as data collection method for evaluation. Demographic characteristics were prepared by researcher. Hospital anxiety and depression scale (HADS) was used to measure the levels of anxiety and depression in patients. HADS is a self-assessment scale for detecting depression and anxiety in patients.(12) It is also a reliable and valid instrument for measuring the severity of an emotional disorder.(13- 15) HADS consists of 14 items each with 4 choices: 0 (no problems) to 3 (very severe problems). The subscale scores for anxiety and depression can be interpreted in ranges (0-21). Seven questions dealt with anxiety. Data analysis indicated that anxiety can be divided into following categories: (0-7) anxiety-free, (8-10) mild anxiety, (11-14) moderate anxiety, and (15-21) acute anxiety. In second part, seven questions dealt with depression scoring same as previous part for anxiety. 35 patients fulfilling the inclusion criteria were selected for the study. Considering ethical issues, an earlier interview was set out to describe the purpose of research. After getting permission, the patients were asked to fill out the questionnaires. On the day of hospital discharge the same patients were again asked to fill out the

questionnaire. So, the questions were answered orally within 48 hours after hospitalization and on the day of discharge.

Results

35 patients were enrolled in this study. 21 (60%) were males and 14 (40%) females. Demographic characteristics are summarized in table- 1. The minimum and maximum days of hospitalization were 19 and 50, respectively. Table- 2 shows absolute and relative frequency distribution the scores achieved for anxiety in pre-and post transplant patient, using HADS. There was no evidence of severe anxiety in pre-and post transplant patients. The means and standard deviations for the anxiety score are presented in the Table- 3. There is statistically significant relationship between pre-and post transplant anxiety, anxiety was significantly less at post transplant as compared to pre transplant ($P < 0.001$). Table- 4 shows absolute and relative frequency distribution of the scores achieved for depression in pre-and post-transplant patients using HADS. There was no clear evidence of major depression among pre-and post-transplant patients. The means and standard deviations for the depression score are presented in the Table- 5.

Depression was significantly less at post transplant as compared to pre transplant ($p < 0.001$; CI 95%). Data were analyzed by statistical software SPSS (version 18.0).

Discussion

Bone marrow transplantation represents a highly aggressive and demanding medical therapy that has a profound impact at a physical and psychological level. Keeping the patient in isolated room for more than a month or so and reverse barrier nursing are additional stress for patient who undergo the procedure.(16) According to the result of the study, the average anxiety score has been reported to be elevated among pre-transplant patients than post-transplant counterparts ($p = 0.001$). The findings of the study are similar to those stated by Fifi et al , Psychological disorders in hospitalized BMT candidates were at highest level, but gradually decreased within 3 month after transplantation.(9) Moreover, Trask et al (2002), also found that 50% their prospective BMT patients reported experiencing high levels of anxiety.(17) The results of the present study indicated that average depression score was greater among pre-transplant patients than post-transplant counterparts ($p = 0.001$). The findings of the study were similar to results were obtained by Karen et al, study showed

Table- 1. Demographic characteristics in patients who were candidates for stem cell transplantation.

Variables		Freq	Percent
Sex	male	21	60%
	female	14	40%
Marital status	single	11	31.4%
	married	24	68.6%
Education	Being able to write	4	11.4%
	Junior-high school	4	11.4%
	High school diploma	17	46.7%
	Academic education	10	28.8%
Insurance status	Insured	34	97.1%
	Uninsured	1	2.9%
Occupation	housewife	10	28.6%
	unemployed	5	14.3%
	employee	9	25.7%
	retired	4	11.4%
	student	7	20%
Types of disorders	HD	10	28.7%
	ALL	6	17.1%
	AML	9	25.7%
	MM	10	28.6%
Types of transplants	Allogenic	17	48.6%
	Autologous	18	51.4%

Table- 2. Absolute and relative frequency distribution the score achieved for anxiety within 48 hours after the hospitalization and on the day of discharge, using the Hospital Anxiety and Depression Scale (HADS)

Level Of anxiety	Time	Score achieve for anxiety			
		48 hours after hospital in the ward		Discharge time from the ward	
	Freq	Percent	Freq	Percent	
Normal		11	31.4%	24	68.6%
Mild		23	65.7%	11	31.4%
Moderate		1	2.9%	0	0%
Total		35	100%	35	100%

Table 3- comparing the score achieved for anxiety within 48 hours after the hospitalization and on the day of discharge, using the Hospital Anxiety and Depression Scale (HADS)

Level of Anxiety	Time	Score achieve for anxiety		The result of Paired T- test
		48 hours after hospital in the ward	Discharge time from the ward	
Mean		8.64	6.09	P=0.001
SD		3.42	2.84	

Table- 4. Absolute and relative frequency distribution the score achieved for depression within 48 hours after the hospitalization and on the day of discharge, using the Hospital Anxiety and Depression Scale (HADS)

Level of depression	Time	Scores achieved for Depression			
		48 hours after hospital in the Ward		Discharge time from the ward	
	Frequency	Percent	Frequency	Percent	
Normal		23	65.7%	23	65.7%
Mild		12	34.3%	12	34.3%
Moderate		0	0%	0	0%
Total		35	100%	35	100%

Table 5-Comparing the score achieved for depression within 48 hours after the hospitalization and on the day of discharge, using the Hospital Anxiety and Depression Scale (HADS)

Level of Depression	Time	Scores achieved for Depression		The result of Paired T- test
		48 hours after hospital in the ward	Discharge time from the ward	
	Mean		7.20	6.00
Std Deviation		3.49	3.7	

that patients presented physical improvement earlier than psychological recovery. Pre-transplant depression resulted in some serious problems during recovery process. Those patients who developed GVHD or had immune deficiency were more likely to experience depression.(18)

The study of Abdkhani et al, indicated that patients were affected by anxiety, depression, hopelessness and fear of death during the course of hospitalization and isolation period. Among patient 37.5% were suffering from psychiatric disorder, 23.33% and 10% had depression and anxiety, respectively. 66.6% were suffering from psychiatric disorders within 24 hours after transplantation. 60% had a need for medication treatment.(19)

The study of Grulke et al, indicated that 10.1% of those who participated in research study had severe depression, 13.8% and 67.15% had mild and moderate depression, respectively. The average survival rate in patients with acute depression was 418 days. The average survival rates in those cases diagnosed with mild and moderate depression were 848 and 699 days, respectively. So, as pre-transplant depression can be regarded as a risk factor for patients undergoing hematopoietic stem cell transplantation, it needs to be taken into account.(20) Begliner et al, in a descriptive research study examined the neuropsychological and psychiatric functioning of 30 cancer patients, 2 weeks before and 100 days after transplantation in levy, United States. The results of the study showed that the level of depression disorder has been decreased among patients.(21) The current study had limitation that need to be noted. First, the sample size was relatively small. Although data were collected over a ten month period, the sample including very few patients. Another limitation is this study relied on self-reported measures to assess patients across the two time points. A primary concern with the self-reported measures in this study pertains specifically to the trust in the HADS scales. With respect to the measured of patient trust,

patients self-report of trust became less reliable over time. In spite of limitations, the study findings provide valuable information for counseling health psychologists working within a hospital setting. BMT units, as well as yielding ideas for future research. The findings from the study have direct implications for counseling health psychologist, social worker, and other BMT staff.

Conclusions

High frequency of psychiatric disorders was observed in bone marrow transplant patients with hematological/ oncological illness during the procedure. This clearly indicates the importance of psychiatric intervention during the period of isolation.

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