

Psychosocial Aspects of Bone Marrow Transplantation

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In this study 12 patients undergoing BMT, 10 BMT survivors who were discharged from the hospital and the 20 donors, all were assessed using different psychometric tools. Our study revealed that most patients suffered from anxiety and depression during BMT, and their scores fall gradually to the level of long term survivors before discharge from the hospital. For those undergoing transplantation anxiety depression and hopelessness were positively correlated before and after the BMT. Donors respond to donation positively as demonstrated by the BPS and RDQ.

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INTRODUCTION

Bone Marrow Transplantation (BMT) offers a very good hope for total cure of patients with otherwise fatal illnesses. It is a very arduous process, through which the patient has to go, along with his family (Jenkins, 1991), and (Syrjala, 1993). BMT is associated with a high risk of mortality (reaching up to 50%) (Thomas, 1987). It is as well associated with marked morbidity. Numerous neurological, endocrine, cognitive, as well as other system complications can result from the process (Fefer et al, 1993).

Both allogenic and autologous BMT are being conducted in Egypt. The latter type has slightly worse results than the former; resulting in a disease-free survival rate of 42% at a median observation period of 18 months, compared to

50-70% survival rate for the allogenic type (Mahmoud,1995).

Consultation-liaison psychiatry plays a major role in BMT. The BMT team should always include a psychiatrist, who does not only assess and manage the patient and family psychological troubles, but also deals with the staffs psychological needs and troubles, in case they arise. Because of the tremendous stresses of BMT, family dynamics come to be tested, and may even be altered either positively or negatively (Futterman & Wellisch, 1990).

As the BMT process proceeds, the patient seems to shift from one stage to another (Andrykowski, 1994), each of which is associated with its own stresses and effects on the patient. Patients utilize various defence mechanisms and ways of coping; each depending on his psychosocial background and premorbid personality (Aeschelman, et al, 1992). Regression is very widely noticed among BMT patients (Futterman & Wellisch, 1990). Religion plays a major role in this context. It gives meaning to the vagueness of why the patient got such a dangerous illness

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(Chodoff et al, 1964). Donors have their own problems, whether or not the recipient survives (Butterworth, et al, 1993a) & (Broers, et al, 2000).

Western patients who communicate with others whose condition worsens or who even die use denial in an attempt to protect themselves (Patenaude, et al., 1982).

Psychiatric intervention in the BMT setting is of great importance due to the wide prevalence of psychiatric disorders among this population of patients. It includes the traditional psychopharmacological agents, as well as psychotherapeutic techniques. Individual psychotherapy can be modified by conducting it through the telephone (Mermelstein & Holland, 1991). It can also be conducted behind isolating glass windows (Mahmoud, 1995).

Patients who successfully undergo BMT experience a higher than normal perceived quality of life (Andrykowski et al., 1990). This is probably because the patient compares his current state with the morbid state. Additionally, survival of an otherwise fatal illness changes the person's values and perspectives in life (Chao et al., 1992).

AIM OF THE WORK

The aim of this work is to highlight the co-existing psychiatric morbidity examine the psychosocial domains of BMT, highlight the possible psychiatric sequelae, and plan a better interventional role of psychiatrists in both pediatric and adult BMT processes.

SUBJECTS AND METHODS

This study was applied on a sample of patients who either were undergoing

or have undergone BMT, and on their donors. The reasons for choosing these patients were the deficient information about their psychiatric problems, and the usual presence of some psychiatric troubles; sometimes serious. Studies on donors are scarce.

A) Subjects

Patients

*10 patients who underwent BMT were selected from two BMT centers (El Fairuz Hospital, and El Salam Hospital).

*12 patients who were undergoing BMT were selected from the above-mentioned centers, in addition to the National Cancer Institute. One patient was dismissed because she had bilharzial hepatosplenomegaly, study was done. Two patients died after receiving the transplant.

*The patients were of both sexes. All patients underwent allogenic BMT, above the age of 14 with no associated organic ailment like dementia or delirium

Donors:

20 donors who donated to the above mentioned patients were selected after their donation.

B) Methods:

Clinical sheet:

A detailed psychiatric sheet was taken from every patient and with special stress on certain points, which seem to be relevant to our study. Psychiatric diagnoses were made according to DSM-IV, and were assessed by the investigators.

Mini-Mental State Examination (MMSE) (Folstein, 1975).

According to Davis (1973), "a far greater proportion of cancer patients than is realized may have some impairment of attention, concentration, and memory".

We used, as our tool in this section, the MMSE, which estimates quantitatively the severity of cognitive impairment (Folstein, 1975). Scores below 20 are supposed to denote some degree of intellectual impairment.

