

The patient’s mental health from the perspective of consultation-liaison psychiatry at the stage of qualification for mechanical circulatory support implantation

Izabela Jaworska^{1,2}, Robert Pudło³, Anna Mierzyńska^{4,5},
Agnieszka Kuczaj¹, Ewa Piotrowicz⁶, Agnieszka Biełka¹,
Piotr Przybyłowski¹

¹ Department of Cardiac, Vascular and Endovascular Surgery and Transplantology,
Medical University of Silesia in Katowice, Silesian Centre for Heart Diseases in Zabrze

² Department of Palliative Medicine, St. Camillus Hospital, Tarnowskie Gory

³ Department of Psychoprophylaxis, Chair of Psychiatry,
Medical University of Silesia in Katowice, Poland, Tarnowskie Gory

⁴ Department of Rehabilitation, Gruca Orthopaedic and Trauma Teaching Hospital,
Centre of Postgraduate Medical Education, Otwock

⁵ Department of Cardiac Surgery, Military Institute of Medicine, Warsaw

⁶ Telecardiology Center, Cardinal Wyszyński National Institute of Cardiology, Warsaw

Summary

During qualification for mechanical circulatory support, the comprehensive assessment of a patient’s mental state is an integral element of the overall medical evaluation. It encompasses a range of psychosocial issues, and as such provides information helpful in the selection of a suitable candidate for the required treatment, and sometimes identifies contraindications to it. It allows ensuring that the patient meets expectations regarding both mental health stability and adherence to medical recommendations. It is also helpful in an early detection and diagnosis of mental problems before the surgery, which can increase the possibility of implementation of appropriate treatment and intervention. Due to the lack of generally accepted guidelines, this assessment can be subjective to some extent, especially if it takes place outside experienced transplant centres. This article presents the core principles of mental status evaluation and management of candidates for heart transplantation or mechanical circulatory support, and psychosocial factors increasing the risk of poor prognosis in this group. The article aims to share with psychiatrists and psychologists the clinical experience and comprehensive knowledge about psychosocial eligibility criteria for mechanical circulatory support or heart transplantation.

Key words: consultation-liaison psychiatry, left ventricle assist device, mental health

Introduction

The treatment of heart failure usually begins with the implementation of suitable pharmacotherapy and the recommendation of more health-promoting lifestyle changes. Over time, however, long-term mechanical circulatory support (MCS) is considered in some patients with advanced heart failure, when options for optimising pharmacological treatment have been spent [1]. In Poland, MCS is used as a bridge to heart transplantation (HTx), or to regenerate this organ if the causes of heart failure may be reversible (e.g. post-inflammatory, toxic). There are also countries where MCS is used as destination therapy. A holistic view of candidates for these forms of treatment is standard procedure. This is supported by the guidelines of both European and American cardiac and transplant scientific societies, which recommend a comprehensive approach to this group of patients [2–4].

A left ventricular assist device (LVAD) is a pump implanted in the patient's heart that helps the left ventricle pump blood to the aorta. It is placed in the chest and is connected via a cable (driveline) through the abdominal skin to a controller, which is powered by a rechargeable battery, charged from an electrical outlet [1]. The controller directs the pump and transmits messages to assist in the operation of this device. The use of LVAD reduces circulatory failure and improves the quality of life. It can also be a source of an intense emotional strain on both the patient and his/her family due to the necessity to comply with a demanding treatment regimen, the risk of complications and finding oneself in a new health situation. For this reason, and because of the long-term nature of this treatment, candidates for LVAD should undergo a comprehensive assessment of their mental state and psychosocial situation, especially if risk factors for noncompliance are identified both in the in-hospital period and after discharge from the hospital [4]. As a standard, they are initially diagnosed by a psychologist, most often employed in a transplant centre, who requests a psychiatric consultation when it is appropriate, e.g. in the event of behavioural disorders.

The diagnosis is made based on standardised assessment tools, clinical interviews and observation of the patient, and in some cases may be a reason for postponing or even disqualifying from the surgery. This assessment not only allows making the diagnosis of existing psychiatric disorders, the implementation of appropriate forms of pharmacological and non-pharmacological assistance, but also, through the rational selection of candidates, maximises the benefit to the patient and ensures public confidence in the organ allocation process [5]. It usually takes place in a transplant centre, but there are times, especially during the SARS-COV-2 pandemic, that it must be performed in an outpatient clinic or cardiology department in the patient's place of residence. This article aims to share with psychiatrists and psychologists who are working in Poland in non-transplant centres the many years of clinical experience, and comprehensive knowledge regarding the universal recommendations being developed worldwide regarding psychosocial eligibility criteria for LVAD and/or HTx. The article is a part of

RHROT Project (STRATEGMED2/266798/15/NCBR/2015). The principles regarding the pharmacological and non-pharmacological treatment of psychiatric disorders in LVAD patients will be described in a separate article. The need to be fully transparent about the principles of patient qualification for LVAD and/or HTx requires reliable adherence to the assessment of the patient's mental state, as well as the ability of the patient and their significant others to cooperate, especially as the scarcity of human organs available for transplantation renders into difficult allocation decisions for the transplant team [6].

