Research Article

Psychological Adaptation of Patients with Ischemic Heart Disease at the Stages of Rehabilitation after Reperfusion Interventions

Roksolana Nesterak

Abstract
Psychological adaptation is a necessary component of rehabilitation of patients with ischemic heart disease. Post-infarction period is a special adaptation period for the patient, which requires a holistic approach taking into account both medical, physical and psychological components. High levels of anxiety in patients, both before surgical interventions, and in the postoperative period, worsen the prognosis that requires to improve the methods of rehabilitation.

The objective of the research was to study the peculiarities of psychological adaptation in patients with ischemic heart disease, depending on reperfusion approaches and applied methods of rehabilitation.

Materials and methods. There were examined 450 patients with ischemic heart disease using different methods of reperfusion interventions. Depending on the methods of rehabilitation, the patients were divided into three subgroups. The determination of levels of reactive and personal anxiety was performed at the beginning of treatment, 1 week, 1 month and 6 months after treatment.

Results. There were revealed high levels of reactive and personal anxiety in patients with ischemic heart disease, which differed depending on the applied reperfusion interventions. The use of psychological methods at the stage of rehabilitation contributed to a decrease in anxiety levels a week after using suggestive therapy methods, and the effect of learning was noted a month and 6 months after the observation.

Conclusions. One of the constituents of a cardiological patient is his psychological status, namely the level of anxiety. For the effective adaptation, it is important to use the suggestive methods of therapy and training of patients. In patients, who are scheduled for surgical operation due to ischemic heart disease, a pre-rehabilitation with an individual approach is necessary.

Keywords
ischemic heart disease; rehabilitation; adaptation; psychology; anxiety

Ivano-Frankivsk National Medical University, Ivano-Frankivsk, Ukraine
*Corresponding author: roxolana.nesterak@gmail.com

Problem statement and analysis of the latest research
Despite the improvement of the methods of diagnosis and treatment of ischemic heart disease (IHD), disability and mortality rates among such patients remain high.

One of the forms of IHD is acute coronary syndrome (ACS). Post-infarction period is a special adaptation period for a patient with IHD, which requires a holistic approach taking into account both medical, physical and psychological components.

In the CROS study, the effectiveness of cardiological rehabilitation in reduction of mortality in patients with ACS and after coronary artery bypass grafting (CABG) was established; in a ”new era”, it is important to carry out rehabilitation and find
ways to improve it in patients with various manifestations of IHD [1].

The traditional risk factors cannot explain all cases of myocardial infarction (MI) in the population, therefore the actual consideration is psychological characteristics of the patient, namely, anxiety [2].

The prevalence of psychosomatic disorders in patients with IHD varies widely from 13.5% to 76.4%, with the most frequent diagnosis of anxiety disorders and depression [3].

Anxiety after ACS has a negative impact on the clinical course of the disease and rehabilitation measures. The decrease in the level of anxiety was found to depend on the patients’ degree of awareness of the physiological, psychological, social and financial aspects of the MI, subsequent rehabilitation and the necessity to adhere to a particular lifestyle. A high level of personal anxiety could be considered as an independent risk factor of IHD [4].

Rehabilitation of patients with chronic forms of stable ischemic heart disease (SIHD), namely patients who are scheduled for surgical operation – CABG requires attention as well. In such patients, the level of anxiety was usually higher and preoperative anxiety was associated with higher overall mortality (risk=1.88, 95% CI 1.12-3.17) regardless of age, renal disease, concomitant heart valve interventions being an unfavorable factor in the occurrence of IHD after CABG [5, 6].

Anxiety, stress, hostility, type A personality, low level of social support and awareness of the disease could be considered as additional risk factors of the patient’s adaptation deterioration [7].

Psychological adaptation is a necessary component of rehabilitation of patients with IHD. A more complete self-perception and the comprehension of the outside world, gaining the ability to consciously choose a model of behavior helps the patient get rid of neurotic and other symptoms of the disease. After psychocorrection or psychotherapy in patients, the level of anxiety, aggressiveness, emotional discomfort decreased, while the activity and mood increased, general physical and mental state improved, the tendency towards hypochondria, depression decreased, and a harmonic attitude toward the disease developed [8].

At the in-patient stage of rehabilitation, the planned work aimed at ensuring that the patient who possesses all the information on the underlying disease, the essence of rehabilitation, consciously became an active participant in all rehabilitation measures must be started [9].