The Hopelessness Scale (Beck, 1974)

Hopelessness has been identified as one of the core characteristics of depression, and has been implicated in a variety of other conditions such as suicide (Beck, 1963).

Two sources are utilized in selecting items for the 20-item true-false Hopelessness Scale. Nine items were selected from a test of attitudes about the future, structured in a semantic differential format (Heimberg, 1961). The remaining 11 items were selected from a pool of pessimistic statements made by psychiatric patients to reflect different facets of the spectrum of negative attitudes about the future and which recurred frequently in the patients' verbalizations (Beck, 1974). Scores above 17 are considered high, and there is a high risk of suicide.

Hamilton Rating Scale for Depression (Hamilton, 1967).

It is the most widely used observer-rating scale (Aschroft et al., 1978). This scale was designed by Max Hamilton (1960 & 1967). The original version consisted of 17 items and was later increased to 24 items by G. Klerman. The scale is not meant to be a diagnostic instrument. Its use is to quantify the results of an interview in order to facilitate the assessment of such factors as depth of depression and response to treatment (Aschroft et al., 1978). Depression is identified if the patient's score exceeded 15 points.

Hamilton Anxiety Scale (Hamilton, 1959).

Max Hamilton designed this scale. This test has been validated against populations of psychiatric patients. It is a clinical test depending on the objective experience of the rater. It consists of 13 items. Anxiety is identified if the patient's score exceeds 15 points.

Dynamic Assessment of Quality of Life After Autologous Bone Marrow Transplantation (Chao et al., 1992)

A 15-item questionnaire, which can be administered to both disease-free patients and those who have relapsed. It can be repeated at intervals to determine the progress of quality of life (QOL). Concurrent validity of the instrument was reported for patients receiving allogenic BMT.

Satisfaction with Life Domains Scale (Baker et al., 1992)

It is a self-report instrument for assessing the subjective QOL of patients receiving aggressive cancer treatment. The scale asks respondents to rate their satisfaction with 17 areas of life using seven faces (three smiling, one neutral, and three frowning). Item 18 inquires about the patient's subjective response to his transplant. A maximum score of 126 can be obtained on the scale, denoting a superb QOL. A score of 18 is the least score that can be obtained on the scale, denoting an extremely poor QOL.

Better Person Scale (Butterworth, et al., 1993a)

A 10-item self-reported measure of the donor's perception of himself as a better person. The score ranges from 0 to 10. A high score stands for a greater perception of one's self as a better person.

Reactions to Donation: (Butterworth et al., 1993a)

An 8 item self-reported measure of the donor's reactions to his donation. It

can be repeated at intervals to assess the progress of such reaction.

RESULTS

Table (1) shows the Long Term Survivors assessment using firstly Satisfaction with life Domaine Scale (SLDS) & secondly Dynamic Assessment of Quality of life scale after BM(QOL). The result of the later (table 1 item 6) supposed to be on question How do you rate your quality of life when you returned home ? on the above mentioned scale.

Table (2): Shows the different scores i.e. mean and standard deviation of BMT patients on the first 4 different tests. They were assessed before BMT, after BMT and before discharge from the hospital.

Table (3) shows the different questions of the dynamic assessment of Quality of life after autologous BMT, the possible responses, the total number of long-term survivors which responded to each item, and their percentage.

Table (4) shows the score on the BPS for donors, with a mean score of 4.85.

Table (5) shows the questions of the reactions to donation questionnaire, the possible responses, the total number of donors which responded to each item and their percentage.

Table (6) Shows insignificant correlation between the BPS and the time passed after domativ ($P < 0.04$)

Table (7) shows a collective correlation scores between different variables regarding patients undergoing BMT e.g.

Positive correlation between the number of psychiatric symptoms & the score of HAS before BMT ; HDS before BMT & hopelessness scale before BMT.

Positive correlation between the score of HAS before BMT & the scores of HDS before BMT & HAS after BMT.

Positive correlation between the score on HDS before BBMT & the scores of hopelessness scale before transplantation & HDS after BMT.

Table (8) shows a collective correlation score between different variables regarding long term survivors e.g.

Positive correlation between education and both survival after BMT and MMSE ($p < 0.001$).

Positive correlation between the length of hospital stay and both 007 & 0.009 respectively).

Positive correlation between HAS and HDS before BMT and both DAQL (Q. 15) after BMT, and SLDS ($p < 0.001$) HAS and HDS before BMT ($p < 0$).

Positive correlation between SLDS and DAQL (Q. 15) after BMT ($p < 0.008$).