Psychological state of people qualified for LVAD

Patients with severe heart failure in whom options for optimising pharmacological treatment have been exhausted can be qualified for LVAD. They experience frequent cardiac decompensation requiring hospitalisation and usually have very limited ability to perform usual daily activities. Their situation is additionally complicated by the deterioration of their financial condition, e.g. due to the increasing costs of treatment or the necessity to quit their professional activity. It results in experiencing various types of losses consequential from the somatic disease, which may also include limitations in fulfilling social roles. Patients give their consent to treatment due to a desire to prolong their life and improve their overall quality of life. Nevertheless, the achievement of these goals is usually associated with the necessity to confront the loss of a sense of security or the fear of death. Those feelings are induced by the prospect of undergoing cardiac surgery, often experienced as complex and deeply interfering with the body.

The need for mechanical circulatory support, like heart transplantation, evokes both positive and negative emotions. It brings a sense of relief, associated with the prospect of further treatment, i.e. hope for further life, but may also lead to adaptive reactions, mood swings, anxiety attacks, sleep disorders, feelings of guilt for not taking sufficient care of oneself before the disease or dysphoria leading to conflicts with the environment and deterioration of interpersonal contacts [7–9]. Patients also lose the illusion that illness or death affects only others, and the feeling of disbelief is mixed with grief, anger, hurt or rebellion [10]. The way of responding to cardiac surgery depends on many factors. These include coping with stress, adjusting to unfamiliar situations, personality traits, or temperament, but may also depend on the level of trust in the medical team or the family's opinion. While experiencing chronic stress, the patient's adaptation mechanisms are weakened, with the risk of developing mental disorders.

Mental status assessment – general aspects

A candidate for MCS should undergo a full psychological assessment to identify factors that may constitute a contraindication to this treatment method, the resources

that influence their ability to adapt to the new health situation and the planned long-term treatment, and their intrapersonal readiness for treatment. It is stated that this assessment should be performed based on factors similar to those used for potential heart recipients, and the inclusion of psychosocial assessment in the eligibility criteria stems from the knowledge that certain psychiatric disorders translate into increased morbidity and mortality after surgery [6]. Based on this evaluation, treatment is planned for diagnosed psychiatric and behavioural problems, and psychosocial risk factors for poor prognosis are identified. Studies in the 1990s showed that compared to kidney or liver transplantation programmes, cardiac programmes have the most stringent psychosocial evaluation criteria for placing candidates on the active waiting list [11,12]. Admittedly, judging the rationale for disqualifying a patient is emotionally challenging for the transplant team, but profound psychiatric disorders, inadequate psychological or social resources, and a patient's disinterest or simple lack of prudence can cause death in the postoperative period, so uncooperative candidates must be excluded [13, 14].

Cooperation, in this context, is understood as the extent to which the patient's behaviour – taking medication, adhering to a diet, making lifestyle changes, implementing exercise, or regularity of outpatient visits – is consistent with the recommendations agreed with the doctor. In contrast, a lack of optimal cooperation is a failure to adhere to a list of medically necessary regimens and interventions, with the risk of non-adherence to one area of the medical regimen not necessarily correlating with all of them [15–17]. Prior nonadherence, depending on its severity, is considered a relative or absolute contraindication to LVAD because it may recur in the postoperative period, increasing the risk of complications and death [15]. Among the factors that may be conducive to poor cooperation, like noncompliance in the past, there are existing mood or anxiety disorders, post-traumatic stress disorders, memory impairment, psychoactive substances addiction, or personality disorders. Other risk factors are related to, for example, the tendency to avoid discomfort, insufficient knowledge about the course of the disease or irrational views on health, low level of social support, and a sense of independence or dissatisfaction with the current care [18].

The assessment of the mental state of a candidate for MCS should be carried out by highly qualified specialists in clinical psychology, and, if necessary, psychiatry, with experience in working with this group of patients and with knowledge of somatopsychic and psychosomatic relationships. This is important as some psychiatric disorders may be masked by symptoms of heart failure, requiring an in-depth differential diagnosis. Furthermore, these professionals should be well acquainted with the transplantation or mechanical circulatory support programme, their principles and requirements for the patient. They should also have the opportunity to continuously improve their professional skills, within the framework and according to the local requirements of

the respective programs [19]. Their training is critical as no national guidelines have been issued on how psychosocial assessment should influence a cardiac surgeon/transplantologist's decision to qualify a patient for MCS or HTx. As in other countries, individual transplant centres, although sticking to general principles, usually develop their own assessment criteria based on their experience, leading to differences between institutions in this matter [6].

