Predictive value of left ventricular function on prognosis in patients undergoing coronary artery bypass surgery.

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PREDICTIVE VALUE OF LEFT VENTRICULAR FUNCTION ON PROGNOSIS IN PATIENTS UNDERGOING CORONARY ARTERY BYPASS SURGERY

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A b s t r a c t: In order to assess the predictive value of left ventricular (LV) function on prognosis during 16 years of follow-up we retrospectively/prospectively evaluated 320 patients (mean age 55.9 ± 9.2 years; 44 women, 276 men) undergoing coronary artery bypass surgery. Patients were divided according to the assessed echocardiographically pre- and postoperative LV ejection fraction (LVEF) into two groups: patients with LV dysfunction (EF < 55%) and patients with preserved LV function (EF ≥ 55%). In order to assess the prognostic variables, patients were further subdivided into a group with severely depressed LV function (EF ≤ 35%). Operative mortality was 2.0% in patients with LVEF < 55% and 4.5% in patients with LVEF ≤ 35%, not showing a statistically significant increase of mortality regarding the reduction of preoperative assessed EF. In contrast to the preoperative assessed EF, which could not be found to be a predictive factor of long-term prognosis, in patients with LV dysfunction registered by postoperative assessed EF increased frequency of coronary events as well as a shorter time of its occurrence with acceptable long-term survival was documented. In patients undergoing surgical myocardial revascularization, symptoms of LV failure and postoperative assessed EF were found as independent predictors of prognosis.

We can conclude that surgical myocardial revascularization in patients with coronary artery disease and LV failure can be performed safely, providing a relatively long-term period of time without coronary events including cardiac death. Postoperative assessed LV systolic function appeared as a significant predictor of the clinical outcome.

Key words: left ventricular failure, coronary bypass surgery, prognosis.

Introduction

Patients with severe coronary artery disease (CAD) and symptomatic left ventricular (LV) systolic dysfunction have an unfavorable prognosis when treated medically, in spite of advances in medical therapy. [1] In this patient group surgical revascularization is offered as a safe therapeutic option with an acceptably low risk of operative mortality that, in comparison to medical treatment alone, shows a significant improvement of LV function, quality of life (demonstrated by the improvement in the angina and congestive heart failure status) as well as an excellent long-term prognosis. [2, 3] As independent predictors of postoperative survival many clinical, functional, angiographic and surgical variables have been identified. [1–5]

The purpose of our study was to assess the predictive value of global LV function, represented by pre- and postoperative LV ejection fraction (EF), on short- and long-term prognosis in patients with CAD undergoing coronary artery bypass surgery.

Method

The Institute for Heart Diseases retrospectively-prospectively followed up 320 patients with CAD undergoing coronary artery bypass graft surgery (CABG) between 1981 and 2002. The patients' baseline information was provided by interview or query and included age, gender, body mass index, risk factors for CAD, previous myocardial infarction, previous stroke, peripheral artery disease, type of percutaneous coronary intervention, presence of symptoms of angina and/or LV failure as well as medication used. Pre- and postoperative the Canadian Cardiovascular Society Functional Classification (CCS) was used to stratify the degree of angina. The investigators acquiring the data were blinded to the values of LVEF after revascularization. Pre- and postoperative physical examination (signs of LV failure) and lipid profile assessment were performed. Two-dimensional echocardiography was used in assessment of global LVEF by apical four-chamber view and Simpson’s method as well as a wall motion abnormalities score index (WMSI) assessment in 16 segments using a 5-grade scoring system, i.e. presence of LV thrombus. Color-Doppler method was used to assess regurgitation jets, presence of diastolic dysfunction and pulmonary hypertension. Coronary angiography was used in assessment of the number of stenotic and/or occluded vessels calculated to modify the Gensini score as an expression of the angiographic extent of CAD. Data were assessed According to the patients’ records operative (number and type of grafts; time, place, type and complication of CABG). Postoperative assessment of global and segmental LV function was performed or considered valid if it was done 3–6

months after revascularization. As for the patients who were retrospectively followed up, all pre- and postoperative data regarding non- and invasive examinations were provided from the Institute's database. All patient information, data from personal records and results of examinations were entered into a computerized database.