DISCUSSION

Demographic Data

1 Age

The mean age of patients undergoing BMT was 24.08, which is lower than that of long-term survivors (33.9). This is probably because of the lapse of time after transplantation for the latter group. The mean age of donors was 29.15. There is borderline significance between all three means ($P < .05$), probably because both patients and donors are siblings and have no marked differences in age.

Age in our study is not any different from earlier international studies (Andrykowski, 1994). This is because the age incidence of specific types of cancer is universal.

Table 1
Relevant Psychobiogram Data for Both Patients & Donors

	X. Pats. Undergoing BMT			Long term survivors			Donors		
	Freq.	%	Mean ($\pm$ SD)	Freq.	%	Mean ($\pm$ SD)	Freq.	%	Mean ($\pm$ SD)
Gender									
Male	7	58.3		7	70		15	75	
Females	5	41.3		3	30		5	25	
Age**			24.08						
			7.74			33.9 7.78			29.15 10.35
Marital St.									
Single	9		75	2	20		11	55	
Married	3		25	8	80		9	45	
Education*			11.83 3.85			12.2 3.42			12.2 3.51
Retal. of patient									
To donor									
Broth	14	70							
Sister	6	30							
The past history									
Physical	2	16.7		2	20				
Psychiatric	1	8.3		2	20				
+ ve Family history									
Malignancy	5	41.7		2	20				
Psychiatric	2	16.7		0	0				
Insight									
Positive	12	100		7	70				
Negative	0	0		3	30				
Financial supp.									
Full by patient	0	0		3	30				
Partial by patient	1	8.3		1	10				
Insurance	11	91.7		6	60				
patient. Refig.	10	83.3		7	70				
Psychiatric D.									
None	3	25		6	60				
Adjust. Dep	3	25		2	20				
Dysthmic	0	0		1	10				
M. Dep.	3	25		1	10				
Adj. Mixed	3	25		0	0				4.4
Psychiatric			9.3 5.1			8.5 4.4			8.5 4.4
Symptoms.									16.75
Length of						54.8 16.75			54.8 16.75
Survival after									
BMT									

* P value is > 0.01 non - significant

** P value < 0.05 borderline significance ANOVA

Table 2
BMT Results Obtained by Patients Across the Time Spectrum of the Study

Results Tests	Ptns. Before BMT		Undergoing After BMT		BMT Before disch		Long term At interview	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
1. Minimental State Exam	27.42							
2. Hopelessness scal (H.S)	5.33	2.67	-	-	-	-	-	-
3. Hamilton Anixety Scale (HAS)	18	6.41	15.27	7.55	10.22	2.82	10.1	5.54
4. Hamilton depression scale (HDS)	19.67	9.22	15.18	8.57	11.55	4.4	10.5	7.69
5. Satisfaction with life domanice scale (SLDS)							105.8	14
6. Dynamic Assess. of Quality of life after BMT (DAQL)							7.3	1.83

Table 3
Distribution of Long - term Survivors According to their
Responses on the Remaining Questions of the QOL Scale

Question	Response	No. of Pts.	%
1- Are you employed	No	4	40
	Part-time	1	10
	Full-time	5	50
2- Are employed in the same occupation as before transplant?	No	4	40
	Yes	6	60
3- Weight	Loss	0	0
	Gain	3	30
	Neither	7	70
4- Describe your appetite?	Poor	0	0
	Variable	4	40
	Good	6	60
5- Describe your sleep?	Poor	0	0
	Variable	3	30
	Good	7	70
6- Is your sex life as satisfying for your as it was pretransplant?	No	5	50
	Yes	4	40
7- Do you have colds?	No	1	10
	Yes	5	50
	Applicable	4	40
8- What do people tell you about your general appearance?	Poor	1	10
	Indifferent	0	0
	Good	10	100
9- How do you feel about your general appearance?	Bad	1	10
	Indifferent	1	10
	Good	8	80
10- Do you take any medications regularly?	No	6	60
	Yes	4	40
11- Do you take any (other) medical or physical copmlaints?	No	10	100
	Yes	0	0
12- What was your greatest concern about the BMT procedure?	Death	3	30
	Pain	4	40
	Complication	0	0
	Relapse	1	10
	Ability to cope	1	10
	Other	1	10
13- What was the most difficult part of the BMT procedure?	Fear	2	20
	Pain	0	0
	Length of Hospit.	4	40
	Coping	2	20
	Loss of control	2	20
	Other	0	0
14- What was the most difficult adjustment when you returned home?	Daily activity	8	80
	Loneliness	1	10
	Eating normally	1	10

