

Psychological evolution and assessment in patients undergoing orthotopic heart transplantation

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Summary – Background. Orthotopic heart transplantation (OHT) is a major surgical intervention inducing distress and anxiety. Psychiatric evaluation of organ transplant candidates is now routinely proposed. This study purposed to assess the psychological evolution in patients having received psychological and/or psychiatric assistance before and during 1–6 postoperative months. **Methods.** Twenty-two consecutive transplant candidates were psychically evaluated as part of the preoperative protocol. In the waiting period, 1 and 6 months after OHT, they were asked to fill out the following questionnaires: the General Health Questionnaire, the Spielberger's State-Trait Anxiety Inventory, the Beck Depression Inventory, the Perceived Social Support Scale, the Toronto Alexithymia Scale and the Personal Reaction Inventory. **Results.** A DSM-IV Axis I diagnosis was found in nine patients (41%); four patients (18%) presented with an Axis II diagnosis. One month after OHT, scores of depression, anxiety and general health significantly improved, while scores of social support, alexithymia and social desirability did not differ. In the sixth postoperative month, all psychological scores remained stable. **Conclusions.** A high prevalence of preoperative psychopathology was reported in 22 candidates who received OHT. Surgical intervention obviously improved the quality of life after cardiac transplantation. If the impact of psychological and/or psychiatric aid remains difficult to appraise, these results emphasize the positive impact of surgery on psychological status and the appropriateness of the psychosomatician's social support intervention on patients facing the transplant process. © 2001 Éditions scientifiques et médicales Elsevier SAS

alexithymia / anxiety / depression / general health / heart transplantation / social desirability / social support

INTRODUCTION

Nowadays, most transplantation centers systematically ask for psychological assessment of each patient entering a transplantation program. The limited availability of donor organs and the need for strict adherence to a postoperative regimen to ensure survival has led to intense scrutiny of transplant candidates [27]. This operation combines the psychological aspects of organ

transplantation with those of cardiac surgery. The favorable effects of psychological intervention on recovery from surgery and heart attacks have been demonstrated in many previous studies [22]. However, little is known about the impact of psychological and/or psychiatric assistance before and after orthotopic heart transplantation (OHT). Indeed, such major operations are known to generate serious psychological complications which can require psychological aid. Several studies

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have reported anxiety, depression, and psychosocial distress in the waiting period for a donor [7, 19, 30]. The wait for an organ is known to markedly impair psychological status in patients with terminal cardiac insufficiency.

After heart transplantation, various authors [1, 6, 20, 25] have described an improvement in the presurgical psychological scores of OHT patients, while others [9, 12] have reported an amelioration in the quality of life. Dew et al. [8] in their study found that anxiety and depression levels raise in the early post-transplant period but rapidly decrease over time in two-thirds of the patients. Yet, preoperative psychological disorders may subsist and influence the patient's outcome after transplantation [23], in particular anxio-depressive symptoms [2]. Moreover, psychological problems can be related to hospital stay after transplantation. In the postoperative phase, changes in the quality of life can vary depending on the severity of the illness before surgery [13]. Such changes affect memory improvement [26], deterioration of the relationship with a spouse within a period of 1–5 years after surgery [5], or of coping strategies. Alteration of coping strategies, however, has been shown to be independent of the time elapsed since transplantation [16]. Nonetheless, in the long term (9–13 years following OHT), the psychological condition of surviving patients has been shown to be comparable to that of the general population [15].

The present prospective study proposed to analyse the evolution of psychological scores before and during the 1–6 month period following surgery in OHT patients who received systematic psychological assistance and/or psychiatric aid during the transplant process.

METHODS

Subjects and procedure

Twenty-two consecutive patients (18 men and four women), aged 53.3 ± 9.6 years (range: 30–71 years), who underwent orthotopic heart transplantation from January 1993 to December 1994 at the University Hospital of Liège were included in the study. In this group, 13 patients (59%) presented with ischemic cardiomyopathy, seven patients (32%) with dilatative cardiomyopathy and two patients (9%) with valvular cardiomyopathy.

These patients received psychological assistance and/or psychiatric treatment before and after OHT.

