Research Article

Quality of Life of Patients with Stable Coronary Artery Disease Combined with Non-Alcoholic Fatty Liver Disease

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Abstract

Quality of life assessment is an integral part of a comprehensive treatment in modern medical practice. Analysis of quality of life of patients with comorbidities is an interesting and poorly understood issue.

The objective of the research was to evaluate the quality of life of patients with postinfarction cardiosclerosis depending on the presence and progression of non-alcoholic fatty liver disease (NAFLD).

Material and methods. The research included 300 patients with stable coronary artery disease (CAD). They included 160 patients without NAFLD (Group I) and 140 patients with NAFLD (Group II). 89 patients of Group II suffered from non-alcoholic liver disease (NALD) and 51 patients from non-alcoholic steatohepatitis (NASH). The control group consisted of 20 apparently healthy individuals. SF-36 and MacNew questionnaires were used to assess the quality of life.

Results. The overall estimate according to SF-36 questionnaire detected a significant decrease in the patient's quality of life due to their low physical activity, mental ill-being, limitation of daily activities, significant effect of pain and low assessment of their health. Decrease in the quality of life was clearly dependent on NAFLD stage and was the lowest in case of NASH. The overall estimate of quality of life according to MacNew questionnaire was 1.5 times lower in patients of Group I compared to the control group, decreased almost by 1.4 times in patients with NALD compared to Group I and was 1.5 times lower in case of NASH compared to the patients with NALD ($p < 0.05$).

Conclusions. Patients with stable CAD combined with NAFLD were characterized by decrease in quality of life due to its physical, psycho-emotional and social components. Quality of life of patients with postinfarction cardiosclerosis depended on NAFLD progression and was the lowest in case of NASH.

Keywords

words

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Problem statement and analysis of the recent research

The assessment of quality of life is an integral part of a comprehensive approach to the treatment of patients in modern medical practice being indicated by its presence as part of the multicenter randomized studies in various fields of medicine [1]. For this purpose, a number of general and specific questionnaires for patients designed to assess the course of a particular disease is used nowadays [7].

Such questionnaires as Minessota Heart Failure Questionnaire, Seattle Angina Questionnaire, MIDAS, Aquarel, Chronic Heart Failure Questionnaire, Severe Heart Failure Questionnaire and others are widely used in cardiology practice. However, MacNew Heart Disease Health-related Quality of Life (MacNew) is considered to be one of the most effective questionnaires of modern times. It has been developed specifically for patients with CAD and provides an opportunity to determine patient's subjective perceptions of problems associated with the presence of this disease and its impact on the daily motor activity and emotional state [5, 9, 10]. Medical Outcomes Study 36-Item Short-Form Health Status (SF-36) questionnaire is also very common. It is considered to be the gold standard in the assessment of quality of life (QOL). Its application allows a detailed analysis of both physical and psychological components of health [2, 6].

However, the analysis of the physical, emotional and social status of the patient with comorbidity, namely postinfarction cardiosclerosis associated with NAFLD remains interesting and understudied.

The objective of the research was to assess the quality of life of patients with postinfarction cardiosclerosis depending on NAFLD presence and progression.

1. Materials and methods of the research

300 patients with stable coronary artery disease who had acute coronary syndrome more than 3 months ago were the object of the research. According to the detailed clinical and diagnostic examination, the patients were divided according

to NAFLD presence. In particular, they included 160 patients without NAFLD (Group I) and 140 patients with NAFLD (Group II). 89 patients of Group II suffered from non-alcoholic liver disease (NALD) and 51 patients from non-alcoholic steatohepatitis (NASH). The control group consisted of 20 apparently healthy individuals.

Diagnosis of stable CAD was verified according to the data of electrocardiography (ECG), the results of coronary angiogram and the presence of past myocardial infarction in past medical history according to the uniform clinical protocol "Stable Coronary Artery Disease" (the order of Ministry of Health of Ukraine # 152 of 02.03.2016) [4]. NAFLD diagnosis was made according to unified clinical protocols "Non-alcoholic steatohepatitis" (the order of Ministry of Health of Ukraine # 826 of 06.11.2014) [3], in accordance with European Association for the Study of the Liver (EASL), European Association for the Study of Diabetes (EASD), European Association for the Study of Obesity (EASO) [8].

Assessment of the patients' quality of life was performed with the use of Ukrainian versions of SF-36 and MacNew questionnaires. The patients filled them themselves.

SF-36 questionnaire contained 36 questions that were grouped into 8 scales: general health, physical functioning, role-physical functioning, bodily pain, vitality, social functioning, emotional role functioning and mental health. The patient gave the answer to the questions, each of which was evaluated from 1 to 5 scores. Physical health component including the scales of general health, physical functioning, role-physical functioning, bodily pain and psychological component of health including scales of vitality, social functioning, emotional role functioning and mental health were assessed.

MacNew questionnaire consisted of 27 questions on physical and emotional state of the patient united into physical, emotional and social scales. The patient gave the answers to the proposed questions each of which was evaluated from 1 to 7 scores. Overall estimate of both questionnaires was conducted by summing scores obtained on each of the scales.

Patients' survey was conducted at the Regional Clinical Cardiology Clinic and Ivano-Frankivsk Central City Clinical Hospital.

Statistical processing of the obtained results was performed using software, namely the spreadsheet Microsoft Excel and software package "Statistica" v. 10.0 StatSoft, USA. The reliability of differences in mean values was assessed using paired Student t-test. The mean values were presented as (M±m) where M indicated the mean value and m meant standard error of the mean. The results were considered statistically significant at $p < 0.05$.