Table 4
Distribution of Donors According to
Supposed Score on the BPS

Donors	
Mean	4.85
S.D.	2.37
Number	20

Table 5
Reactions to Donation Questionnaire

Question	Respons	No. of patients	%
1- In term of the way you felt physically during and after the donation, would you say donation was	Very stressful	1	5
	Pretty stressful	3	15
	Not very stressful	11	55
	Not at all stressful	5	25
2- Would you say you are	Very worried about your health now	1	5
	Some what worried	0	0
	A little worried	9	45
	Not at all worried	10	50
3- Did you feel well prepared for the donation experience?	Yes, totally	15	75
	Yes, but could have been better prepared	3	15
	No	2	10
4- Was the experience	More painful	0	0
	Less painful	13	65
	About what you expected	7	35
5- How was the experience different from your expectations? Was it	More emotionally positive	11	55
	Less emotionally positive	2	10
	About what you expected	7	35
6- If someone were to ask you sometime in the future to donate bone marrow, do you think you would be willing to donate once more?	Would donate	15	75
	Would not donate	4	20
	Unsure	1	5
7- If a recipient needed a second transplant, do you think you would be willing to donate a second time?	Would donate a second time	15	75
	Would not donate a second time	4	20
	Unsure	1	5
8- What would your advice be to someone who was considering being adonor? Would you...	Encourage someone strongly	18	90
	Encourage someone alittle	2	10
	Discourage someone alittle	0	0
	Discourage someone strongly	0	0

Table 6
Correlation of The Time Passed since Donation to the BPS Score

BPS			
	R	t	p-value
Time	- 0.4520	2.1498	0.0454

Table 7
Correlations of Patients Undergoing BMT

		HAS bef. AMT	HDS bef. BMT	Hopelessness bef. BMT	HAS after BMT	HDS after BMT
Age	r	- 0.6800	- 0.7535			
	t	3.9347	4.8625			
	P-value	0.001	0.0001			
Education	r	- 0.5833	- 0.6706			
	t	3.0467	3.8353			
	P-value	0.0069	0.0012			
No. Psych Symp	r	0.8213	0.7731	0.8768		
	t	6.1078	5.1712	7.7361		
	P-value	9E- 06	6E- 05	4E- 07		
HDS bef. BMT	r		0.5980		0.7562	
	t		3.1655		4.9031	
	P-value		0.0054		0.0001	
HAS bef. BMT	r			0.8270		0.6720
	t			6.2404		3.8499
	P-value			7E- 06		0.0012

Table 8
Correlations of Long Term Survivors

		Survival after BMT	Minimental test	HAS	HDS	DAQL after BMT Q15	HDS
Education	R	0.6767	0.6375				
	T	3.9884	3.5105				
	P-value	0.0011	0.0025				
Length	R			0.5800	0.5654	-0.6033	
	T			3.0207	2.9083	3.2095	
	P-value			0.0073	0.0094	0.0049	
HAS	R				0.9545	-0.7481	-0.8884
	T				13.58	4.783	8.2104
	P-value				7E-11	0.0001	2E-07
HDS	R					-0.6595	-0.8286
	T					3.7222	6.2794
	P-value					0.0016	6E-06
SLDS	R					0.5799	
	T					2.9432	
	P-value					0.0087	

Age was negatively correlated to both scores of Hamilton Anxiety and Depression scales of patients undergoing

BMT before transplantation ($r = -.6800$ & $-.7535$ consecutively). This is probably because the older one gets the better adaptability to stressful situations he has.

2. Education:

The mean years of formal education for patients undergoing BMT, long-term survivors, and donors was close, being 11.83, 12.2, and 12.5 consecutively. These is because both patients and donors are siblings, and were living in the same socio-economic level; there were non-significant differences between all three groups ($P > .01$).

The number of years of formal education for patients undergoing BMT before transplantation was correlated to the scores to the Hamilton Anxiety and Depression scales, being $-.5833$ and $-.6706$ consecutively. This is probably because the higher educated the person gets, the better he will be able to cope to stressful situations.

Education is also positively correlated to survival after BMT ($r = .6767$). This can be understood in terms of the better understandability of the nature of the illness and treatment, as well as the better compliance to treatment of the higher educated patients.

Education is positively correlated as well to the score on the Mini-mental test

($r=.6365$). Cognitive skills among educated people are of course higher than in the less educated, thus positively affecting their Mini-mental test scores.

Lesko et al. (1992) reported on the educational status of the patients in their study. 74% of patients had 16 years of formal education (college) or higher, and less than 2% had less than 9 years of formal education; compared with the 25% and 33.3% results of our study consecutively. This is explained by the high level of illiteracy in our country. Lesko et al. (1992) did not find any statistical correlations to the educational status of the patients.