Therefore, it is important to search for methods of rehabilitation, which will contribute to the maximum restoration of health, work capacity and psychological adaptation of patients with IHD.

The objective of the research was to study the peculiarities of psychological adaptation in patients with IHD, depending on reperfusion approaches and applied methods of rehabilitation.

### 1. Materials and Methods

There were examined 450 patients with IHD. Among 117 patients with SIHD, 60 individuals underwent CABG and 57 patients had planned stenting of coronary arteries.

Patients with ACS were divided into groups according to the form of IHD and the applied method of treatment, revascularization.

Patients with ACS with elevation of the ST segment were divided into groups depending on the applied method of treatment and restoration of coronary blood flow: 63 patients treated with the use of conservative treatment, 57 patients treated with thrombolytic therapy and stenting and 78 patients treated with the use of invasive treatment tactics.

Among patients with ACS without the stable ST segment elevation, there were 60 patients treated with conservative treatment and 75 patients receiving invasive treatment tactic, respectively.

All groups of patients were divided into three groups, depending on the applied methods of restorative treatment and rehabilitation.

Group I included patients treated with the use of traditional rehabilitation measures, namely, medical rehabilitation, physical rehabilitation, including respiratory and curative gymnastics, controlled walking, physiotherapy. Group II consisted of patients, who were treated with the traditional rehabilitation measures, using psychological component, namely
suggestive methods of therapy. Group III comprised patients who were treated with the traditional rehabilitation measures using the "Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health" (author’s certificate for a scientific work "Program of psychological rehabilitation of cardiologic patients by optimizing the internal picture of health" No 75681 of 29.12.2017) [10].

All the patients completed questionnaires, namely the Spielberger-Hanin Situational and Personal Anxiety Scale, the Seattle Angina Questionnaire before treatment, 1 week, 1 month, and 6 months after treatment.

Statistical processing was performed using the software Microsoft Excel and Statistica v. 10.0 StatSoft, USA. The estimation of the probability of differences in the mean values was carried out using the paired Student t-test. The mean values were given in the form of \( M \pm m \), where \( M \) was the average value of the indicator, \( m \) was the standard error of the mean. The results were considered statistically significant at a value of \( p < 0.05 \).

2. Results and Discussion

When analyzing reactive anxiety at the start of treatment in patients with ACS without elevation of the ST segment who underwent conservative treatment, its high levels were observed in all the groups (46.8±1.20) points in the group of traditional treatment, (47.2±1.19) points in the group of suggestive therapy, and (46.9±1.21) points in the group of patients who were trained according to the "Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health".

A week after the start of treatment, there was a decrease in the level of reactive anxiety in the group of suggestive therapy; in other groups, there were no changes (\( p > 0.05 \)). A month after the start of treatment, there was a decrease in the level of reactive anxiety in patients receiving suggestive therapy and the "Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health" to (40.5±1.15) and (38.0±1.19) points, respectively. Six months after the start of treatment, a decrease in the level of reactive anxiety was noted only in the group where the "Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health" was used - (35.1±1.18) points (\( p < 0.01 \)), which may indicate a change in the patient’s attitude to the illness and his/her being in the comfort zone (Table 1).

When analyzing personal anxiety as a more stable individual characteristic at the start of treatment, its high levels were observed in all the groups - (47.4±1.19), (48.5±1.20) and (46.9±1.19) points, respectively. As a result of using rehabilitation methods, in the group of suggestive therapy, the reduction in the level of personal anxiety was observed 1 week after the start of treatment (\( p < 0.05 \)), and when the "Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health" was used, the reduction in the level of personal anxiety was observed 1 months, and especially 6 months after the start of treatment (\( p < 0.01 \)). In the group of patients treated with traditional methods of rehabilitation, there was no significant decrease in the level of personal anxiety during in-patient treatment (\( p > 0.05 \)), and after 6 months of treatment, the rate was (45.2±1.16) points (Table 1).

In the group of patients with ACS without elevation of the ST segment, who received invasive treatment, high levels of both reactive and personal anxiety were observed at the start of treatment (Table 2). As a result of treatment, the reduction in anxiety was observed in all the groups; however, in a week, more pronounced changes were observed in the group of patients treated with suggestive therapy (\( p < 0.05 \)).

