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ARTYKUŁ ORYGINALNY / *ORIGINAL ARTICLE*

Prognosis in patients with left main coronary artery disease managed surgically, percutaneously or medically: a long-term follow-up

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Abstract

Background: Left main stenosis (LMS) occurs in 5–7% of patients with coronary artery disease. Half of patients with left main coronary artery (LMCA) disease die within few years after the diagnosis.

Aim: To evaluate survival of patients with LMCA disease treated with coronary artery bypass grafting (CABG), percutaneous coronary intervention (PCI), or managed medically due to lack of consent for CABG or being considered unsuitable candidates for CABG/PCI.

Methods: In 2006–2008, a significant LMS was found in 257 (5.14%) patients, and 98.44% of these patients were followed up for on average 15.1 months. The patients were divided into 5 groups according to the treatment used. CABG was performed in 67% of patients, PCI of an unprotected LMS in 8% of patients, and 12% of patients were treated with PCI after a previous CABG (protected LMS). The remaining patients were managed medically: 4% were not considered suitable for CABG, and 9% did not give their consent for CABG.

Results: Total mortality in the overall study group ($n = 253$) was 14.6%. Multivessel disease was more frequent in the CABG group (60.9% vs. 15.8%, $p < 0.001$). Mortality in CABG and PCI groups was comparable (11.4% vs. 15.8%). Patients in the PCI group were more frequently hospitalised due to recurrent angina (21.1% vs. 3.0%, $p < 0.001$) and the need for repeated revascularisation (15.8% vs. 1.2%, $p < 0.001$). Compared to the CABG group, patients considered not suitable for CABG had lower left ventricular ejection fraction (LVEF) (36.55% vs. 51.04%, $p < 0.001$) and a higher mortality risk as estimated by the EuroScore. Mortality among patients deemed unsuitable for CABG was 54.6% ($p < 0.001$) and myocardial infarctions were observed more frequently in this group (18.2% vs. 2.4%, $p < 0.01$). In comparison to the CABG group, patients who did not consent to CABG were older (71.04 vs. 65.99 years, $p = 0.027$), had lower LVEF (44.05% vs. 51.04%, $p = 0.004$), were less frequently hospitalised due to acute coronary syndromes (17.4% vs. 40.8%, $p = 0.03$), and had a smaller degree of LMS (63% vs. 71%, $p = 0.027$). Mortality in this group was comparable to the CABG group (17.4% vs. 11.4%). The majority of patients who underwent previous CABG needed repeated revascularisation: PCI of a protected LMS was performed in 27% of patients, PCI of other native coronary arteries in 39% of patients, and PCI of a bypass graft in 7% of patients.

Conclusions: PCI of unprotected LMCA may be an equally effective revascularisation method as CABG. High mortality (55%) due to concomitant diseases was observed among patients with LMS who were deemed unsuitable candidates for CABG. Prognosis among patients who declined CABG was relatively good and might have been related to the small number of patients and different patient characteristics in this group.

Key words: left main coronary artery disease, coronary artery bypass grafting, coronary angioplasty, medical management

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INTRODUCTION

A significant stenosis of the left main coronary artery (LMCA) is found in coronary angiography in about 5–7% of patients with coronary artery disease (CAD). It is most commonly located distally and accompanied by significant stenoses in other coronary arteries in about 80% of patients. Occlusion of the LMCA, if not associated with the presence of well-developed collateral circulation or protected by a bypass graft to the left anterior descending (LAD) or left circumflex (LCx) artery, leads to an extensive myocardial infarction (MI) and patient death [1–3].

Long-term follow-up studies showed that about 50% of patients with left main stenosis (LMS) managed medically die within several (3–5) years after the diagnosis [2, 4, 5]. Coronary artery bypass grafting (CABG) has been the treatment of choice in patients with LMCA disease for many years, and percutaneous coronary intervention (PCI) is considered an alternative treatment modality, particularly when CABG is not feasible or if the patient does not consent to cardiac surgery, provided that PCI is a viable option [6, 7].