3. Psychiatric diagnosis:

25% of those currently transplanting were diagnosed as having major Depressive Disorder according to DSM-IV. This is comparable to the results obtained by Rodrigue et al. (1993), who found 28% of BMT patients having a major depressive episode according to DSM-III. 50% of those currently transplanting were found to have an adjustment disorder with either depressed mood or with both anxiety and depressed mood. Psychometrically, as determined by the Hamilton Anxiety and Depression scales, anxiety and depression were co-existent almost to the same degree. These percentages make depression the highest-ranking psychiatric diagnosis among the BMT population, and cancer patients in general (Abd El Azim 1995). In our study, 75% experienced depression. This value is higher than the cancer population in general, being 47% only Derogates et al., 1983). This difference is probably because BMT is associated with marked side effects, and more vigorous treatment. In a study done on terminally ill Egyptian cancer patients, Abd El Azim et al. (1994) found that depression is the highest ranking psychiatric symptom in this population.

The values obtained in those undergoing BMT are higher than those found in long-term survivors. 60% of long-term survivors could not be assigned a psychiatric diagnosis, as compared to 25% of those currently transplanting. This is probably because we tried to obtain a retrospective diagnosis from long-term survivors at the time of their transplantation. Some long-term survivors underwent BMT up to 4 years ago, recalling what one felt then is rather remote. All patients' psychological states tend to gradually get better as the BMT process unfolds and discharge from the hospital gets closer. This fact is true for those who did not receive any type of psychiatric intervention because their condition did not require any intervention, as well as in those who were managed by the psychiatrist Gatson, et al, 2000).

4. Number of psychiatric symptoms:

The number of psychiatric symptoms of those currently undergoing BMT is positively correlated to their Hamilton Anxiety and Depression scale scores before BMT, r -value being .8213 and .7731 respectively. This adds to the reliability of these two scales to be used in the BMT setting, despite the overlap between some questions of the scales and the general medical condition (such as frequency of micturition, abdominal pain, sexual problems).

The number of psychiatric symptoms was also positively correlated to the scores on the Hopelessness scale ($r=.8768$). This correlation is quite clear, because hopeless patients tend to have more psychiatric pathology, and thus more symptoms.

Other authors have undoubtedly interviewed their patients, yet none reported the number of psychiatric symptoms (Hengeveld et al, 1988), (Jenkins et al, 1991 & 1994), and (Andrykowski ,

1994). Instead, they report on the results obtained on the psychometric tools they employed such as the Hospital Anxiety and Depression scale (Jenkins et al., 1991 & 1994), the Beck Depression index, and the Symptom Checklist-90 (Hengeveld et al., 1988).

5. Length of hospital stay

The length of hospitalisation in long-term survivors is positively correlated to the scores on the Hamilton Anxiety and Depression scales ($r = .5800$ and $.5654$ respectively), this can be explained in two terms, the first is that the longer hospitalisation gets the more painful the experience is when the patient recalls it, thus elevating the scale scores. The second possibility is that the longer hospitalisation gets the worse the general medical condition was and probably still is; chronic Graft Versus Host Disease (GVHD). This is supported by the negative correlation that exists between this item and the question "How do you rate your quality of life when you returned home?" ($r = -.6033$).

Jenkins et al. (1994) found no statistical significance of length of hospital stay.

Psychological Tests:

Mini-mental State Examination (MMSE):

The scores on the MMSE for those undergoing BMT (before BMT, after BMT, and before discharge from the hospital), and long-term survivors are very close. Their means were 27.42, 27.64, 27.89 and 27.7 respectively. This denotes that BMT does not impair the cognitive functions of the patient. Yet, these results are different from those reported by Andrykowski et al (1992). They found that performance tests assessing memory were most likely to be impaired, whereas those of attention were least likely to be impaired. Perfor-

mance in the motor and complex attention / motor domains was intermediate between the attention and memory domains, this is so because our instrument is rather crude as compared to the more specific and comprehensive psychometric tools they used.

Measurement of the cognitive deficit was not an aim of this research. We only needed an instrument that could show that the patient is not delirious, and hence, we could proceed with the rest of the clinical psychometric tools.

Hopelessness scale (HS):

The overall scores on the HS were not high despite the seriousness of the process. This is probably because the patients tend to overlook the bad outcome and associated morbidity. Patients consider BMT as a last hope to survive and escape from their dreadful fate. This probable explanation coincides with what was reported by Andrykowski (1994).

The scores on the HS are positively correlated to the scores on the Hamilton Depression scale ($r = .8270$). This is clear, because the more severe depression gets, the more hopeless the person is. This is also strengthened by the positive correlation between the score on the HS and the number of psychiatric symptoms ($r = .8768$). These positive correlations may appear odd because patients do not actually suffer from hopelessness, as shown by the scores of the scale. Yet, this can be explained because the small increments in the score of the HS are associated with large increments in the Hamilton Depression scale.