Spouses were systematically included in the first interviews. After the initial evaluation patients were seen at weekly intervals while they were in the hospital. The goals of the psychotherapeutic approach were the following: to provide comfort, soften irrational beliefs, or offer emotional support and relieve anxiety. Psychotropic treatments (anxiolytic and/or antidepressant drugs) were used when anxiety, insomnia and depressive symptoms uncomfortably occurred. After discharge, the psychotherapeutic follow-up consisted of monthly visits until the sixth postoperative month. During the first 30 months of the program, 28 prospective heart transplant candidates were evaluated. Twenty-six were accepted as candidates, but four died while waiting for an operation.

Of the 22 recipients, seven patients had emergency transplants and could not be psychologically assessed before surgery. The 15 other patients were evaluated during the indication phase for heart transplantation 1 month after surgery. In the sixth month, two patients did not complete the questionnaires.

Patients were evaluated for depression, anxiety, general health, social support, alexithymia, and social desirability, and all had to fill out the same questionnaires before and after OHT. All patients were in New York Heart Association class IV before surgery. These samples appeared to be representative of the population of heart recipients with respect to age and type of heart disease.

Psychological assessments

A semi-structured interview was performed during the pre-transplant evaluation by a single reviewer. DSM-IV Axis I and Axis II were assigned for each patient.

All patients were administered the following four questionnaires:

- The Beck Depression Inventory (BDI) is considered as the most satisfactory self-rating depression scale from a methodological standpoint. Beck published a short form limited to 13 of the 21 original items, the validity of which has been checked by Beck et al. [3]. Depression is assessed as follows: no depression (0–4), mild depression (5–7), moderate depression (8–15), and severe depression (≥ 16);

- Spielberger's State-Trait Anxiety Inventory (STAI) (form Y) [28] consists of two parts. The state section of the STAI includes 20 items intended to measure transitory feelings of tension and apprehension, while the trait section evaluates the stable personality trait of anxiety proneness. In normal working males, references

values (mean \pm SD) are 35.7 ± 10.4 for the STAI-state and 34.9 ± 9.2 for the STAI-trait. In normal working females, the norms are 35.2 ± 10.6 and 34.8 ± 9.2 for the STAI-state and STAI-trait respectively;

– The General Health Questionnaire [11] is a recognized instrument for the screening of minor psychiatric morbidity. We used the most recent version (GHQ-28), which encompasses four dimensions, each including seven items: anxiety and insomnia, severe depression, social dysfunction, and somatic symptoms. GHQ items were rated according to the Likert method. The global score and the scores of the four subscales were computed as the sum of the item scores;

– The 12-item Blumenthal scale (PSSS-12) was specifically developed for use in studies of coronary heart disease risk factors [4]. This scale has a good potential for assessing the perceived availability of support. Using a five-point Likert-type format, a total score and three subscale scores (family support, friendly support and personal support) were computed as the sum of the item scores;

– The Toronto Alexithymia Scale (TAS-20) is the most recent self-report measure of alexithymia with good internal consistency and test-retest reliability, and a factor structure congruent with alexithymia constructs [21, 29]. As alexithymic patients are prone to psychosomatic diseases, this measure was used in the psychological evaluation of OHT patients; and

– The Personal Reaction Inventory: because many of the measures used in the present study involve self-reporting, the social desirability response set was assessed using the 13-item version of the Marlowe-Crowne Scale, developed by Reynolds [24]. Scores on the short form correlate highly with scores on the full scale, and the short form predicts almost 90% of the variance in full-scale scores.

Statistical analysis

Results were expressed as mean and standard deviation (SD). Psychological scores recorded before and after OHT were compared by the Wilcoxon rank sum test. Results were considered to be significant at the 5% critical level ($P < 0.05$). All statistical calculations were carried out using SAS (SAS Institute, release 6.12 for Unix).

Table I. Demographic characteristics of 22 pre-transplant candidates (18 men and 4 women, aged 53.3 ± 9.6 years).