The aim of the study was to evaluate survival of patients with LMCA disease treated with CABG, PCI or managed medically due to lack of consent for CABG or being considered unsuitable candidates for coronary revascularisation (CABG/PCI).

METHODS

We retrospectively evaluated medical records of 5,000 patients who underwent coronary angiography at the Department of Invasive Cardiology, Medical University of Bialystok, since January 2006 to March 2008. The present study included all patients (n = 257; 5.14%) with a significant LMS defined as vessel lumen reduction by ≥ 50%.

Long-term follow-up was based on direct telephone interviews with the patients or their family members at 4–34 (mean 15.4) months after the treatment. Missing data were collected using the PESEL (*Powszechny Elektroniczny System Ewidencji Ludności*, Universal Electronic System for Registration of the Population) numbers and the personal information database of the Podlaskie Voivodship Office (*Podlaski Urząd Wojewódzki*) in Bialystok. Long-term follow-up data were available for 253 patients (98.44%) who were included in the final analysis (192 men and 61 women). Table 1 shows the baseline characteristics of the study population.

The study population was divided into 5 groups according to the treatment used and the cause of not performing revascularisation. Most patients underwent invasive treatment, including 169 (67%) patients treated with CABG (Group 1), 19 (8%) patients treated with PCI of unprotected LMS (Group 2), and 30 (12%) patients treated with PCI after a previous CABG (protected LMS; Group 5). The remaining 34 (13%) patients were managed medically, including 11 (4%) of patients considered not suitable for CABG (Group 3) and 23 (9%) patients who did not give their consent for CABG (Group 4). One patient who died 5 days before the scheduled admission to the Department of Cardiac Surgery was also not

Table 1. Clinical and angiographic characteristics of the study population (n = 253)

Age [years]		66.23 ± 10.53
Men		75.9%
Stable coronary artery disease		46.6%
Acute coronary syndrome		53.4%
Left ventricular ejection fraction [%]		48.94 ± 11.53
ST elevation in aVR		28. %1
Previous myocardial infarction		42.3%
Previous coronary artery bypass grafting		11.9%
Previous angioplasty of the left main coronary artery		1.2%
Previous angioplasty of other coronary arteries		14.6%
Degree of left main stenosis [%]		71.17 ± 15.40
Location of left main stenosis:	Proximal segment	15.4%
	Middle segment	4.3%
	Distal segment	58.5%
	Whole left main	21.7%
Mean number of significantly stenosed coronary arteries		2.75 ± 1.31
Number of significantly stenosed coronary arteries in addition to the left main coronary artery (% of patients):	0	5.1%
	1	13.0%
	2	20.6%
	≥ 3	61.3%

Table 2. Clinical characteristics of the patient groups

	Group 1: CABG (n = 169)	Group 2: PCI N = 19	Group 3: Medical treatment (n = 11)	Group 4: Medical treatment (n = 23)	Group 5: PLMS (n = 30)
Age [years]	65.99 ± 10.18 △	62.05 ± 13.68	70.27 ± 7.46	71.04 ± 10.63 △	65.67 ± 4.95
Men	72.8%	89.5%	74.4%	78.3%	73.3%
BMI [kg/m^2]	28.16 ± 4.14	28.69 ± 3.86	30.31 ± 5.72	28.86 ± 4.42	29.01 ± 4.74
Stable CAD	43.2% $	47.3%	36.4%	56.5%	63.3% $
Troponin-negative ACS	40.8% △△	21.1%	27.2%	17.4% △△	23.3%
Troponin-positive ACS	16.0%	31.6%	36.4%	26.1%	13.3%
EF [%]	51.04 ± 10.81 #△△△$$	52.06 ± 9.52	36.55 ± 14.32 #	44.05 ± 9.66 △△△	42.64 ± 11.51 $$
ST elevation in aVR	25.3% $$$	16.7%	45.5%	26.1%	50.0% $$$
Hypertension	76.9%	68.4%	72.7%	78.3%	83.3%
Diabetes type 2	25.4%	21.1%	18.2%	34.8%	20.0%
Hyperlipidaemia	66.3% *##&	42.1% *	27.3% ##	39.1% &	70.0%
Smoking	54.6%	72.3%	80.0%	56.5%	40.0%
Family history of CAD	35.0%	33.3%	30.0%	30.4%	33.3%
Previous myocardial infarction	41.4%	26.3%	45.5%	52.2%	50.0%
Additive EuroScore	4.78 ± 3.29 ###€	4.32 ± 4.06	9.00 ± 5.69 ###	6.04 ± 3.87	6.9 ± 3.19 €
Logistic EuroScore	5.94 ± 7.58 #&&€€	5.64 ± 6.24	23.53 ± 28.53 #	9.80 ± 13.58 &&	16.68 ± 12.26 €€

