Research Article

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Quality of Life of Patients with 2nd Type Diabetes Mellitus and Chronic Heart Failure

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ANNOTATION

Background: Heart failure (HF) occurs in the late stages of cardiovascular disease and affects more than 23 million people worldwide. Studies have shown that demographic characteristics significantly influence the quality of life (QOL) of patients with HF.

Material and Methods: 75 patients (prospectively) with type 2 diabetes mellitus (DM 2) and CHF were examined in the period 2022-2023 at the Russian Scientific Center for Surgery named after. acad. V.V. Vakhidov on the basis of a scientific agreement jointly with the RSNPMCE Ministry of Health of the Republic of Uzbekistan named after academician. Y.H. Turakulov. Among 75 patients, among whom there were 24 women, 51 men.

Research Results: The mean TDS score was 23.6 (SD= 10.5), with 16 (21.3%) having mild depression, 12 (16%) having moderate depression, and 29 (38.6%) having severe depression. depression. Critical factors associated with quality of life included hospital readmission >10 days and level of depression.

Keywords: Type 2 Diabetes Mellitus; CHF; Quality of Life

Abbreviations: ER: Endovascular Revascularization; HFSD: Hf-Related Symptom Distress; NYHA: New York Heart Association; HF: Heart Failure; QOL: Quality of Life; MLHFQ: Minnesota Living with Heart Failure Questionnaire

Introduction

Heart Failure (HF) occurs in the late stages of cardiovascular disease and affects more than 23 million people worldwide. Mortality from HF accounts for approximately 2% of all deaths worldwide, with 13 million people hospitalized for HF each year [1,2]. Studies have shown that demographic characteristics significantly influence the Quality of Life (QOL) of patients with HF. For example, unmarried patients with HF have been found to face a higher risk of readmission and death than their married peers [1], most likely due to a lack of spousal support. Moreover, older adults with HF have been shown to have significantly lower health-related quality of life than their healthy older peers, mainly due to their relatively more severe physical and emotional symptoms. HF has been found to limit patients' physical activity, cause social and psychological distress, and economic hardship, thereby affecting patients' quality of life in several different ways. For example, patients with HF experience physiological symptoms such as shortness of breath and fatigue, which often affect their functional ability, as well as symptoms of discomfort that limit activity, thereby affecting both functional and social aspects of quality of life.

Literature Analysis

(Riegel B, et al. [2]). reported that HF-Related Symptom Distress (HFSD) is a key factor influencing quality of life in patients with HF [2]. In addition, according to their data, quality of life is significantly correlated with the New York Heart Association (NYHA) functional classification and left ventricular ejection fraction [3]. Readmission

of patients with HF has been reported to be associated with disease severity, cognitive function, physical function, and family functioning. In addition, readmission rates and length of hospitalization have been reported to influence the quality of life of patients with HF, predict their prognosis, and increase their medical costs (Lee KS, et al. ([2,4,5]). found data indicating that the likelihood of developing comorbid depression in patients with heart failure is 4-5 times higher than in healthy people. Comorbid depression reduces the desire to visit a doctor and increases the risk of death. Thus, patients with HF and comorbid depression may be more likely to be readmitted to the hospital and have a higher mortality rate than patients with HF and without depression [6-8]. The risk of readmission to hospital in patients with HF and comorbid depression is 3 times higher than in patients with HF but without depression. Moreover, the mortality rate in patients with HF and comorbid depression is two times higher than in patients with HF and without depression. Thus, the clinical characteristics of patients with HF and comorbid depression influence their quality of life [9].

The above was the reason for the present study.

The Purpose of the Research

was to study the quality of life of patients with type 2 diabetes mellitus and chronic heart failure [10].