<i>DSM IV psychiatric diagnosis identified</i>	
<i>Axis I diagnosis, N = 9 (41%)</i>	
•	4 affective disorders
1	major depression, mild, recurrent
3	dysthymic disorder
•	4 adjustment disorders
•	1 alcohol dependence
<i>Axis II diagnosis, N = 4 (18%)</i>	
•	2 dependent personality disorders
•	1 obsessive-compulsive personality disorder
•	1 antisocial personality disorder
<i>Axis I + Axis II diagnosis, n = 2 (9%)</i>	
•	1 dysthymic disorder + dependent personality disorder
•	1 alcohol dependence + dependent personality disorder

RESULTS

Of the 22 patients who underwent OHT, nine (41%) were found to have DSM IV Axis I psychiatric disorders and four patients (18%) had a DSM-IV Axis II diagnosis. Patients with Axis I diagnoses were grouped into affective, adjustment, anxiety, and substance-related disorders. Two patients (9%) with an Axis II diagnosis (dependent personality disorder) also presented with Axis I disorders (dysthymic disorder and alcohol dependence). Delineation of demographic characteristics is shown in *table I*. Reservations about the suitability for transplantation were expressed for two patients (alcohol dependence and antisocial personality)

Psychological scores recorded before and 1 month after OHT in the total group of patients are displayed in *table II*. Significant differences were seen for depression, anxiety, somatic complaints and general health. Scores for BDI, STAI-state, STAI-trait, and GHQ markedly improved after surgery. No improvement was observed for the other variables. Psychiatric complications appeared in four patients (18%) after OHT and required further consultations. There were no discernible differences between the groups with or without preoperative DSM Axis I and/or Axis II diagnoses in the assessment of psychiatric outcome variables.

When we compared mean psychological scores recorded 1 and 6 months after OHT, there were no significant differences. It appeared that improvement observed in the first postoperative month remained stable in the sixth postoperative month (*table III*).

Table II. Mean (\pm SD) of psychological scores before and one month after OHT in 15 patients receiving psychological and/or psychiatric assistance.

Variable	Scores		Difference	P-value
	Pre-OHT	1 month post-OHT		
BDI-13	4.0 \pm 2.8	2.1 \pm 2.9	1.9 \pm 2.1	0.008
STAI-state	36.4 \pm 11.3	28.4 \pm 9.9	8.0 \pm 6.9	0.0007
STAI-trait	36.7 \pm 8.8	31.9 \pm 9.1	4.9 \pm 5.9	0.01
GHQ-somatic	7.2 \pm 4.8	4.3 \pm 4.6	2.9 \pm 4.6	0.04
GHQ-anxiety	6.7 \pm 5.7	4.3 \pm 5.2	2.4 \pm 5.8	0.19
GHQ-social	9.4 \pm 2.5	9.0 \pm 3.4	0.4 \pm 4.0	0.75
GHQ-depression	0.5 \pm 1.1	0.4 \pm 0.7	0.1 \pm 1.1	0.81
GHQ Likert	23.8 \pm 11.6	18.0 \pm 11.3	5.8 \pm 9.7	0.04
PSSS-1 person	26.5 \pm 2.7	25.8 \pm 3.1	0.7 \pm 1.7	0.20
PSSS-friends	24.7 \pm 4.1	24.1 \pm 5.8	0.5 \pm 3.4	0.72
PSSS-family	24.7 \pm 4.2	25.1 \pm 4.0	-0.4 \pm 2.1	0.55
PSSS-total	75.8 \pm 9.1	75.0 \pm 10.8	0.8 \pm 5.1	0.96
TAS-20	46.5 \pm 13.6	46.3 \pm 15.9	0.2 \pm 8.2	0.89
PRI	8.7 \pm 2.5	9.1 \pm 3.0	-0.4 \pm 2.2	0.45

BDI: Depression scale [3]; STAI: Anxiety scale [28]; GHQ: General Health Questionnaire [11]; PSSS: Perceived Social Support Scale [4]; TAS: Alexithymia scale [29]; PRI: Social Desirability scale [24].

DISCUSSION

Most studies concerning the effects of psychological assistance on recovery from surgery and heart attacks have demonstrated that surgical coronary patients who are provided with information or emotional support to help them overcome the medical crisis do better than patients who receive ordinary care [22]. Depressed patients had a high postoperative mortality rate, while

those who denied anxiety had a high incidence of postoperative psychiatric complications [10, 17]. Psychological variables appear to play an important role in the outcome of transplantation, but psychological assessment of transplantation candidates is difficult because of the lack of normative data specific to this population [14]. Previous research has indicated the need for intensified supportive psychotherapeutic treatment particularly during the waiting period [30]. The

Table III. Mean (\pm SD) of psychological scores and of 1–6 month post-OHT differences in 13 patients receiving psychological and/or psychiatric assistance.