*G1 vs. G2: p = 0.036
#G1 vs. G3: p < 0.001; ##G1 vs. G3: p = 0.013; ###G1 vs. G3: p = 0.034
△G1 vs. G4: p = 0.027; △△G1 vs. G4: p = 0.03; △△△G1 vs. G4: p = 0.004
&G1 vs. G4: p = 0.01; &&G1 vs. G4: p = 0.042
$G1 vs. G5: p = 0.045; $$G1 vs. G5: p = 0.0002; $$$G1 vs. G5: p = 0.006
€G1 vs. G5: p = 0.0008; €€G1 vs. G5: p < 0.001
ACS — acute coronary syndrome; BMI — body mass index; CABG — coronary artery bypass grafting; CAD — coronary artery disease; EF — ejection fraction; G — group; PCI — percutaneous coronary intervention; PLMS — protected left main stenosis

included in further analyses due to a difficulty with assigning him to any of the above groups.

Among 169 patients who underwent cardiac surgery, off-pump CABG was performed in 23.4%. The mean number of bypass grafts per patient was 2.61, and the mean number of anastomoses per patient was 3.28. An arterial graft to the LAD artery (LIMA-LAD) was performed in 86.2% of patients. Simultaneous valve surgery was necessary in 7.2% of patients, and left ventricular plasty in 3.6% of patients. Two female patients underwent surgical ostioplasty of the LMCA using the approach described by Hitchcock et al. [8].

PCI for LMCA disease was performed in 27 patients, including 8 patients after previous CABG due to LMCA disease or multivessel disease. One patient underwent balloon angioplasty, a drug-eluting stent (DES) was implanted in 46% of patients, and the remaining patients were treated with a bare metal stent (BMS). In 59% of patients treated with PCI of the LMCA, a follow-up coronary angiography was performed at 4–9 (mean 5.9) months after the treatment, including 11 patients with unprotected left main stenosis (UPLMS) and 5 patients with protected left main stenosis (PLMS). The remaining patients did not give their consent for a follow-up coronary angiography.

As CABG is the treatment of choice in patients with LMCA disease, all treatment groups were compared to patients who underwent cardiac surgery.

Statistical analysis

Statistical analysis of the study results included the Student *t* test, the Mann-Whitney test, the χ^2 test, and the test for two frequencies. We also used Kaplan-Meier survival analysis. In addition, multivariate logistic regression analysis was performed for the total mortality. All calculations were performed using the STATISTICA 10 package.

RESULTS

CABG vs. PCI of unprotected LMS

Clinical and angiographic characteristics of the groups treated with PCI of the LMCA and CABG is shown in Tables 2 and 3.

Mortality among patients treated with CABG and PCI did not differ significantly (Fig. 1). Patients treated with PCI were more frequently hospitalised due to recurrent angina

Table 3. Angiographic characteristics of the study groups.