Material and Methods

75 patients (prospectively) with DM 2 and CHF were examined in the period 2022-2023 at the Russian Scientific Center for Surgery named after. acad. V.V. Vakhidov on the basis of a scientific agreement jointly with the RSNPMCE Ministry of Health of the Republic of Uzbekistan named after academician. Y.H. Turakulov. 80 patients were examined, including 24 women and 56 men. The average age of men was 67 ± 4.2 years, and the average age of women was 64 ± 5.6 years. 20 patients with type 2 diabetes without coronary artery disease of the same age formed the control group. All observed 80 patients were divided into 4 groups: 1 gr. – 15 patients with coronary artery disease and type 2 diabetes, subjected to endovascular revascularization (ER), 2 gr. – 15 patients with coronary artery disease without type 2 diabetes, subjected to ER, 3 gr. – 15 patients with coronary artery disease and T2DM who underwent CABG, 4 gr. – 20 patients with coronary artery disease without type 2 diabetes who underwent CABG. The control group consisted of 15 patients with type 2 diabetes without coronary artery disease. Inclusion criteria: type 2 diabetes mellitus with CHF, men and women. Exclusion criteria: pregnant women, children and young people with type 1 diabetes, acute kidney and heart diseases, CKD stages 4-5, connective tissue diseases, vasculitis, amyloidosis, visceral obesity, hydronephrosis, systemic cancer.

Research Methods

general clinical, biochemical (bilirubin, direct, indirect, lipid spectrum, ALT, AST, PTI, coagulogram, CRP, blood sugar, glycated hemoglobin, urea, creatinine, GFR, galectin-3, H-FABP) and instrumental: ECG , Echo-ECG, cardiac angiography, 24-hour blood pressure monitoring, Dopplerography of the great vessels of the heart and legs, ultrasound of internal organs, fundus, examination by a cardiologist, podiatrist. To assess quality of life, we used the Russian version of the Minnesota Living with Heart Failure Questionnaire (MLHFQ). The MLHFQ, which is often used to assess the health status of patients with chronic HF, is a 21-item disease-specific quality of life measure with two dimensions: physical and emotional. MLHFQ total scores range from 0 to 105, with higher scores indicating worse quality of life. Items are rated on a 6-point Likert scale from 0 (not at all) to 5 (very much), and item scores are summed to produce a total quality of life score, a physical health score (eight points; score range: 0–40) and an emotional health score (five points; score range: 0–25). Statistical calculations were carried out in the Microsoft Windows software environment using the Microsoft Excel-2007 and Statistica version 6.0, 2003 software packages. Then, stepwise multiple regression was used to analyze the impact of demographic and clinical characteristics, as well as the level of depression on the quality of life. Regression analyzes included entry of all variables associated with demographic characteristics (i.e., gender, age, education, work status, BMI, exercise, marital status, income, and religion), clinical characteristics (i.e., time of diagnosis, type medications, ejection fractions, etc.), NYHA class, rate, readmission duration, and symptoms of distress), and depression variables into the model. Forty participants (53%) were diagnosed with HF more than 5 years ago, while 16 were diagnosed with one concomitant disease (21.3%).

Moreover, 23.2% of patients had a left ventricular ejection fraction of 31–40%, and the majority were in NYHA functional class II (n = 96.7, 55.8%). However, 52 participants were readmitted to the hospital for >10 days during the previous 1-year period (69.3%) (Table 1). shows the results of the MLHFQ questionnaire assessment by group. Participants' quality of life was found to be associated with clinical characteristics, including readmission to hospital for >10 days with increased levels of HF-related symptoms of distress (HFDS) and more severe depression. Regarding the depression status, among the patients in the main group, 16 (21.3%) had mild depression, 12 (16%) had moderate depression, and 29 (38.6%) had severe depression. In addition, the assessment of MLHFQ in the groups revealed significant differences with the control in all patients. The mean MLHFQ score across groups overall was 21.3 (SD = 30.5%). Mean scores for all MLHFQ items ranged between 0 and 1, indicating that participants perceived HF symptoms to have little impact on their quality of life. At the same time, the average scores on this questionnaire indicate a significant decrease in quality of life indicators in all 4 groups of patients compared to controls. Next, we performed a regression analysis on the effect of functional class according to NYHA (New York Heart Association), length of stay in the clinic, and depression on the quality of life of patients (Table 2). As can be seen from (Tables 2 & 3), there was a significant correlation between the NYHA stage of HF: as

it increased, the correlation with quality of life significantly increased. Thus, our results showed that patients have a decrease in self-assessment of quality of life with low scores compared to controls on the MLHFQ questionnaire. These data were aggravated by the varying degrees of depression identified in all groups. All this taken together has a negative impact on the quality of life and requires further study.