HS use in the BMT setting should not be overlooked because hopelessness can lead to suicide, which has been reported among BMT patients (Jenkins & Roberts, 1991).

Hamilton Anxiety scale (HAS):

For those currently transplanting, the mean scores on the HAS drop after BMT, and drop even more before discharge from the hospital. The mean values are 18 before BMT, 15.27 after BMT, and 10.22 before discharge. This drop proves that this was just a transient experience, and the probable positive effect of feeling cured of cancer, the later scores do not differ markedly from those of long-term survivors (mean score 10.1). The scores before transplantation are positively correlated to the scores after transplantation ($r=.7562$). This denotes that the psychopathology is not greatly altered by transplantation, and thus psychiatric intervention would prove of value before and during transplantation. The score on the HAS before transplantation is also positively correlated to the score on the Hamilton Depression scale, indicating the close inter-relation between anxiety and depression. The later finding is similar to what has been reported by Jenkins et al. (1994). This finding has also been found among long-term survivors ($r=.9545$).

Hamilton Depression Scale (HDS):

For those currently transplanting, the mean scores on the HDS drop after BMT, and drop even more before discharge from the hospital. The mean scores are 19.67 before BMT, 15.18 after BMT, and 11.55 before discharge. The later scores do not differ markedly from those of long-term survivors (mean score = 10.5). The scores on the HDS before transplantation are positively correlated to the scores on the Hopelessness scale ($r=.8270$), and this is not striking, because depression and hopelessness are closely related. The scores on the HDS before transplantation are also positively correlated to the scores after transplantation ($r=.6720$), denoting that the psycho-

pathology is not greatly altered by transplantation. This later finding is also found in the application of HAS in the same context.

Colon et al. (1991) found that depressed mood is statistically correlated to a poorer outcome, yet these results are doubted as proven by our study and the studies conducted by Jenkins et al. (1994), and Andrykowski et al. (1994).

HDS use in BMT setting should not be overlooked because hopelessness can lead to suicide, which has been reported among BMT patients (Jenkins & Robert 1991).

Satisfaction with Life Domains Scale (SLDS):

The mean score for long-term survivors on the SLDS is 105.8, compared to 91.95 obtained by Baker et al. (1992). The maximum score on the scale is 126. This denotes that survivors of BMT probably perceive a better quality of life. This coincides with the findings of Chao et al. (1992).

There are negative correlations between the scores on the SLDS and the HAS, and the HDS ($r= -.8884$ & $-.8286$ consecutively). This finding adds to the reliability and validity of this instrument.

There is positive correlation between the scores of the SLDS and the question How do you rate your quality of life when you returned home? ($r=.5699$), denoting that there is no significant difference between the individual's global assessment of his QOL, and the meticulous report of the quality of each domain of life.

Dynamic Assessment of Quality of Life after Autologous Bone Marrow Transplantation:

This scale is fit for application for allogenic BMT. The items of this scale

should be applied and then reapplied at intervals to assess the changes that occur to the patients lives (Chao et al., 1992).

The last question of the scale (Q15) "How do you rate your quality of life when you returned home?", in which the patient rates his QOL. from 1 to 10, proved to be of great significance. The mean score was 7.3 compared with 7.8 as obtained by Chao et al. (1992). It is negatively correlated to both of the scores of the HAS and the HDS ($r = -.7481$ & $-.6595$ respectively). It is also negatively correlated as well to the length of hospitalisation, as has been mentioned before. It is positively correlated to the scores on the SLDS, as has also been mentioned before.

Better Person Scale (BPS):

The mean score of donors on this scale (4.85) is lower than what has been reported by Butterworth et al. (1993b), being 5.26. This is because Egyptian donors are full siblings to the patients. Thus donation is probably viewed as a social and religious obligation for which the patient does not credit him / herself, whereas earlier donors studied abroad were usually unrelated.

There is negative correlation between the scores on the BPS and the time lapse after BMT ($r = -.4520$). This is probably because the longer the time passes the less of an achievement the donor feels he has made.

The emergence of peripheral stem cell donation is associated with less distress than in traditional BMT; thus makes donation easier and safer.

Reactions to Donation Questionnaire:

This questionnaire should be repeated at spaced intervals to donors in order to check any change in their reactions to their donation. Most donors (75%) reported their absolute willingness to do-

nate BMT to someone else other than their siblings, and 100% of the donors reported their absolute willingness to donate once again to their siblings, if they were in need. This is to be compared with the 90%, and 95% figures obtained consecutively by Butterworth et al. (1993b).