In order to perform the study, patients were divided into two groups according to the registered preoperative global LVEF: Group A (200 pts.) with EF < 55% and Group B (120 pts.) with EF ≥ 55%, i.e. according to the registered postoperative global LVEF: Group A1 (42 pts.) with EF < 55% and Group B1 (61 pts.) with EF ≥ 55%. In order to assess the prognosis, patients with pre- and postoperative LVEF < 55% were further subdivided into two groups: patients with severely depressed LV function (EF ≤ 35%) and those with a LVEF of 36–54%.

Follow-up was obtained from hospital records, and from interviews with the patients or the family and was completed in all 320 patients. Adverse cardiac events were defined as follows: cardiac death, acute myocardial infarction, LV failure and need for myocardial revascularization (percutaneous and/or surgical).

Statistical analysis. The data were analyzed using SPSS software (version 10.0, SPSS INC., Chicago, Illinois). Continuous variables were reported as mean ± SD. Categorical variables were reported as counts (percentages) and compared between groups using a chi-square test. Continuous variables were examined by a two-tailed *t* test or by the Mann-Whitney U test if not normally distributed. The Spearman rank correlation coefficient was used to estimate the correlation between variables. Freedom from unfavourable coronary events was analysed by means of Kaplan-Meier curves, with differences between groups tested by long-rank test. The Cox proportional hazard regression models, using a multivariate forward stepping model, were used to examine the time-dependent association between the multiple clinical, echocardiographic and angiographic variables and adverse cardiac event occurrence. The criterion for possible inclusion in the Cox hazard model was the existence of a significant correlation among variables and adverse cardiac event occurrence, including cardiac death. For all analyses a p value < 0.05 was considered statistically significant.

Results

Baseline characteristics. The study population (320) was at a mean age of 55.9 ± 9.2 years, among them 44 (13.8%) women and 276 (86.3%) men. A preoperative comparison between two groups of patients regarding the demographic, clinical and angiographic variables, as well as the degree of angina

and heart failure status stratified by CCS and NYHA class (Table 1), revealed a statistically significant difference only concerning previous myocardial infarction, symptoms of LV failure and presence of peripheral artery disease (more frequently present in Group A), and dyslipidemia (more frequently present in Group B; p = 0.002). There was no difference between the two groups either in the extent of CAD presented by its anatomical distribution or in the frequency of percutaneous coronary intervention applied. As for the echocardiographically assessed global LV function presented by EF and regional LV function assessed by regional asynergy and calculated as a score index of wall motion abnormalities (WMSI) as well as for LV internal dimensions, a significant difference between the two groups was found. Patients with preoperative LVEF < 55% (Group A) had a significantly higher detoriation of their LV function than the others (Table 1).

Table 1 – Табела 1

Comparison of preoperative clinical, angiographic and echocardiographic variables of study population divided according to the registered preoperative LV function

Споредба на предоперативните клинички, ангиографски и ехокардиографски обележја на испитуваната популација поделена според предоперативно измерената ЛК функција

	Patients with EF < 55% n = 200	**Patients with EF ≥ 55% n = 120**	**p**
Age (years)	56.6 ± 9.4	54.9 ± 8.8	NS
Gender (m/w %)	88.0/12.0	83.3/`6.7	NS
BMI (kg/m^2)	27.0 ± 3.6	27.2 ± 3.6	NS
PVD (%)	84.0	2.5	0.043
HTA (%)	54.8	36.1	NS
Smoking (%)	60.0	75.0	NS
HLP (%)	31.5	55.3	0.002
DM (%)	28.0	23.7	NS
MI (%)	70.8	88.9	0.0001
Symptoms of LV failure (%)	87.9	1.2 ± 0.5	0.001
CCS score	2.5 ± 0.8	1.9 ± 0.9	NS
Primary PTCA (%)	2.5	0	NS
Elective PTCA (%)	9.0	5.3	NS
Stent implantation (%)	6.5	0	NS

Number of stenotic CA	2.4 ± 0.6	2.4 ± 0.6	NS
Left main (%)	25.8	20.8	NS
Gensini score	19.4 ± 7.6	18.6 ± 7.4	NS
EF (%)	38.6 ± 10.3	65.8 ± 7.6	0.0001
LVIDd (mm)	59.8 ± 8.1	51.7 ± 4.9	0.0001
LVIDs (mm)	44.0 ± 8.9	33.6 ± 4.9	0.0001
WMSI	1.5 ± 0.5	1.1 ± 0.2	0.0001