A month after the start of treatment, there was a decrease in the levels of reactive anxiety in the group of suggestive therapy ((37.7±1.18) points) and the group of patients who were trained according to the "Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health" ((36.8±1.16) point); personal anxiety in these groups was (36.8±1.16) and (38.7±1.17) points, respectively. Six months
Table 1. Indices of the Spielberg-Hanin questionnaire in patients with ACS without elevation of the ST segment who underwent conservative treatment

<table>
<thead>
<tr>
<th>Index</th>
<th>Traditional treatment (n=20)</th>
<th>Traditional treatment and methods of suggestive therapy (n=20)</th>
<th>Traditional treatment and the “Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health” (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At the start of treatment</td>
<td>In 1 week</td>
<td>In 1 month</td>
</tr>
<tr>
<td>Reactive anxiety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>46.8 ± 1.20</td>
<td>45.7 ± 1.19</td>
<td>43.4 ± 1.17</td>
</tr>
<tr>
<td></td>
<td>47.2 ± 1.19</td>
<td>43.0 ± 1.16</td>
<td>40.5 ± 1.15**</td>
</tr>
<tr>
<td></td>
<td>46.9 ± 1.21</td>
<td>45.2 ± 1.20</td>
<td>41.2 ± 1.19**</td>
</tr>
<tr>
<td>Personal anxiety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>47.4 ± 1.19</td>
<td>46.5 ± 1.18</td>
<td>44.8 ± 1.17</td>
</tr>
<tr>
<td></td>
<td>48.5 ± 1.20</td>
<td>46.2 ± 1.21</td>
<td>43.8 ± 1.19**</td>
</tr>
<tr>
<td></td>
<td>46.9 ± 1.19</td>
<td>44.1 ± 1.20</td>
<td>41.2 ± 1.19**</td>
</tr>
<tr>
<td>Notes</td>
<td>Statistical significance of differences in indices as compared to values at the start of treatment:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* - &lt;0.05; ** - &lt;0.01.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After the start of treatment, in the group of patients who were trained according to the "Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health", there were observed lower levels of reactive ((33.4 ± 1.17 points) and personal ((35.5 ± 1.21 points) anxiety (p<0.01).

Reactive anxiety correlates with the subjective perception of the results of treatment and depends on treatment outcomes. Therefore, in the group of patients receiving invasive treatment, there were noted lower levels of anxiety than in the group of patients receiving conservative treatment. Vital threat, the decision on invasive intervention considerably increased reactive anxiety. At the same time, qualitative changes in the patient’s condition, such as changes in the nature of pain syndrome, the emergence of hope led to a rapid decrease in reactive anxiety and this was promoted by the methods of suggestive therapy through the understanding and feeling of one’s body and changes occurring here and now.

Personal anxiety is a general characteristic of patients with acute forms of IHD. On the one hand, personal anxiety is one of the causes of IHD, and on the other hand, the disease itself does not allow personal anxiety to decline. Patients are at risk of the occurrence of the underlying disease and its complications, which contributes to the increase in the levels of anxiety.

Understanding the causes of the disease, the peculiarities of its clinical course and the prospects for rehabilitation is a necessary intervention that can be implemented through the use of the "Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health". The effectiveness of rehabilitation programs depends on the extent of damage to the heart.
The indicators of reactive anxiety levels in patients with ACS with the ST segment elevation, who received conservative treatment, were high at the start of treatment in all the groups regardless of the rehabilitation method. In a month, there was observed a decrease in the levels of reactive anxiety; these data were significant in the group where, in addition to traditional methods of rehabilitation, suggestive therapy and training \((p < 0.05)\) were applied. Thus, at the start of treatment, in the group of patients treated with traditional rehabilitation, the level of reactive anxiety was \(47.9 \pm 1.19\) points; in the group of patients treated with suggestive therapy, it was \(47.4 \pm 1.20\) points; in the group where the “Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health” was used, it was \(46.9 \pm 1.21\) points. In 6 months, the levels of reactive anxiety were \(44.8 \pm 1.16\), \(39.5 \pm 1.17\) and \(36.0 \pm 1.15\) points, respectively \((p<0.01)\).

The dynamics of personal anxiety levels was less significant \((p>0.05)\). In 6 months, in the group of patients treated with traditional rehabilitation, personal anxiety was \(45.5 \pm 1.17\) points; in the group of patients treated with suggestive therapy, it was \(45.0 \pm 1.19\) points \((p<0.05)\), and in the group where the “Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health” was used, it was \(40.6 \pm 1.18\) points \((p<0.01)\).