		Group 1: CABG (n = 169)	Group 2: PCI (n = 19)	Group 3: Medical treatment (n = 11)	Group 4: Medical treatment (n = 23)	Group 5: PLMS (n = 30)
Degree of left main stenosis [%]		70.88 ± 15.22 △ €	72.58 ± 14.65	70.91 ± 12.21	63.26 ± 15.57 △	78.10 ± 15.85 €
Location of left main stenosis:	Proximal segment	16.0%	26.3%	9.1%	4.3%	16.7%
	Middle segment	2.4%	15.8%	18.2%	4.3%	3.3%
	Distal segment	62.1% *	26.3% *	45.5%	78.3%	46.7%
	Whole left main	19.5%	31.6%	27.3%	13.1%	33.3%
Number of significantly stenosed coronary arteries		2.40 ± 0.88 **	1.16 ± 0.55 **	2.86 ± 0.38	2.52 ± 0.89	2.43 ± 0.86
Number of significantly stenosed coronary arteries in addition to the left main coronary artery (% of patients)	0	4.7%	15.8%	0.0%	4.3%	3.3%
	1	11.8%	36.8%	9.1%	4.3%	13.3%
	2	22.6% △△	31.6%	9.1%	4.3% △△	20.0%
	≥ 3	60.9% **	15.8% **	81.8%	87.1%	63.3%

*G1 vs. G2: p = 0.003; **G1 vs. G2: p < 0.001
△G1 vs. G4: p = 0.027; △△G1 vs. G4: p = 0.04
€G1 vs. G5: p = 0.02
CABG — coronary artery bypass grafting; G — group; PCI — percutaneous coronary intervention; PLMS — protected left main stenosis

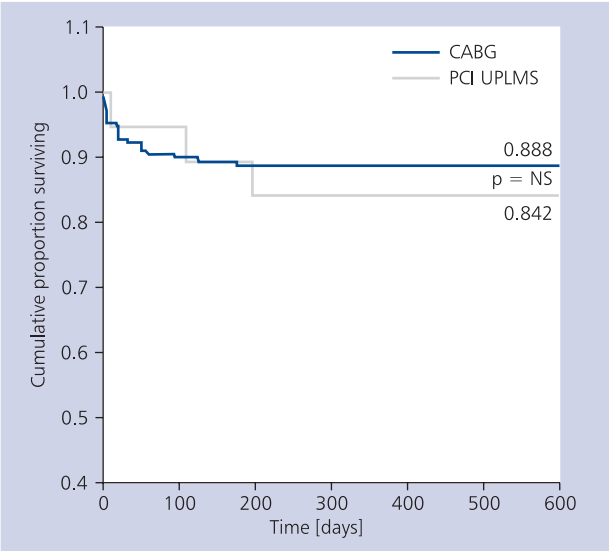

Figure 1. Kaplan-Meier survival curves during long-term follow-up in patients treated with coronary artery bypass grafting (CABG) or percutaneous coronary intervention of an unprotected left main stenosis (PCI UPLMS)

(Table 4). Follow-up coronary angiography at 6 months was performed in 11 (58%) patients, including 3 with recurrent angina. A durable effect of PCI of the LMCA was noted in all patients, and recurrent anginal symptoms were related to significant lesions in other coronary arteries. The remaining patients did not give their consent for a follow-up coronary angiography. Among 19 patients treated with PCI of UPLMS, 3 (15.8%) deaths were noted.

CABG vs. medical treatment in patients deemed unsuitable for CABG

In the study group, 11 (4.3%) patients were deemed unsuitable candidates for CABG, mostly due to concomitant diseases or poor overall clinical status. These patients were managed medically because percutaneous revascularisation was also not feasible.

The main reasons for declining CABG in these patients included cardiogenic shock with pulmonary oedema (3 patients), lower limb amputation due to severe peripheral arterial disease (2 patients), contrast nephropathy requiring renal replacement therapy (1 patient), pulmonary embolism (1 patient), stroke following coronary angiography (1 patient), and advanced renal cancer (1 patient).

Clinical and angiographic characteristics of patients deemed unsuitable candidates for CABG are shown in Tables 2 and 3. Surgical risk estimated using both EuroScore models was much higher compared to the group treated with CABG (Table 2).

Among 11 patients who were declined CABG, 6 (54.6%) patients died, including 3 due to MI. CAD remained stable in 4 of 5 survivors who were contacted during follow-up evaluation (Table 4, Fig. 2).

CABG vs. medical treatment in patients who did not give consent for CABG

Among 192 patients selected for cardiac surgery, 23 patients did not consent for the proposed treatment and did not show up for the scheduled elective surgery in the Department of Cardiac Surgery. These patients were considered managed medically due to lack of consent for CABG.