NS = statistically non-significant; BMI = body mass index; PVD = peripheral vascular disease; HTA = arterial hypertension; HLP = hyperlipidemia; DM = diabetes mellitus; MI = myocardial infarction; LV = left ventricular; CSS = Canadian Cardiovascular Society; PTCA = percutaneous transluminal coronary angioplasty; EF = ejection fraction; LVIDd = left ventricular internal end-diastolic dimension; LVIDs = left ventricular internal end-systolic dimension; WMSI = wall motion score index; MR = mitral regurgitation; PAH = pulmonary artery hypertension;

Perioperative characteristics. The patients were operated on in ten different operative centres. Mean 2.8 ± 0.9 grafts per patient were applied, most often using the left internal mammary artery in combination with vein grafts (53.8%) or radial artery (22.5%). In 294 patients classical CABG (using extra corporal circulation) was performed and in 26 patients off-pump surgery. Statistical analysis of perioperative data (Table 2) revealed that, despite the lack of significant difference between the two groups concerning the number of grafts used, significant differences were found in the type of conduits used. These included greater use of the left internal mammary in combination with the radial artery in patients with LVEF < 55% (Group A), i.e. a greater use of vein conduits only in Group B. As for associated surgical interventions (frequency of aneurysmectomy, endartherectomy, LV reconstruction, annuloplasty of mitral and/or tricuspid valve), analysis revealed (Table 2) a lack of significant difference between the two groups for almost all interventions except for the annuloplasty of the mitral valve which was significantly (p=0.004) more frequently used in patients with LVEF < 55% (Group A). Early postoperative complications (Table 2) as well as intrahospital cardiac death appeared insignificantly more frequently in patients with preoperatively EF < 55% in comparison with those with LVEF ≥ 55% (2.0% vs. 2.5%; p = NS; respectively). In Group A cardiac death appeared in 3 patients with EF ≤ 35% (4.1%) which was insignificant compared with the rest of the patients, but the more important thing was that cardiac death appeared in 12.1% of patients with preoperative presence of symptoms of LV failure.

Table 2 – Табела 2

*Comparison of operative variables of study population divided according to the registered **preoperative** LV function*

*Споредба на оперативните обележја на испитуваната популација поделена според **предоперативно** измерената ЛК функција*

	Patients with EF < 55% n = 200	**Patients with EF ≥ 55% n = 120**	**p**
Number of conduits	2.7 ± 0.9	2.7 ± 0.9	NS
Type of operation (%) - with pump - off-pump	 90.5 8.5	 94.2 5.8	NS
Type of conduits (%) - LIMA - LIMA+vein graft - LIMA+a.radialis - vein graft	 7.6 55.6 15.7 17.7	 9.2 51.7 3.3 30.8	0.004
LV reconstraction (%)	14.5	0.8	NS
Aneurysmectomy (%)	12.0	0	NS
Endartherectomy (%)	8.6	14.2	NS
MV annuloplasty (%)	10.0	1.7	0.004
TV annuloplasty (%)	3.5	0.8	NS
Early postoperative complications (%)	36.5	29.2	NS
Intrahospital death (%)	2.5	2.0	NS

NS = statisticaly non-significant; LIMA = left internal mammary artery; LV = left ventricular; MV = mitral valve; TV = tricuspid valve;

Postoperative characteristics. The comparison of postoperative echocardiographic measurements revealed a significant difference between the two groups of patients for almost all analysed echocardiographic variables (Table 3). Patients with preoperative LVEF < 55% in comparison to those patient with LVEF ≥ 55% postoperative revealed significantly lower EF (p = 0.0001), higher LV internal dimensions (p = 0.0001), and WMSI (p = 0.001). In comparison to preoperative value (Figure 1), analysis of echocardiographic data revealed that patients with preoperative LVEF < 55% showed postoperative significant

improvement of EF, while patients with preoperative LVEF ≥ 55% showed postoperative significant deterioration of global and regional LV function presented as decreased EF and increased values of the rest of echocardiographic measurements, but still within the referential limits (Figure 1).

Comparison of postoperative frequency of smoking and using aspirin as well as statins did not show a significant difference between the two groups (Table 3).