The major task of the consulting psychiatrist and psychologist is to inform the transplant team of doubts about the prognostic significance of the identified disorder and to initiate its treatment [14, 19]. When complex mental health problems are revealed, it is advisable to divide the examination into more than one meeting. It is valuable to wait, for example, until the prescribed pharmacotherapy has given an effect, or until the end of the trial period, as in the case with individuals addicted to psychoactive substances. In their case, the recommended observation time of the quality of cooperation and documented abstinence, as in other areas of transplantology, should arbitrarily take 6 months [15, 20].

Mental health assessment – specific aspects

Soon after Christiaan Barnard performed the world's first successful adult heart transplantation on December 3, 1967, psychiatrists began to report on the presence of mental health factors disqualifying patients from this treatment method [13]. Those discussions are present in our times as well since, with the development of psychiatry and psychotherapy, a larger group of patients can be effectively treated for their mental disorders, which allows giving them hope of being qualified for the LVAD/HTx procedure [14]. In addition to psychological or social factors, the psychological state of LVAD/HTx candidates is influenced by the rate of heart failure progression, age of onset of heart failure and the intensity and frequency of symptoms. Cognitive impairment associated with worsening organ perfusion, and electrolyte or metabolic fluctuations is also a pathoplastic factor. The criteria for assessing the mental state of a patient qualified for LVAD/HTx are much stricter than in the case of other cardiac surgeries, which results from the long-term nature of this treatment and the necessity to determine broadly understood factors that may contribute to the occurrence of noncompliance and, consequently, premature death of the patient. In general, it can be said that during the examination below-mentioned areas are assessed:

- factors that constitute a contraindication to LVAD/HTx;
- presence of psychiatric disorders requiring pharmacological and/or non-pharmacological treatment;
- ego defence mechanisms; patient's resources affecting favourably or unfavourably the ability to adjust to a new situation and the planned long-term treatment; coping strategies in difficult situations.

Referring more specifically to the above-mentioned areas, according to various sources, the consultation should include:

1. A clinical interview regarding the assessment of mental status, including:
 - mood, level of anxiety and other disorders, including insomnia, with regard to their severity, treatment history and adherence to pharmacological treatment or motivation to seek treatment if the current severity of the clinical symptoms suggests that treatment is justified;
 - past or present history of suicidal thoughts or self-harm incidents as an indicator of a will to live or weakness/lack of resources to overcome emotional crises;
 - personality traits that may adversely affect the quality of cooperation with the treatment team, including, in particular, antisocial personality traits; as well as a tendency to impulsive behaviour, a high level of neuroticism;
 - a family history of mental disorders, especially psychotic and other disorders associated with thought disorders and significant behavioural disorders.
2. History of psychoactive substance use, including:
 - alcohol, drugs or tobacco, with an assessment of the frequency and duration of use, the losses incurred (occupational, health, psychosocial) because of it, and the length of abstinence that can be maintained;
 - previous or present addiction therapy (including motivation to seek it);
 - history of substance use/abuse in the immediate family.
3. Assessment of factors related to patients' knowledge, understanding and capacity to make informed decisions, including:
 - deficits in cognitive and intellectual functions that may impair the ability to understand the provided information and thus the ability to make decisions regarding the proposed treatment for the underlying disease, or subsequent adherence;
 - knowledge and understanding of the current underlying disease, including the causes and course of the disease (including the patient's attitude towards compliance) and its impact on daily functioning, and understanding the reasons for qualifying for an LVAD;
 - knowledge and understanding of current treatment options for the underlying disease, including the risks and benefits associated with the considered cardiac surgical intervention and the resulting consequences – e.g. implementation of new pharmacological treatment regimens, the need for lifestyle changes;
 - in patients qualified for LVAD, also the ability to understand and learn to self-operate the assistive device, e.g. by changing batteries or interpreting messages displayed on the device.
4. Interview regarding individual patient's resources such as:
 - strategies of coping with the disease;

- level of social support;
- co-existing life stressors;
- family, occupational and social situation [16, 19, 21, 22].

An important aspect is also the assessment of the patient's degree of truthfulness, expressed through the willingness to disclose negative information about themselves, including information that could influence the decision-making process of the qualifying team. The tendency to conceal important negative aspects of functioning, or to give them only after being confronted with the facts, may be a risk factor for noncompliance and thus increase the risk of postoperative complications.

