



A prospective cohort study on posttraumatic stress disorder in liver transplantation recipients before and after transplantation: Prevalence, symptom occurrence, and intrusive memories



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ABSTRACT

Objective: This study aimed at increasing the understanding of posttraumatic stress disorder (PTSD) in liver transplant patients by describing the course of PTSD, symptom occurrence, psychological co-morbidity, and the nature of re-experiencing symptoms.

Methods: A prospective cohort study was performed among 95 liver transplant recipients from before transplantation up until one year post-transplantation. Respondents filled out a questionnaire regarding psychological functioning (PTSD, anxiety, and depression) before, and at 3, 6, and 12 months post-transplantation. Both quantitative and qualitative methods were used to analyze the data.

Results: Before transplantation, respectively 10.5% and 6.3% of the respondents were identified as possible cases of full or partial PTSD. In all cases, co-morbid conditions of anxiety and/or depression were present. After transplantation, no new onset of full PTSD was found. New onset of possible partial PTSD was found in six respondents. Arousal symptoms were the most frequently reported symptoms, but may not be distinctive for PTSD in transplant patients because of the overlap with disease- and treatment-related symptoms. Re-experiencing symptoms before transplantation were mostly related to waiting for a donor organ and the upcoming surgery; after transplantation this was related to aspects of the hospital stay.

Conclusions: In our group of liver transplant patients, PTSD symptomatology was more present before transplantation than after transplantation. Being diagnosed with a life-threatening disease seemed to be the main stressor. However, when a diagnosis of PTSD is suspected, assessment by a clinician is warranted because of the overlap with mood and anxiety disorders, and disease- and treatment-related symptoms.

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1. Introduction

Since the introduction of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) [1] in 1994, being diagnosed with a life-threatening illness has been introduced as a potential stressor event for PTSD. Since then, PTSD has been described in a variety of somatic diseases and treatments, including organ transplantation [2–7]. A recent systematic review [8] showed that 0–46% of transplant recipients had clinically relevant symptom levels of PTSD, while clinician-ascertained PTSD was present in 1–16% of the cases.

Studies on transplant candidates are limited and mainly retrospective in nature, showing that clinically relevant symptom levels of PTSD were present in 7–25% [9,10], while 2–6% of transplant candidates satisfied the criteria for PTSD [11,12].

So far, the focus of the studies on PTSD after organ transplantation has mainly been on assessing prevalence rates, identifying risk factors, and the impact on outcomes after transplantation. Little attention has been paid to which aspects of the transplant process are traumatic in nature, to the occurrence of specific symptoms of PTSD, and to the overlap of PTSD symptoms with disease symptoms and other psychological disorders. Besides this, prospective studies examining the course of PTSD in the same patient group before and after transplantation are lacking. Examining these aspects may help to gain a better understanding of the concept of PTSD in the transplant population.

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PTSD is characterized by symptoms of re-experiencing, avoidance, and arousal [1]. Symptoms of re-experiencing, such as recurrent dreams, intrusive memories, or flashbacks related to the event, are seen as the core symptom of PTSD [13]. However, contrary to other stressful events that may lead to PTSD, such as rape or car accidents, being diagnosed with a life-threatening illness is not a single event but a process, comprising a number of stressors that may lead to a traumatic experience. In the liver transplant process these are, among others, being diagnosed with a potentially life-ending disease, for which a donor organ is needed to survive, but where it is uncertain if this donor organ will arrive in time. Each year approximately 15% of transplant candidates die while on the organ transplant waiting list [14]. When a donor organ becomes available, patients have to undergo major surgery, followed by a stay on the intensive care unit (ICU) often accompanied by a delirium. After a successful transplantation, patients have to adjust to a life with a life-long regimen of immunosuppressive drugs and life-style rules but they may as well have to deal with serious, potentially life-ending, complications, such as rejection of the graft, or the development of cardiovascular diseases or cancer [15,16]. Examining the nature of these symptoms in transplant patients may provide valuable insight into stressors associated with PTSD in this population.

The symptom clusters of avoidance and arousal are more general in nature, and show an overlap with mood and anxiety disorders [17]. Avoidance symptoms refer to the avoidance of distressing thoughts, feelings, or reminders of the event, but also detachment from others, and hopelessness about the future. Arousal symptoms are characterized by aggressive behavior, sleep disorders, and hyper-vigilance.

An important aspect to consider regarding these PTSD symptoms is that they should not be the result of another medical condition, medication, drugs, or alcohol [18]. In liver transplant patients, arousal symptoms like sleeping disorders and concentration problems may also be disease- or treatment-related. Sleeping disorders are common in both transplant candidates (35–73%) and transplant recipients (41–73%) mainly due to hepatic encephalopathy, the underlying liver disease or physical problems [19–23]. Concentration problems and irritability may also interfere with symptoms of encephalopathy before transplantation [24]. Therefore, examining the occurrence of PTSD symptoms, in transplant patients can add to the understanding of PTSD in the transplant population.