Table 4. Long-term follow-up data in the study groups

	Group 1: CABG (n = 169)	Group 2: PCI (n = 19)	Group 3: Medical treatment (n = 11)	Group 4: Medical treatment (n = 23)	Group 5: PLMS (n = 30)
Death	11.4% #	15.8%	54.6% #	17.4%	13.3%
Myocardial infarction	2.4% ##	0.0%	18.2% ##	0%	3.3%
Repeated revascularisation (PCI)	1.2% *	15.8% *	0%	4.3%	0%
Hospitalisation: recurrent angina	3.0% *	21.1% *	0%	8.7%	10.0%
Hospitalisation: other reason	25.4%	10.5%	27.3%	28.7%	23.3%

*G1 vs. G2: $p < 0.001$
#G1 vs. G3: $p < 0.001$; ##G1 vs. G3: $p = 0.005$
CABG — coronary artery bypass grafting; G — group; PCI — percutaneous coronary intervention; PLMS — protected left main stenosis

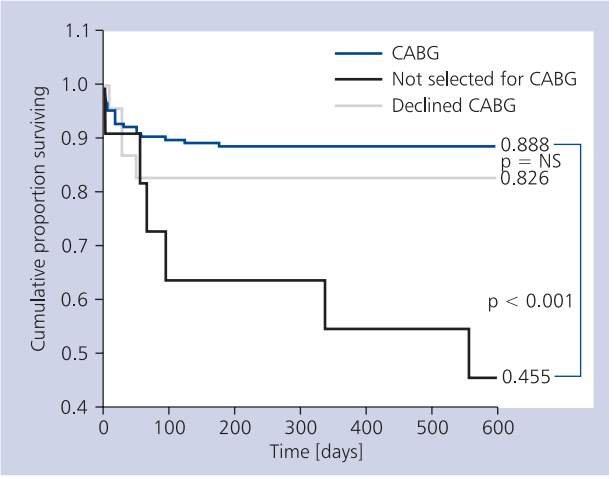

Figure 2. Kaplan-Meier survival curves during long-term follow-up in patients treated with coronary artery bypass grafting (CABG), patients not selected for CABG and patients who declined CABG

Clinical and angiographic characteristics of patients who did consent for CABG are shown in Tables 2 and 3. Surgical risk estimated using the logistic EuroScore model was higher compared to the group treated with CABG. Mortality among patients who did consent for CABG was similar to those treated with CABG (Table 4, Fig. 2). In 6 patients in this group (26%) who were hospitalised due to an acute coronary syndrome, PCI of the culprit artery (LAD, LCx, right coronary artery or other vessel) was performed. Due to a finding of significant LMS, these patients were referred for elective CABG but did not consent for this treatment.

Patients with protected LMS

Thirty of 253 patients (11.9%) previously underwent CABG due to LMCA or multivessel disease. Time from previous CABG ranged from 2 months to 12 years (mean 5 years). These patients underwent coronary angiography due to recurrent or worsening anginal symptoms. Most patients with PLMS required repeated revascularisation, including 8 patients treated with PCI of PLMS, 12 patients treated with angioplasty of other native vessels, and 2 patients treated with PCI of bypass grafts. Further medical management was selected in 8 patients.

During long-term follow-up, 4 patients died including 2 patients after PCI of PLMS and 2 patients after PCI of other native vessels, and 9 patients were rehospitalised including 3 patients due to recurrent angina and 6 patients due to other causes. Among 8 patients treated with PCI of PLMS, a follow-up coronary angiography at 6 months after the procedure was performed in 5 patients, showing a durable PCI effect.

In addition, we compared long-term outcomes in patients treated with CABG (n = 169) and patient who received any other treatment than CABG (n = 84). Compared to the CABG group, the non-CABG group was characterised by higher mortality (21.4% vs. 11.4%, $p = 0.034$) and more frequent hospitalisations due to recurrent anginal symptoms (10.7% vs. 3.0%, $p = 0.012$) during long-term follow-up.