In addition to the clinical interview, standardised tools for assessing anxiety, depression and cognitive impairment can be used in the diagnosis. The Stanford Integrated Psychosocial Assessment for Transplantation (SIPAT) or the Psychosocial Assessment of Candidates for Transplantation (PACT) can also be helpful in identifying, and therefore counteract, the psychosocial risk factors [23, 24]; however, these tools are not available in the Polish language version. When selecting the set of research tools, the general health status of the patient should be considered – in the case of patients with severe heart failure, conducting an extensive questionnaire assessment may be burdensome for the patient or even impossible.

In practice, instead of creating detailed and extensive lists of contraindications to MCS or HTx, it is much better to formulate criteria to help the consulting clinical psychologist or psychiatrist in making a recommendation. All mental disorders present in the patient should be considered in the context of the ability to give informed consent and to cooperate with the treatment team long term. In this sense, absolute contraindications include:

- active psychosis;
- moderate or severe dementia;
- moderate or severe intellectual disability;
- addiction to psychoactive substances with the inability to maintain at least 6 months of abstinence;
- antisocial personality, of an intensity that precludes effective cooperation.

All the above precludes effective cooperation, and the first three also impede giving informed consent for the operation in accordance with the laws in Poland, including the Act on professions of doctor and dentist. The finding of active psychosis requires the inclusion of psychiatric treatment and reassessment after its resolution. In the case of patients with a history of psychotic disorders, at the stage of qualification for LVAD, far-reaching caution should be exercised, and final decisions made after completing a detailed history, preferably after more than a single examination. The existing literature mainly concerns patients undergoing heart transplantation and the results

give an ambiguous picture of their fate. On the one hand, a case has been described in which, with appropriate psychiatric and social support, even in active schizophrenia, the patient is able to comply with follow-up appointments and immunosuppression recommendations, and there are papers claiming that it is unfair to disqualify a priori people with a history of psychosis. On the other hand, it has been shown that suicide attempts were more frequent in those with psychotic symptoms in the year preceding HTx, as were graft rejection episodes [6, 25, 26]. Therefore, schizophrenia should be treated as a relative contraindication.

Mild intellectual disability is not an absolute contraindication to eligibility for LVAD/HTx. A small amount of literature in this area indicates that those patients can achieve comparable results to other patients after transplantation if they have the effective social support necessary to comply with medical recommendations [19, 27]. For this reason, an interview regarding their environmental resources and daily functioning is very significant. It is emphasised that these individuals can write, read and relate to others, and are therefore also able to establish a good relationship with medical staff and understand how to operate the LVAD. There is a case of a patient with Danon's syndrome who had an intelligence quotient of 64 and who scored maximum in a control test on LVADs, [28] or a man who with an intelligence quotient of 68 has been living more than 16 years after heart transplantation [29].

With regard to personality disorders, the guidelines highlight that they may increase the risk of forming suboptimal interpersonal relationships and thus negatively affect the acquisition of a stable social support network. Personality disorders may also promote maladaptive behavioural patterns and non-adherence to treatment, which increases the risk of mortality in these patients [19]. Of course, patients with antisocial personality disorder easily declare any kind of cooperation, but usually, none of it occurs in their behaviour [14].

Conclusions

This article presents basic information on psychosocial criteria for assessing the mental state of patients qualified for mechanical circulatory support. As this description shows, creating a precise and complete list of relative contraindications is difficult, if not impossible. Admittedly, in the literature one sometimes encounters, quite elaborate, lists of "psychosocial contraindications" which include, in addition to various mental disorders, for example, poor financial situation or lack of social support. The present paper's authors believe that no such list will be complete, and each attempt to do so may inappropriately exclude a patient who could benefit from a life-saving procedure. Therefore, it makes much more sense to recall that a prerequisite for successful LVAD is an understanding of the principles of the implanted device functions and mastery of its operation, as well as the ability to undertake long-term, consistent cooperation with the team. Such an attitude forces one to bring an analysis

of the candidate's mental state in the context of his/her personal and family situation and gives more information to the transplant team, which has to decide on his/her eligibility or disqualification.

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Address: Izabela Jaworska

1. Department of Cardiac, Vascular and Endovascular Surgery and Transplantology,
Medical University of Silesia in Katowice, Silesian Centre for Heart Diseases in Zabrze
M. Curie-Skłodowskiej Street 9, 41-800 Zabrze

2. Department of Palliative Medicine, St. Camillus Hospital, Tarnowskie Gory
42-606 Tarnowskie Góry, Bytomska Street 22

e-mail: I.Jaworska@scs.pl