During the analysis of anxiety indices based on the method of treatment, namely, thrombolytic therapy or invasive tactics, it was noted that the dynamics of the indicators was similar with the decrease in the levels of reactive anxiety and more moderate decrease in the levels of personal anxiety.

Positive dynamics of reactive anxiety indices...
depended on changes occurring in the process of treatment and rehabilitation, especially in patients receiving invasive treatment, which may be associated with a decrease in angina syndrome symptoms and shortness of breath, normalization of blood pressure and heart rate.

The dynamics of indicators while applying suggestive treatment was characterized by certain peculiarities; the dynamics of changes over time was noted. Thus, the diagnostics and treatment within the first week of rehabilitation showed that there were positive changes in reactive anxiety, that were caused by direct attention to the patient, the inclusion of psychological defense mechanisms, body management training. Changes at the end of the first month of treatment were marked by the ability to relax and feel one’s body; these changes were more pronounced when the patient was in the hospital using these techniques. The lack of dynamics in 6 months was associated with the impossibility of applying these methods in customary conditions.

When training a patient according to the “Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health” with the impact on various components of the internal picture of health, within the first month, the patient receives knowledge on the disease, all the information regarding the strategy of rehabilitation measures and changes occurring in the process of treatment, and in 6 months, he implements his knowledge in his daily life.

The highest levels of reactive anxiety were observed in the group of patients who underwent aortic CABG. At the start of treatment, they were high in all the groups: (50.8±1.27) points in the group of patients treated with traditional rehabilitation, (49.6±1.26) points in the group of patients treated with suggestive therapy, (50.5±1.26) points in the group where the “Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health” was used. In the group of patients treated with traditional treatment, there were no significant changes 1 month and 6 months after the start of treatment (p>0.05). More significant dynamics was observed in the groups of patients who, in addition to traditional treatment, were treated with suggestive therapy and training. In the group of patients treated with suggestive therapy, they were (41.4±1.21) points 1 month after the start of treatment and (40.5±1.20) points 6 months after the start of treatment (p<0.05); in the group of patients who were trained, they were (39.9±1.21) and (37.2±1.20) points, respectively (p<0.01).

Personal anxiety in patients with SIHD was higher than in groups with destabilization of IHD and tended to decrease in the process of treatment and rehabilitation; it can be evaluated as an individual characteristic of patients with IHD.

Lower levels of reactive anxiety were observed in patients with SIHD, who underwent planned stenting of coronary arteries; however, in this group, higher levels of personal anxiety were found. In the group of patients treated with traditional rehabilitation, reactive anxiety was (44.9±1.19) points; in 1 month, it was (40.0±1.18) points; in 6 months, it was (39.4±1.16) points (p<0.05). In the group of patients treated with traditional treatment and application of suggestive therapy, it was (45.0±1.18) points; in 1 month, it was (37.3±1.16) points; in 6 months, it was (36.0±1.15) points (p<0.05). In patients who were trained, reactive anxiety was (45.7±1.20) points; in 1 month, it was (34.5±1.18) points (p<0.05); in 6 months, it was (31.2±1.17) points (p<0.01). The levels of personal anxiety were high and decreased in the process of rehabilitation being significant in the group where the “Program of clinical and psychological rehabilitation of cardiologic patients by optimizing the internal picture of health” was used (p<0.01).

3. Conclusions

One of the constituents of a cardiologic patient is his psychological status, namely the level of anxiety, which differs depending on the form of the IHD and the applied method of reperfusion surgery.

In patients with IHD, there were revealed high levels of personal anxiety being the highest in patients who underwent CABG. Reactive anxiety, which varies according to the stressful situation, increased at the start of treatment and decreased during the
The use of suggestive therapy methods helped reduce anxiety after one week of treatment. In a month and especially 6 months, the effect of "training" manifested itself allowing the patient to apply the acquired skills in his daily life.

In patients who are scheduled to surgery, CABG or stenting of coronary arteries, a waiting effect is observed, which leads to an increase in reactive anxiety on the background of high personal anxiety. Therefore, the pre-rehabilitation with the use of psychological methods of the influence before intervention with an individual approach and under the control of objective indicators of the patient’s condition is effective.

4. Prospects of Further Researches

A comprehensive assessment of the results of physical and psychological recovery of patients with IHD, depending on the efficiency of the reperfusion procedures is promising.

References


Received: 2018-12-14