Overall mortality in the study population (n = 253) was 14.6%. Figure 3 shows mortality in the analysed patient groups. In multivariate logistic regression analysis, variables associated with increased mortality risk included age (odds ratio [OR] 3.71, 95% confidence interval [CI] 1.76–7.83, $p < 0.001$), low ejection fraction (OR 6.64, 95% CI 2.97–14.85, $p < 0.001$), and medical management of UPLMS regardless of the reason (OR 3.54, 95% CI 1.55–8.08, $p = 0.004$).

DISCUSSION

The main purpose of the present study was to evaluate long-term outcomes in patients with LMCA disease. We analysed treatment outcomes in all patients with LMS, categorising them into 5 groups depending on the treatment approach used and being aware of their heterogeneity. We were unable to determine outcomes of only 4 (1.6%) patients who were not included in the long-term follow-up analysis.

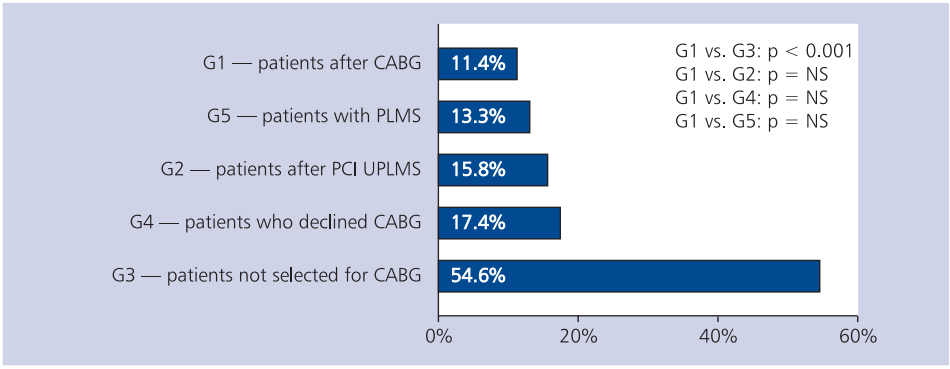

Figure 3. Long-term mortality in study groups; CABG — coronary artery bypass grafting; G — group; PCI — percutaneous coronary intervention; PLMS — protected left main stenosis; UPLMS — unprotected left main stenosis

Our study population had a comparable age, gender, and cardiovascular risk factor profile to patient groups evaluated in other studies on LMCA disease [9–11]. The study was limited to a single centre and thus the patient number was smaller than in multicentre registries. The prevalence of LMS in our study (5.14%) was similar to other literature data [1, 12]. Isolated LMS was also found at a similar rate (5.1%) as in other studies [10, 11]. Both in our study and other reports, LMCA disease was mostly located distally and less frequently in the proximal and middle segments of the LMCA [9, 10, 13, 14].

During a mean of 15.4 months of follow-up, mortality in the overall study group was 14.6%, higher than in other studies with similar duration of follow-up that were published in recent years and reported outcomes in patients with LMCA disease. In most recent studies evaluating outcomes of PCI using various types of stents, mortality was in the range of 4–10% [15–18]. Higher mortality observed in our study resulted from the lack of exclusion criteria, resulting in inclusion of high-risk patients with multiple concomitant diseases or critically ill patients, including those in cardiogenic shock.

CABG vs. PCI

Patients who underwent PCI for LMCA disease were much fewer than those treated with CABG (19 vs. 169). During 15.4 months of follow-up, more frequent repeated revascularisations and hospitalisations due to recurrent angina were noted among patients treated with PCI. Mortality did not differ significantly between the two groups (11.4% in the CABG group vs. 15.8% in the PCI group). Among 19 patients in the CABG group, in whom valvular surgery or left ventricular plasty was performed in addition to bypass grafting, 4 deaths were noted, yielding a mortality of 21%. When these patients were excluded, mortality associated with isolated CABG was 10% compared to 15.8% in the PCI group (p = NS). Half of patients treated with PCI of UPLMS had a DES implanted. All patients in the PCI group who died were treated with BMS.