Table 1: Results of the MLHFQ questionnaire assessment by group.

Index	1 group n=15	2 group n=15	3 group n=15	4 group n=20	control n=10
norm (≤ 18) б.	2 (13.3%)	3 (20%)	2 (13.3%)	1(6.7%)	1 (10%)
Mild depression (19–23) б.	3 (20%)*	4 (26.6%)*	4 (26.6%)*	5 (25%)*	9 (90%)
Moderate depression (24–29) б.	2 (13.3%)*	3(20%)*	2 (13.3%)*	5 (25%)*	-
Severe depression (≥ 30) б.	8 (53.3%)*	5(33,3%)*	7 (46.6%)*	9 (45%)*	-
MLHFQ assessment	22,4 ±3.3*	21,3 ±2,4*	20,8 ±3,2*	22,3 ±2,1*	11,2 ±0,3
Emotional dimension of quality of life (*M* ± м)	5.0±0,3*	4.7±0,8*	5.8±0,6*	5.2±0,5*	13.0±0,3
Physical aspect of quality of life (*M* ± м)	6.7±4,2*	5.1±0,2*	6.8±0,23*	6.6±5,4*	14.2±0,2

Table 2: Correlation analysis of the influence of NYHA functional class, length of stay in the clinic, depression on quality.

Step	Predictor	Outcome	R	p
NYHA Functional Class				
1	NYHA I class	Quality of life	0.46	< 0.01
2	NYHA II class	Depression	0.49	< 0.01
3	Depression	Quality of life	0.57	< 0,001
4	NYHA III class	Quality of life	0.67	< 0.001
	Depression		0.42	< 0,01
Duration of Readmission				
1	Length of hospital stay > 10 days	Quality of life	0.47	< 0,01
2	Length of hospital stay > 10 days	Depression	0.48	< 0.01
3	Depression	Quality of life	0.40	< 0,01
4	Length of hospital stay > 10 days	Quality of life	0.52	< 0.001

Note: NYHA - New York Heart Association.

Table 3: Basic demographic indicators by group.

Index	1 group n=15	2 group n=15	3 group n=15	4 group n=20	control n=10
Sex: male,	10 (66,7%)	9 (60%)	11 (73.3%)	16 (80%)	5 (50%)
Sex: female	5 (33,3%)	6 (40%)	4 (26.7%)	4 (20%)	5 (50%)
Average age	62,5 ±5,1	60,2 ±6,8	59,9 ±7,3	63,2 ±7,6	61,3 ±5,3
H/E yes	11 (73.3%)	12 (80%)	10(66,7%)	17 (85%)	8 (80%)
H/E no	4 (26.7%)	3 (20%)	5 (33,3%)	3 (15%)	2 (20%)
Married	12 (80%)	14 (93%)	13 (86.7%)	16 (80%)	7 (70%)
Single	3 (20%)	1 (6.7%)	2 (13.3%)	4 (20%)	3 (30%)
Unemployed	13 (86.7%)	10(66,7%)	15 (100%)	18 (90%)	6 (60%)
Employed	2 (13.3%)	5 (33,3%)	-	2 (10%)	4 (40%)
SAD mm Hg	149,2±6,7*	156,5±7,8*	153,8 ±5,1*	158,2±6,2*	130,2±7,3
DAD mm Hg	93,5 ±4,3*	98,3 ±7,6*	101,2 ±9,4*	90,9 ±7,2*	78,6 ±5,6
Heart rate beats , min	83,5 ±4,3*	80,3 ±5,1*	85,6 ±6,7*	88,7 ±5,2*	72,3 ±8,2

Note: higher education, *is a reliability criterion p < 0.05 in comparison with control, H/E-higher education, SAP – systolic arterial pressure, DAP- diastolic blood pressure. The majority of patients were men (n=51), married (n=62) and retired (n=62).

Conclusions and Recommendations

1. The mean MLHFQ score was 21.3 (SD= 30.5%), with 16 (21.3%) experiencing mild depression, 12 (16%) experiencing moderate depression, and 29 (38.6%) %) - severe depression, which confirms a significantly low level of quality of life in the main group of patients.

2. To improve the quality of life of patients with type 2 diabetes and heart failure, it is recommended to prescribe antidepressants under the supervision of a neurologist.

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