Table 3 – Табела 3

Comparison of postoperative echocardiographical variables and cardiac events occurence of study population divided according to the registered ***preoperative*** *LV function*

Споредба на послеоперативните обележја на испитуваната популација поделена според ***предоперативно*** *измерената ЛК функција*

	Patients with EF < 55% n = 200	**Patients with EF ≥ 55% n = 120**	**p**
EF (%)	48.2 ± 16.8	60.9 ± 13.9	0.0001
LVIDd (mm)	60.6 ± 7.8	51.7 ± 4.9	0.0001
LVIDs (mm)	43.6 ± 10.9	33.6 ± 4.9	0.001
WMSI	1.6 ± 0.5	1.3 ± 0.3	0.002
Smoking (%)	9.6	8.4	NS
Aspirin (%)	62.4	66.3	NS
Statins (%)	17.6	26.3	NS
Cardiac events (%)	17.9	18.8	NS
Cardiac death (%)	4.6	2.6	NS
"Hard" events*	9.7	8.5	NS
LV failure	5.1	2.6	NS

NS = statistically non-significant; EF = ejection fraction; LVIDd = left ventricular internal end-diastolic dimension; LVIDs = left ventricular internal end-systolic dimension; WMSI = wall motion score index;

* Cardiac death, acute myocardial infarction and/or LV failure;

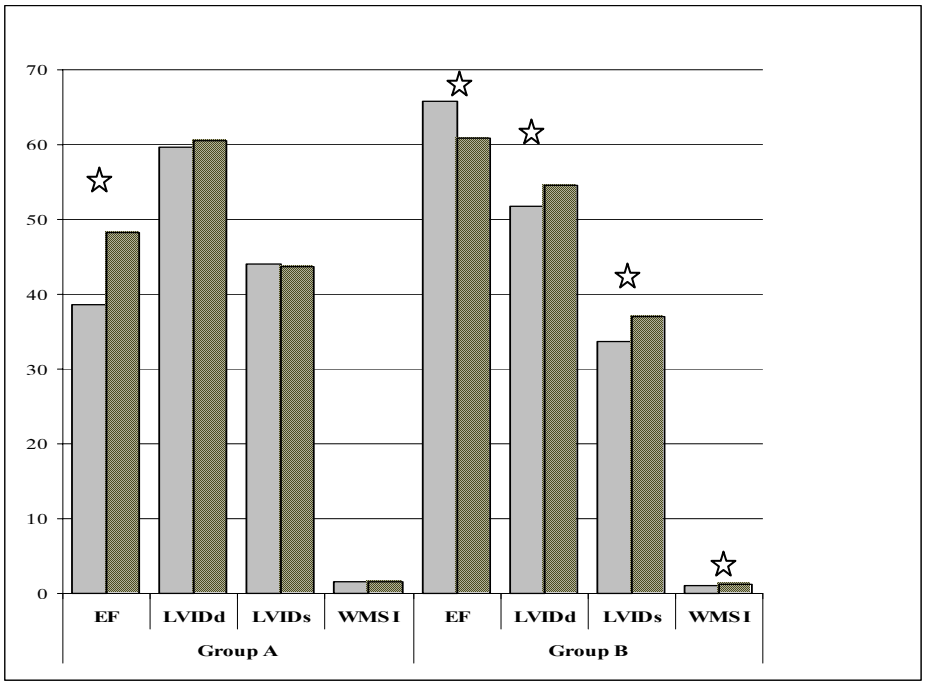

Figure 1 – *Echocardiographic variables of LV function before and after surgical revascularization of study population divided according to the registered* ***preoperative*** *LV function*

Графикон 1 – *Ехокардиографски обележја на ЛК функција пред и по хируршка реваскуларизација на испитуваната популација поделена според* ***предоперативно*** *измерената ЛК функција*

EF = ejection fraction; LVIDd = left ventricular internal end-diastolic dimension; LVIDs = left ventricular internal end-systolic dimension; WMSI = wall motion score index;

* Group A preoperatively in comparison to postoperative assessed EF, p = 0.001;

* Group B preoperatively in comparison to postoperative assessed : EF, p = 0.007; LVIDd, p = 0.017; LVIDs p = 0.007; WMSI, p = 0.007