Cultural Variations

It was noticed that married Egyptian females undergoing BMT experience a great deal of social difficulty during and after the process. Some may even become divorced. This is probably because a great deal of marital ties is based on the childbearing abilities of the female, which are lost because of BMT. This assumption is favoured because when normal married females find out that they are infertile, it is most likely that their husbands either think of, or even may divorce them or get remarried. Another possible assumption for the cause of such social difficulty is that females in our society are responsible for the emotional care-giving of the family, and once they undergo BMT, they become needy of a great deal of emotional support; with which their husbands were not familiar, 'these factors have not been pointed at in any of the international literature written about this subject. This is because the marital ties among Westerners do not have the same sacred value as they do in our society. Another notice is that Western individuals do not care as much for their childbearing abilities. This is proven by their small family sizes, as well as by the continuous attempts by the governments to encourage childbirth.

Another important notice about Egyptian family dynamics in the BMT setting has to be highlighted here. There is rather strong adherence between Egyptian family members as compared to Western families, and a normal re-

sponse to one family member getting sick here is even more strengthening of this family cohesion. This cohesion can hinder the medical care given to the patient by bothering the medical staff, or by insisting on visiting the patient while being in the germ-free isolation. This way of expressing care and love has to be altered and corrected in the BMT setting.

In our study, it was noticed that regression is marked among patients with low educational profiles as well as among those with low socio-economic standards. One good way of handling this regression when it becomes marked is the clarification of the importance of the role that the patient plays in the outcome of BMT, such as compliance to medical treatment, and adherence to the instructions. Another possible way of achieving autonomy and eliminating regression is the incorporation of the patient in the planning of, and possibly alteration of the scheduling process.

Egyptian patients not only employ more religious defences than Western patients in such a stressful process, they even go a step further. They consider the outcome of BMT, whether good or bad, to be God's will, thus greatly minimizing the anxiety provoked by thinking of the bad outcome of BMT. The marked religiosity associated with the transplantation process seems to wane after its success, and was noted to be of above-normal levels in long-term survivors, thus, it is evident that the arduousness of the process leaves its long-lasting imprints on the patients.

Massive denial is one more peculiarity of BMT in Egypt; the patient simply cannot comprehend having a fatal illness. Moreover, the patient can get the illness, undergo BMT, become discharged from the hospital, and later come for follow-up probably for years

and he is never explicitly informed of his illness. Patients who employ such denial appeared to show a good degree of coping and adaptation.

Patients who communicate with others on the wards whose condition worsens or who even die do not use denial as Westerners do. They simply do not try to find the differences between their own condition and that of the neighbouring patient. Instead they still use identification, and this of course raises the anxiety and depression levels in those patients. If the staff instead of the current ignorance highlights the differences between the two cases, denial is thus favoured, and both anxiety and depression would be expected to be lower.

Egyptian patients are similar to Western patients regarding the overall QOL. Yet, Egyptian males seem to be reporting more satisfaction with sexual life than females, and even more than Western patients; as was evidenced when obtaining the sexual history from the patient, and from the SLDS. This may be because Egyptian males regard reporting sexual difficulty as a very poor indicator of their manhood and self-esteem. Another reason is because women experience menopausal symptoms after BMT, which may necessitate hormonal replacement therapy (Mahmoud, 1995).

Conclusion

BMT patients suffer psychologically, and are subject to a great risk of morbidity and mortality. Yet, BMT can lead to complete cure from otherwise fatal illnesses.

Psychological distress is expected once the diagnosis of a fatal illness is made. Some patients are able to cope adequately, while others aren't, this is usually dependent on the premorbid personality, degree of maturity, socioeconomic status, and family dynamics.

Depression is the commonest psychiatric symptom in this particular population. The whole depressive spectrum can be encountered. Depression is most often associated with anxiety; the levels of each vary according to the stage of BMT the patient is passing through.

Donors have their own problems and concerns about donation. This can range from self-blame to experiencing actual grief whether or not the recipient is their relative. BMT can mould the relationship between the donor and the recipient if they are siblings. Old conflicts can be resolved in this context.

The family is greatly affected by BMT. This can either be in a good or a bad way. BMT seems to be a process that does not only involve the patient, but also his immediate surroundings.

Our study showed some differences between the Egyptian population and Western population, females experienced more difficulty than males did. Egyptian family adherence is markedly stronger than that of Western families. Moreover, the specific defences utilized by the patients generally show some differences than those described in Westerners. Finally, QOL despite being globally similar here and abroad the sexual domain in Egyptian males seems to show some difference.

Recommendations

Further research in the area of the peculiarities of each physical diagnosis that is fit for BMT and its psychiatric problems, with more number of patients, as well as incorporation of patients undergoing autologous BMT.