In the recent years, most studies on LMCA disease compared outcomes of cardiac surgery and percutaneous revascularisation using different types of DES and BMS. Despite largely different numbers of patients in the PCI and CABG groups in our study, our results are similar to those reported in other analyses based on a similar duration of follow-up [19]. Similar mortality following surgical and percutaneous treatment of LMS was reported in other nonrandomised studies [13, 20, 21]. Lower mortality among patients treated with PCI and CABG was observed in shorter-term studies [22, 23]. In most studies, patients treated with PCI more frequently required repeated revascularisations [19, 21, 23]. Strokes were more frequent after CABG in some studies [11, 23], but in other studies they were more frequent after PCI [13, 21, 22]. Similarly discordant results were reported for MI [13, 19, 21].

In a study by Buszman et al. [14], a higher mortality during a 12-month follow-up was observed among surgical patients, when similar numbers of patients treated with PCI and CABG were compared (7.5% vs. 1.9%). In the Syntax study, 12-month mortality was similar in both groups (PCI 4.2% in the PCI group vs. 4.4% in the CABG group) [9].

Current expert views on the management of LMCA disease and outcomes reported after the Syntax study were reflected in the most recent 2009 focused update of the ACC/AHA guidelines for the management of patients with ST elevation MI and the ACC/AHA/SCAI guidelines on PCI [24]. In the most recent 2010 guidelines on myocardial revascularisation, PCI of UPLMS was upgraded to class IIa recommendation, level of evidence B, in cases of isolated LMS or LMS with concomitant significant stenosis of a single additional coronary artery [7].

CABG vs. medical management

Eleven patients in the study group were deemed unsuitable candidates for CABG, mostly due to concomitant diseases. These patients were also not treated with PCI of LMCA due to the fact that percutaneous treatment was technically

not feasible. During long-term follow-up, 6 of these 11 patients died (54.6%), and thus this group was characterised by the highest mortality observed in our study. In initial studies evaluating prognosis in patients with LMCA disease, mortality during several years of follow-up was reported to be in the range of 40–50% [4, 5].

The other medically managed group included 23 patients who were referred for elective CABG but did not show up in the cardiac surgical unit or for the scheduled appointment in the outpatient clinic. During follow-up evaluation, they explained their decision with generally good well-being and unwillingness to undergo a major cardiac surgery. It was considered that these patients withdrew their previous consent for CABG. Most patients in this group (56.5%) were hospitalised due to stable CAD, and the degree of LMS was smaller. During long-term follow-up, mortality among these patients did not differ significantly compared to patients treated with CABG. However, analysis of the Kaplan-Meier survival curves indicates that deaths among these patients occurred during the first 3 months of follow-up. In our study, survival among medically managed patients with LMS was significantly better than reported previously [4, 5] which seems to be related to a stable clinical course of CAD, a lesser degree of LMS, and the performance of PCI of the culprit vessel in one fourth of patients in this group.

Patients with protected LMCA

We separately analysed 30 patients who underwent previous CABG due to multivessel disease or a significant LMS. Follow-up evaluation in this group was performed mean 6.4 years after CABG (including 5 years from previous CABG to the study inclusion). During 15.4 months of follow-up, 13.3% of patients died. This mortality is comparable to mortality reported in other studies that evaluated outcomes of PCI of PLMS. In a study by Vignali et al. [25], 12% of patients treated with PCI of PLMS died during a 14-month follow-up. Smaller 1-year mortality (5%) among patients with PLMS treated with PCI using metal stents was reported by Kelley et al. [3]. However, in a registry evaluating outcomes of PCI using sirolimus-eluting stents, 3-year mortality among patients with PLMS was 20%, higher than among patients with UPLMS [26].

Limitations of the study

Authors are well aware of the limitations of this study. It was a retrospective analysis that included a small group of patients treated with PCI. In addition, we did not evaluate the severity of CAD using the Syntax score, as patients included in this study were treated prior to the development and wide application of this score in clinical practice.