Postoperative outcome. Comparison of patients divided according to preoperatively assessed LVEF (Table 3) showed a lack of any statistically significant difference in the frequency of postoperative cardiac events occurrence (35 patients in Group A versus 23 patients in Group B; p = 0.473) as well as for the cardiac death (9 patients in Group A versus 3 patients in Group B; p = 0.281). These findings were also confirmed when only "hard" events (cardiac

death, acute myocardial infarction, LV failure) were considered (19 patients in Group A versus 10 patients in Group B; p = 0.451). Comparison of the event-free survival time in the two groups of patients again confirmed lack of any significant difference either to overall adverse cardiac events (p = 0.089) or the "hard" ones (p = 0.080) or to cardiac death (p = 0.074). In order to assess the existence of a possible difference in event-free survival time in patients with severely depressed LV function (EF ≤ 35%) in comparison to patients with moderate LV dysfunction (EF = 36–54%) and those with preserved LV function (EF ≥ 55%), we performed a Kaplan-Meyer analysis. The results showed that patients with severely depressed LV function (EF ≤ 35%) in comparison to the other two groups of patients had a significantly shorter time to cardiac death occurrence (p = 0.019; Figure 2), but with acceptable long-term survival.

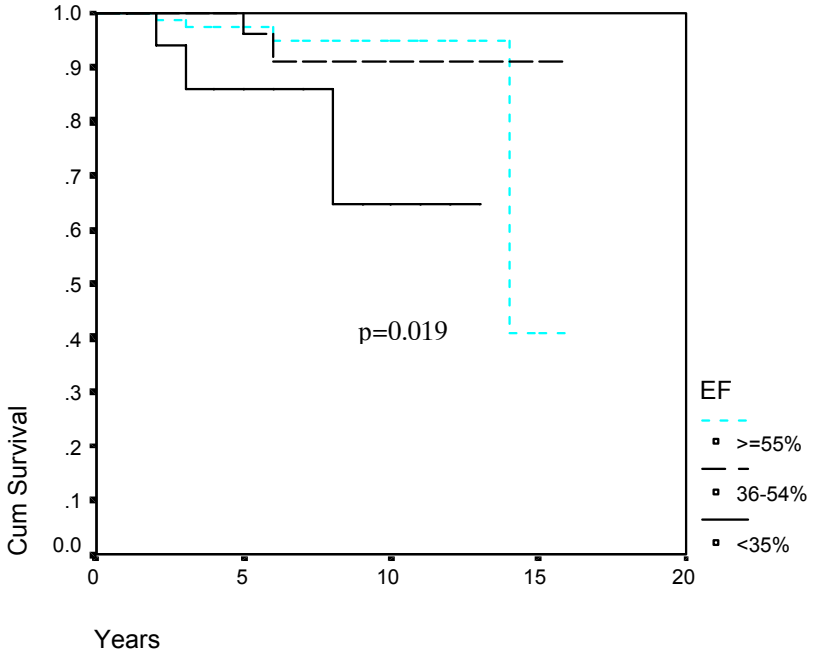

Figure 2 – *Kaplan-Meier curves for probability of not experiencing cardiac death of study population divided according to the registered* ***preoperative*** *LV function*

Графикон 2 – *Kaplan-Meier криви за веројатноста на отсуството на појава на смрт кај испитуваната популација поделена според* ***предоперативно*** *измерената ЛК функција*