To give patients and their families more adequate information about the physical diagnosis, prognosis, chances of cure by BMT as compared to other lines of treatment, exact sequence of events and what the patient is expected

to experience in the event BMT is chosen, and highlighting the possible associated morbidity with BMT.

Initiation of a bone marrow registry program here in Egypt.

Using closed circuit television in the three centres currently working and internationally registered here in Egypt. It offers a good communication channel between the therapist and the patient. It minimises the risk of infection, renders psychotherapy easier to the therapist as there is no more need to get sterilized, makes the patient more at ease, and offers a 24-hour patient surveillance for the nursing and medical staff.

The family's psychological needs should be dealt with properly in this context, as there current is negligence of this matter.

Bereavement for family members, and donors should be dealt with properly, because their ties with the treating staff are abruptly cut after death of the patient.

Psychological care for the doctors and nurses working on BMT units is lacking and should be addressed properly.

Psychological orientation of the medical staff and nurses working on BMT units is lacking. It should be addressed to avoid over-care (positive counter-transference), or avoidance (negative counter-transference), each of which is non-professional and can affect medical care of the patient.

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الجوانب النفسية الإجتماعية لعملية زرع نخاع العظام

تم اجراء عملية النخاع لـ ١٢ مريض وقد بقى منهم ١٠ مرضى على قيد الحياة بعد عملية الزرع وغادروا المستشفى، وكذلك ٢٠ متبرع تم تقييمهم باستعمال وسائل القياس النفسى المناسبة. وقد كشفت هذه الدراسة أن معظم المرضى يعانون من القلق والإكتئاب خلال عملية الزرع ودرجاتهم تقل تدريجيا خلال استمرار عملية الزرع لتصل إلى مستوى المرضى الباقين على قيد الحياة وذلك قبل مغادرتهم للمستشفى. طبق الاختبار العقلى المصغر على كل المرضى لى يتم توثيق النتائج المختلفة للإختبارات الأخرى ولم تظهر نتائج الإختبار دلالات غير طبيعية فى أى من المرضى. لقد تبين أن طبيعة الحياة الخاصة بالمرضى الذين بقوا على قيد الحياة لمدة طويلة تعتبر معقولة كما هو واضح فى مقياس الرضا عن أوجه الحياة والمقياس الديناميكي لطبيعة الحياة بعد عملية زرع النخاع الذاتية، كما ينظر المتبرعون الى عملية التبرع نظرة ايجابية كما هو واضح عن طريق مقياس الشخص الأفضل واستفتاء رد الفعل للتبرع.

كما كانت نتيجة مقياس الشخص الأفضل مرتبطة سلبيا بالمدة التى مرت بعد التبرع. بالنسبة للأشخاص الذين تجرى لهم عملية الزرع حالياً، فإن السن والتعليم كانا مرتبطين سلبياً مع نتائج مقياس هاملتون للإكتئاب والقلق، كما أن عدد الأعراض النفسية كان مرتبطاً ايجابياً بمقياس هاملتون للإكتئاب والقلق وأيضاً بمقياس فقدان الأمل. إن نتيجة مقياس هاملتون للقلق كانت مرتبطة ايجابياً بنتيجة مقياس هاملتون للإكتئاب وكذلك بالنسبة للنتيجة قبل وبعد عملية الزرع، وكانت نتيجة مقياس هاملتون للإكتئاب مرتبطة ايجابياً بنتيجة مقياس فقدان الأمل وكذلك بالنسبة للنتيجة قبل وبعد عملية الزرع. بالنسبة للأشخاص الباقين على قيد الحياة لمدة طويلة، فإن التعليم كان مرتبطاً ايجابياً مع مدة البقاء على قيد الحياة بعد عملية الزرع وكذلك بنتيجة الإختبار العقلى المصغر. كانت مدة البقاء بالمستشفى مرتبطة ايجابياً بنتيجة مقياس هاملتون للإكتئاب والقلق ولكنها مرتبطة سلبياً بنتيجة السؤال رقم ١٥ "كيف تقيم طبيعة حياتك بعد عودتك الى المنزل؟" مقياس هاملتون للقلق كان مرتبطاً ايجابياً بنتيجة مقياس هاملتون لإكتئاب كلاهما كان مرتبطاً سلبياً مع نتائج مقياس الرضا عن أوجه الحياة والسؤال رقم ١٥ واخيراً بنتيجة مقياس الرضا عن أوجه الحياة كانت مرتبطة ايجابياً بنتيجة السؤال رقم ١٥.

وقد ناقش الباحثون دلالات هذه النتائج وقدموا توصياتهم.