Variable	Scores		Difference	P-value
	1 month post-OHT	6 month post-OHT		
BDI-13	1.9 \pm 3.1	2.5 \pm 2.8	-0.6 \pm 2.9	0.25
STAI-state	27.4 \pm 12.6	28.2 \pm 9.9	-0.5 \pm 9.3	0.43
STAI-trait	31.7 \pm 9.9	31.9 \pm 9.3	-0.2 \pm 7.3	0.86
GHQ-somatic	4.5 \pm 4.7	4.4 \pm 5.2	0.2 \pm 4.1	0.83
GHQ-anxiety	3.1 \pm 2.7	3.5 \pm 4.0	-0.5 \pm 4.1	0.96
GHQ-social	8.1 \pm 3.1	7.5 \pm 3.0	0.6 \pm 3.3	0.55
GHQ-depression	0.6 \pm 1.0	1.0 \pm 2.3	-0.4 \pm 2.3	0.84
GHQ Likert	16.3 \pm 9.5	16.4 \pm 12.2	-0.1 \pm 9.2	0.96
PSSS-1 person	25.8 \pm 3.3	25.6 \pm 3.7	0.2 \pm 3.2	0.93
PSSS-friends	24.4 \pm 5.8	23.6 \pm 4.1	0.8 \pm 5.1	0.58
PSSS-family	25.7 \pm 3.8	24.8 \pm 4.3	0.8 \pm 3.5	0.70
PSSS-total	75.9 \pm 10.5	74.1 \pm 10.4	1.8 \pm 10.1	0.65
TAS-20	43.2 \pm 14.2	45.6 \pm 16.2	-2.4 \pm 10.4	0.53
PRI	9.2 \pm 1.9	9.5 \pm 1.8	-0.3 \pm 1.9	0.69

BDI: Depression scale [3]; STAI: Anxiety scale [28]; GHQ: General Health Questionnaire [11]; PSSS: Perceived Social Support Scale [4]; TAS: Alexithymia scale [29]; PRI: Social Desirability scale [24].

purpose of this study has been to assess the psychological evolution before and 1–6 months after transplantation.

Our high prevalence of preoperative psychopathologic states that can be diagnosed is consistent with other research [18]. One of the two patients (patient with antisocial personality disorder) for whom reservations were expressed about the suitability for transplantation developed medical complications because of noncompliance. For depression, anxiety, somatic complaints and general health, we found significant improvement before and after OHT in 15 patients who received psychological assistance and/or psychiatric aid. Surely these differences appeared as a positive impact of surgery, the effect of psychological intervention remaining difficult to appraise in the present study. The comparison between psychological scores in the first and sixth month after surgery showed that the levels of anxiety, depression and general health were similar. No discernible factors between the groups with or without a preoperative DSM Axis I and/or Axis II diagnosis affected psychological outcome in patients after OHT. These results suggest that the acute reaction due to the surgery influenced the psychological status of all transplant candidates. Therefore, both surgical and psychological intervention are probably linked to explain the significant decrease in anxiety and depression after cardiac transplantation, but this finding indicated that most improvement was observed during the first month.

In this group, we systematically conducted psychological interviews with the patient and spouse in order to strengthen therapeutic alliance. Such a familial approach could explain the good perception of social support in this group of OHT patients. Assessment of alexithymia and social desirability were similar before and after surgery.

These results suggest that TAS and PRI mainly measured stable characteristics of the patients' personality which were not significantly influenced by surgery.

Possible limitations of this study have to be considered. The lack of donor organs made the accumulation of prospective data difficult. Only one transplantation center with a psychotherapeutic and/or psychiatric approach participated in the study and, consequently, the sample size was relatively small. Furthermore, it was impossible to realize in parallel a similar control group of patients without any psychological assistance during the transplant process. These facts decreased the statistical validity of the findings.

Despite these limitations we were able to supplement earlier studies. Our results emphasize that systematic psychological assessment has a useful action towards psychological adjustment after transplantation. Through his/her intervention, the psychosomatician could give the patient the opportunity to receive appropriate psychotherapeutic aid, which can greatly help in patient management and emotional adjustment.

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