On the other hand, comparison of patients divided according to postoperative assessed LVEF (Table 4) showed a significant difference in the frequency of overall adverse cardiac events (22 patients in Group A1 versus 14 patients in Group B; $p = 0.003$) or the "hard" ones (12 patients in Group A1 versus 4 patients in Group B; $p = 0.004$) as well as in LV failure occurrence (8 patients in Group A1 versus 4 patients in Group B; $p = 0.003$) in favour of patients with LVEF < 55% (Group A1), but without any statistical difference for cardiac death (3 patients in Group A1 versus 1 patient in Group B; $p = 0.302$). As for the comparison of the time to events soccurrence in patients divided according to postoperative assessed LVEF, a significanty worse prognosis was found for the patients with LVEF < 55% . The time to the overall cardiac events' occurrence (Figure 3), including the "hard" ones, LV failure or cardiac death (Figure 4), was significantly shorter in this patient group ($p = 0.0007$; $p = 0.0004$; $p = 0.001$; $p = 0.028$; respectively), in spite of a relatively good long-term survival (median time of survival for patients with LVEF < 55% was 12 years). In comparison to patients with preserved LV function (EF ≥ 55%), a significantly shorter time to the overall events' occurrence as well as to "hard" ones was found either in patients with postoperative LVEF ≤ 35% ($p = 0.001$; $p = 0.001$; respectively) or with EF of 36–54% ($p = 0.01$; $p = 0.037$; respectively), while a significantly shorter time to cardiac death and LV failure occurrence was found only in patients with severely depressed LV function (EF ≤ 35%) in comparison to patients with LVEF ≥ 55% ($p = 0.03$; $p = 0.0001$; respectively). The median time of survival for patients with LVEF ≤ 35% was 10 years, for those with LVEF of 36–54% was 12 years and for patients with LVEF ≥ 55% it was 17 years.

After performing a correlation analysis of demographic, pre- and postoperative clinical, echocardiography and angiographic variables, potential predictors of adverse cardiac events, including cardiac death, were identified and entered in Cox proportional hazard models. After adjustment for other factors, the preoperative presence of the symptoms of LV failure was identified as an independent predictor of intrahospital cardiac death ($p = 0.0001$), while the postoperative echocardiographically assessed LV systolic internal dimension as well as LVEF were revealed as independent predictors of overall cardiac events' occurrence ($p = 0.0001$). As for postoperative cardiac death, the most significant predictors of its occurrence were the preoperative presence of symptoms and signs of LV failure and postoperative complications ($p = 0.002$).

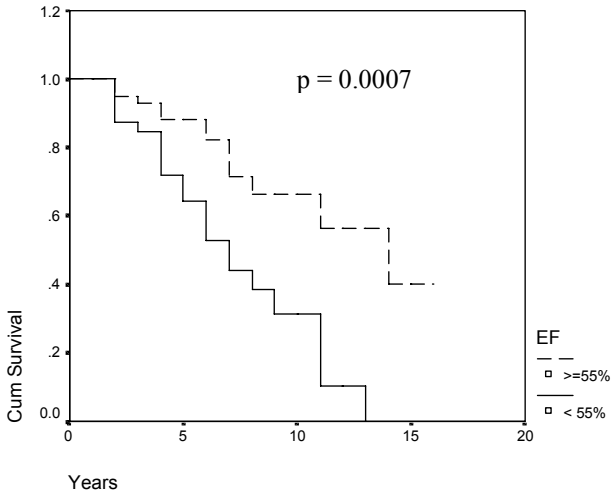

Figure 3 – *Kaplan-Meier curves for probability of not experiencing future coronary events in study population divided according to the registered* ***postoperative*** *LV function*

Графикон 3 – *Kaplan-Meier криви за веројатноста на отсуството на појава на несакани збиднувања во испитуваната популација поделена според* ***послеоперативно*** *измерената ЛК функција*

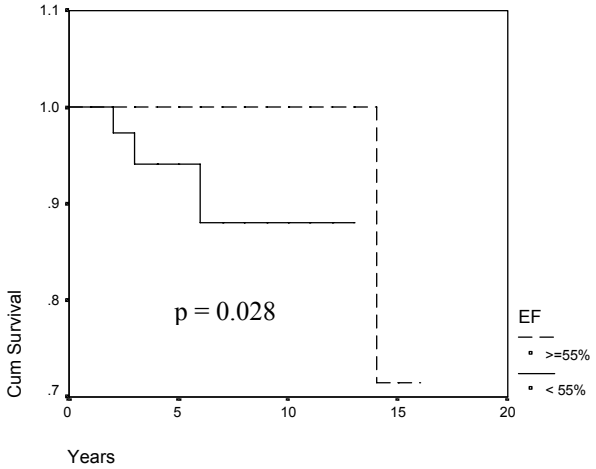

Figure 4 – *Kaplan-Meier curves for probability of not experiencing cardiac death in study population divided according to the registered* ***postoperative*** *LV function*

Графикон 4 – *Kaplan-Meier криви за веројатноста на отсуството на појава на смрт во испитуваната популација поделена според* ***послеоперативно*** *измерената ЛК функција*