2. Results and Discussion

Analysis of the quality of life according to SF-36 questionnaire detected a decrease in physical and psychological components in all groups of patients with postinfarction cardiosclerosis ($p < 0.05$) (Table 1). Moreover, this decrease was significant in comparison with the control group and depended

on the presence and progression of NAFLD. In particular, the physical component of quality of life in the patients of group I was 36.3 % lower compared to healthy individuals ($p < 0.05$). This indicator was lower by almost 1.8 and 2.3 times in comparison with the control and 13.5% and 32.3% compared to the patients in group I ($p < 0.05$), respectively, in case of NALD and NASH. Moreover, significant changes in this indicator were observed in patients of all groups compared to the patients with NASH. In particular, the physical component of quality of life was higher by 27.7% in the patients with NALD and by 47.6% in the patients of group I in comparison with the patients with NASH ($p < 0.05$).

In its turn, psychological component of quality of life significantly decreased with progression of NAFLD. In particular, this indicator was 1.8 and 2.2 times lower in the patients with NALD and NASH, respectively, in comparison with the control group ($p < 0.05$). Comparing the significance of the psychological component in patients in Group I, its significant decrease by 12.2% and 28.2% was observed in the patients with NALD and NASH ($p < 0.05$), respectively. However, this indicator was higher by 39.2% (Group I) and 22.3% (patients with NALD) compared to patients with NASH, respectively ($p < 0.05$).

Thus, overall estimate according to SF-36 questionnaire revealed a significant decrease in the quality of life in patients with postinfarction cardiosclerosis associated with NAFLD due to the patient's low physical activity, mental ill-being, limitation of daily activities, significant effect of pain and low assessment of health at that moment. Moreover, the decrease in the quality of life directly depended on NAFLD stage and was the lowest in case of NASH constituting (53.9±2.1) scores in comparison with (120.6±3.2) scores in the control group ($p < 0.05$).

Similar regularities of changes were detected according to MacNew questionnaire (Table 2). In particular, physical quality assessment of quality of life significantly decreased depending on NAFLD stage and was 1.4 times lower in the patients with NALD and 2.3 times lower in the patients with NASH compared to the patients in Group I ($p < 0.05$). In its turn, emotional assessment in patients of Group II was lower by 1.3 times in case of NALD and almost by 2.0 times in case of NASH compared to the indicator in Group I ($p < 0.05$). The deterioration of the patient's physical and emotional condition led to a significant limitation of social contacts, decrease in communication level, the percentage of positive emotions resulting in lower social assessment. Moreover, the reduction value depended on NAFLD activity. In particular, this indicator was 1.9 times and 2.6 times lower in patients with NALD and NASH in comparison with Group I respectively ($p < 0.05$). The overall estimate of the quality of life according to MacNew questionnaire was 1.5 times lower in the patients of Group I in comparison with the control group. It decreased by 1.4 times in the patients with NALD compared to Group I and was 1.5 times lower in case of NASH in comparison with the patients with NALD ($p < 0.05$).

Table 1. Indicators of physical, psycho-emotional and social components of quality of life in the patients with stable coronary artery disease depending on the presence and progression of nonalcoholic fatty liver disease according to SF-36 questionnaire (M±m)

Indicator, scores	Control group (n=20)	Group I (n=160)	Group II (n=140)	
			Patients with NALD (n=89)	Patients with NASH (n=51)
Physical component	59.3±3.3	37.8±1.2*&	32.7±1.6 *#&	25.6±2.1 *#
Psychological component	61.3±3.4	39.4±1.3 *&	34.6±1.8 *#&	28.3±2.3 *#
Overall estimate	120.6±3.2	77.2±1.4 *&	67.3±1.7 *#&	53.9±2.1 *#

Notes.

* – probability of difference in comparison with the control group (p<0.05);

– probability of difference in comparison with Group I (p<0.05);

& – probability of difference in comparison with patients with NASH (p<0.05).

Table 2. Indicators of physical, psycho-emotional and social components of quality of life in the patients with stable coronary artery disease depending on the presence and progression of nonalcoholic fatty liver disease according to MacNew questionnaire (M±m)

Indicator, scores	Control group (n=20)	Group I (n=160)	Group II (n=140)	
			Patients with NALD (n=89)	Patients with NASH (n=51)
Overall assessment	18.5±2.3	12.7±1.2 *&	8.7±1.7 *#&	5.4±1.6 *#
Physical assessment	38.7±2.1	23.7±1.6 *&	16.5±1.5 *#&	10.2±1.5 *#
Emotional assessment	65.3±3.7	47.2±1.3 *&	35.4±1.6 *#&	23.5±1.8 *#
Social assessment	52.5±2.8	35.8±1.5 *&	26.4±1.8 *#&	19.5±1.3 *#
Overall estimate	175.3±2.7	119.4±1.5 *&	87.2±1.7 *#&	58.6±1.5 *#

Notes.

* – probability of difference in comparison with the control group (p<0.05);

– probability of difference in comparison with Group I (p<0.05);

& – probability of difference in comparison with patients with NASH (p<0.05).

3. Conclusions

Decrease in the quality of life due to its physical, psycho-emotional and social components is peculiar to the patients with stable coronary artery disease associated with NAFLD. Quality of life in the patients with postinfarction cardiosclerosis significantly depends on NAFLD progression and is the lowest in case of NASH.

4. Prospects for further research

The study of optimal ways to influence different pathogenetic aspects of comorbidity in patients with stable coronary artery disease and NAFLD and assessment of quality of life under the influence of new approaches to comprehensive treatment of such patients are reasonable.

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