Because of the overlap of avoidance and arousal symptoms with mood and anxiety disorders, examining comorbidity between PTSD, anxiety, and depression, and the overlap of symptoms of anxiety and depression with the symptom clusters of PTSD may help to differentiate between these problems.

The aim of this study was to increase the understanding of PTSD in liver transplant candidates and recipients by describing the course of PTSD from before transplantation up until the first year after transplantation, symptom occurrence, the overlap of PTSD with anxiety and depression, and to examine the nature of re-experiencing symptoms in liver transplant patients.

2. Methods

A prospective cohort study on psychological aspects of liver transplantation was performed among transplant patients in all three liver transplant centers in the Netherlands. Transplant candidates who were placed on the waiting-list between October 2009 and April 2013 were asked to participate. Inclusion criteria were: ≥ 18 years, and receiving medical treatment in one of the three transplant centers. Exclusion criteria were: unable to fill out a questionnaire due to physical, mental, or cognitive functioning, or due to a language barrier.

Eligible transplant candidates ($n = 350$) received a letter explaining the purpose and procedure of the study, together with an informed consent form and a pre-addressed, stamped return envelope. After written informed consent, respondents received a baseline questionnaire (T0). Measurements of psychological functioning were repeated every six

months after inclusion in the study until transplantation. In this study, data from the last measurement-point before the transplant were used to describe PTSD symptoms before transplantation (T0). After transplantation respondents filled out a questionnaire at three (T1), six (T2), and twelve (T3) months after the transplant surgery. The institutional review board of the transplant center that initiated the study approved the study, and a positive recommendation of local feasibility was obtained from the other transplant centers (METc2009.190).

2.1. Research instruments

To measure symptoms of PTS, the Self-Rating Inventory for Posttraumatic Stress Disorder (SRIP) was used [25], a Dutch screening instrument that registers symptoms of PTSD. The 22 items, corresponding to the DSM-IV criteria for PTSD, are rated on a 4-point self-report scale (1 = not at all, to 4 = extremely). The SRIP has satisfying psychometric properties: validity (0.90), reliability (0.92), sensitivity (83%), and specificity (72%) [25]. In this study Cronbach's alphas of the SRIP were, respectively, 0.89 (T0), 0.88 (T1), 0.87 (T2), and 0.87 (T3).

The items of the SRIP are stated in general terms, by referring to a stressful experience that happened in the past. In order to be able to examine symptoms of PTSD related to the end-stage organ disease (T0) or to the transplantation (T1–T3), the items were adjusted by replacing “stressful event” with either “my disease” or “my transplantation.” Respondents who reported having re-experiencing symptoms, such as intrusive thoughts or recurrent dreams, were asked to briefly describe the nature of these re-experiencing symptoms.

In the SRIP, five of the PTSD symptoms mentioned in the DSM-IV are split into two separate items. For example, “having difficulty falling or staying asleep” is split into two items: “having difficulty falling asleep” and “having difficulty staying asleep.” To correspond to the DSM-IV criteria, SRIP items that belong to the same PTSD symptom were merged into one item.

A cut-off score of ≥ 39 was used to identify respondents with clinically relevant symptom levels of PTS [26]. To be able to identify possible cases of PTSD, all items were recoded into 0 (no symptom of PTSD, scores 1 or 2) and 1 (symptom of PTSD, scores 3 or 4). For each symptom cluster, the number of symptoms was calculated by adding up the recoded symptom scores. Based on DSM-IV-criteria, possible cases of full PTSD were defined as the presence of one symptom of re-experiencing, three avoidance symptoms, and two arousal symptoms [1]. Regarding possible cases of partial PTSD, different criteria have been used in the literature, either satisfying symptom clusters at two of the three symptom clusters [27], or having one symptom in each symptom cluster [28]. Because intrusive re-experiencing is recognized as the core symptom of PTSD, the latter definition of partial PTSD was used in this study.

To measure psychological co-morbidity, the symptoms of anxiety and depression were assessed using, respectively, the short form of the State-Trait Anxiety Inventory (STAI-6) [29] and the Center for Epidemiological Studies Depression Scale (CES-D) [30].

The STAI-6 consists of 6 items rated on a 4-point intensity scale (1 = not at all, to 4 = very much), resulting in a total sum score between 6 and 24. Higher scores indicate more symptoms of anxiety. Based on a transformation of the original 20 item scale cut-off of ≥ 40 for the general population [31], a cut-off score of ≥ 12 was used to identify clinically relevant cases. The convergent validity of the STAI-6 with the full form of the STAI showed a correlation of 0.95 [32]. Cronbach's alpha of the STAI-6 in the present study varied from 0.87 to 0.89 at the different measurement-points.

The CES-D consists of 20 items, scored on a 4-point self-report scale (0 = seldom or never, to 4 = most of the time-always). Higher scores indicate more symptoms of depression. A cut-off score of ≥ 16 was used to identify clinically relevant cases [33]. Cronbach's alpha of the CES-D in the present study varied from 0.91 to 0.92 at the different measurement-points.

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