Discussion

At the end of seventies of the last century surgical coronary revascularization became standard therapy for patients with multivessel CAD and severe myocardial ischemia. As a result of several clinical studies this therapeutic option appeared as an extremely useful procedure for patients with moderate to severe LV dysfunction, although at the expense of higher perioperative mortality. [1–5]

A number of demographic, clinical and imaging variables have been identified as predictive factors of a higher operative mortality rate in patients with impaired LV function, such as: emergency of surgical operation; low EF; higher end-diastolic LV pressure; worse wall motion abnormalities score index (WMSI); higher left main stenosis; advanced age; female gender; previous coronary bypass surgery etc. [6–10] The majority of studies have revealed that operative mortality progressively increases with a lowering of EF to below 40%, reaching the highest value in patients with an EF below 20%. However, few studies came to the notion that the operative mortality rate increases along with the extent of heart failure symptoms, no meter of objective extent of LV dysfunction being represented by decreased EF. [2, 9]

The results of our study showed that intrahospital mortality rate in the overall population was 2.2% which is within the limits issued in the literature (around 3%), i.e. 2% in patients with EF < 55% and 4.1% in patients with EF ≤ 35%, but without any statistically significant increase of mortality with a decrease of preoperatively assessed EF. Such results are possibly related to application of CABG in a highly selected population with LV dysfunction that have few associated diseases as well as to complete revascularization, especially arterial which was in this group of patients more often applied. However, intrahospital mortality appeared significantly more often in patients with a preoperative presence of symptoms of LV failure (12.1% in patients with symptoms vs. 1% in patients without; $p = 0.0001$). Although analysis of preoperatively assessed variables showed the existence of a significant correlation between mortality and advanced age, symptoms of LV failure, echocardiogaphically assessed higher LV end-diastolic dimension and aneurismectomy, Cox-regression analysis revealed that only the presence of symptoms of LV failure was identified as an independent predictive factor of intrahospital mortality, which led to a risk of 5% in those patients who had them.

In the literature, evidence from randomized studies that could confirm the positive impact of CABG on LV failure symptoms improvement is still lacking, but results of observational studies has revealed that the application of CABG could improve the symptoms, i.e. stabilize and improve LV function, exercise-tolerance and/or extend the long-term survival in selected patients with

the presence of a relevant amount of viable myocardium which is vascularized by adequate coronary arteries that could be bypassed. [1, 8, 11–13] Analysis of data from CASS registry and Duke University Cardiovascular Database regarding 5- and 10-year survival rates of patients with LV failure revealed that 5-years survival in patients revascularized by CABG was 63% versus 43% in patients medically treated. Yet, patients with EF ≤ 35% had the most benefit from CABG with a 10-year survival rate of 46% versus 27% in medically treated ones. [11] However, in part of this population group, a beneficial effect of CABG on the clinical outcome could not be found; even some increase in frequency of adverse cardiac events' occurrence, including death could be demonstrated. Therefore, having the possibility to identify patients with LV dysfunction who could most benefit from surgical revascularization becomes extremely important.

For many years now, a number of clinical and non-invasive imaging methods have been used, whose essential goal was to identify predictive factors of postoperative symptom improvement and better long-term prognosis in patients with LV dysfunction. Therefore many factors have been identified: age, diabetes mellitus, previous CABG, time to surgical revascularization, functional impairment assessed by NYHA and/or LVEF, i.e. percentage of viable myocardium and/or amount of a myocardial scar. [4, 12, 13]

The results of our study revealed the lack of a statistically significant difference in the frequency as well as the time free of adverse cardiac events' occurrence, including cardiac death in patients divided according to preoperatively assessed LVEF (LVEF < 55% and ≥ 55%). However, when we analyse the same patients further divided into severe (EF ≤ 35%) and moderate (36–54%) LV dysfunction, the results revealed a statistically significant shorter time to cardiac death occurrence, but with acceptable long-term survival in patients with EF ≤ 35% in comparison to those with EF ≥ 55% ($p = 0.019$; Figure 2). These results are probably due to a higher percent of intrahospital cardiac death in patients with LVEF ≤ 35%, and acceptable long-term survival to the fact that patients with LVEF < 55% postoperative showed significant improvement of LV function in relation to preoperative values (Figure 1). On the other hand, in patients divided according to postoperative assessed LVEF, the comparison analysis revealed more frequent adverse cardiac events' occurrence, but without cardiac death in patients with EF < 55%. As for analysis of the time to event occurrence in patients divided according to the postoperative assessed LVEF, a significantly by worse prognosis was found for the patients with LVEF < 55% (Figure 3 and 4). In comparison to patients with preserved LV function (EF ≥ 55%), the time to overall cardiac events' occurrence was significantly shorter both in patients with LVEF ≤ 35% and in those with LVEF of 36–54%, while a significantly shorter time to cardiac death occurrence as well as signs and

symptoms of LV failure appeared only in patients with severe LV dysfunction (LVEF ≤ 35%). However, besides a relatively worse prognosis, acceptable long-term survival has been identified both in patients with LVEF < 55% and in those with postoperative severely impaired LV function (EF ≤ 35%).

The results of our study revealed that the preoperative presence of symptoms of LV failure as well as postoperative assessed LVEF appeared as most significant independent predictors of prognosis in patients after surgical revascularization.

Limitation of the study

The potential limitation of the present study was the low mortality rates encountered in our cohort which could represent the limitation factor to detect differences and/or assess prognosis according to certain predictive variables. However, the satisfactory number of patients and its long-term follow-up, provide a real base for interpretation of the results of the study.

Conclusion

The results of our study revealed that surgical coronary revascularization in patients with CAD and LV dysfunction, although carrying a higher risk of operative and postoperative adverse cardiac events' occurrence and/or cardiac death, can be performed as a therapeutically safe option, providing a relatively long-term period of time without coronary events including cardiac death.

Symptoms of LV failure appeared as a significant independent predictor of intrahospital as well as postoperative mortality, while postoperative assessed LVEF as a representative of LV systolic function, appeared as significant independent predictor of the long-term clinical outcome in patients with surgical coronary revascularization.

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Резиме

ПРЕТСКАЖУВАЧКА ВРЕДНОСТ НА ЛЕВОКОМОРНАТА ФУНКЦИЈА ВРЗ ПРОГНОЗАТА КАЈ ПАЦИЕНТИ ПО КОРОНАРНА БАЈПАС ХИРУРГИЈА

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Со цел да се процени претскажувачката вредност на лево коморната (ЛК) функција врз прогнозата, ретроспективно-проспективно во тек на 16 години беа следени 320 пациенти (средна возраст од 55.9 ± 9.2 години; 44 жени и 276 мажи) по коронарна бајпас хирургија. Пациентите беа поделувани на две групи според пред- и послеоперативно ехокардиографски регистрираната ејекциона фракција (ЕФ): пациенти со нарушена ЛК функција (ЕФ < 55%) и пациенти со сочувана ЛК функција (ЕФ ≥ 55%), а прогностичките ефекти на обележјата беа испитувани и кај пациентите со значајно нарушена ЛК функција (ЕФ < 35%). Болничка смртност беше забележана кај 2.0% од пациентите со ЕФ < 55% и 4.5% кај пациентите со ЕФ < 35%, што не претставуваше статистички значајно зголемување на смртноста со намалување на предоперативно проценетата ЕФ. За разлика од предоперативно проценетата ЕФ којашто не се покажа како дискриминаторен фактор на долгорочната прогноза, кај пациентите со ЛК дисфункција регистрирана со послеоперативно проценетата ЕФ беше најдена, како зголемена честота на појава на несакани збиднувањата, така и пократко време до нивната појава, но со задоволително долгорочно преживување. Симптомите на ЛК слабост и послеоперативно проценетата ЕФ се издвоија како најзначајни независни претскажувачи во предвидувањето на прогнозата на пациентите по хируршка реваскуларизација на миокардот.

Би можеле да заклучиме дека хируршката реваскуларизација на миокардот кај пациентите со КАБ и ЛК дисфункција, иако носи поголем ризик за појава на оперативни и послеоперативни несакани збиднувања и/или смрт може да се примени како сигурна терапевтска опција, при што

обезбедува релативно долг период ослободен од несакани коронарни збиднувања, вклучувајќи ја и смртта. Послеоперативно проценетата ЛК систолна функција претставува значаен претскажувач на клиничкиот тек.

Клучни зборови: лево коморна слабост, коронарна бајпас хирургија, прогноза.

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