CONCLUSIONS

Based on our analyses, the following conclusions can be reached:

1. In selected cases, PCI of unprotected LMCA may be an equally effective revascularisation method as CABG. Outcomes in patients treated with CABG were worse when additional procedures were required (valve replacement, left ventricular plasty).
2. High mortality (55%) was noted among patients with LMCA disease deemed unsuitable candidates for both CABG and PCI, mostly related to the presence of concomitant diseases.
3. A relatively good prognosis among patients who declined CABG might have been related to the small number of patients and different patient characteristics in this group (stable disease course, less severe LMCA stenosis).
4. Patients with unprotected LMCA disease are a heterogeneous patient group that often requires revascularisation procedures and is characterised by large mortality during long-term follow-up.

Conflict of interest: *none declared*

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Rokowanie pacjentów z chorobą pnia lewej tętnicy wieńcowej leczonych kardiochirurgicznie, przezskórnie i zachowawczo: obserwacja odległa

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Streszczenie

Wstęp: Choroba pnia lewej tętnicy wieńcowej (LMCA) jest najpoważniejszą postacią choroby niedokrwiennej serca. W koronarografii istotne zwężenie pnia lewej tętnicy wieńcowej (LMS) rozpoznaje się u ok. 5–7% pacjentów z chorobą wieńcową. Wyniki wieloletnich badań obserwacyjnych wykazały, że ok. 50% pacjentów ze zwężeniem LMCA leczonych zachowawczo umiera w ciągu kilku (3–5) lat od rozpoznania choroby. Dlatego też stwierdzenie LMS jest bezwzględnym wskazaniem do wykonania zabiegu rewaskularyzacyjnego. Pomostowanie aortalno-wieńcowe (CABG) od wielu lat pozostaje metodą z wyboru w leczeniu choroby LMCA, natomiast przezskórna interwencja wieńcowa (PCI) jest uznawana za metodę alternatywną.

Cel: Celem pracy była ocena przeżycia pacjentów z chorobą LMCA poddanych CABG, PCI i leczonych zachowawczo z powodu braku zgody na CABG lub dyskwalifikacji z leczenia rewaskularyzacyjnego (CABG/PCI).

Metody: W latach 2006–2008 w Klinice Kardiologii Inwazyjnej Uniwersytetu Medycznego w Białymstoku u 257 (5,14%) pacjentów w koronarografii stwierdzono LMS. Odległe badanie kontrolne przeprowadzono po średnio 15,4 miesiącach u 98,44% chorych. Ryzyko śmiertelności okołozabiegowej oszacowano za pomocą modelu numerycznego i logistycznego kardiochirurgicznej skali ryzyka EuroScore. Badaną populację podzielono na 5 grup w zależności od zastosowanej terapii. Większość chorych była leczona zabiegowo; 169 (67%) pacjentów poddano CABG, u 19 (8%) osób wykonano PCI niezabezpieczonego LMCA, natomiast 30 (12%) pacjentów już wcześniej przebyło CABG. Pozostałych 34 (13%) chorych było leczonych zachowawczo; 11 (4%) osób nie zakwalifikowano do leczenia, a 23 (9%) pacjentów nie wyraziło zgody na CABG. Poszczególne grupy chorych porównano z pacjentami leczonymi kardiochirurgicznie (CABG).

Wyniki: W grupie pacjentów poddanych CABG istotnie częściej niż w grupie PCI stwierdzano chorobę wielonaczyniową (60,9% *vs*. 15,8%; $p < 0,001$). Śmiertelność w grupach chorych leczonych za pomocą CABG i PCI LMCA nie różniła się statystycznie (11,4% *vs*. 15,8%), natomiast pacjenci po PCI LMCA częściej byli hospitalizowani z powodu nawrotu bólów dławicowych (21,1% *vs*. 3,0%; $p < 0,001$) i wymagali wykonania ponownych zabiegów rewaskularyzacyjnych (15,8% *vs*. 1,2%; $p < 0,001$). Pacjenci niezakwalifikowani do CABG charakteryzowali się niższą frakcją wyrzutową lewej komory (LVEF) w porównaniu z chorymi poddanymi CABG (36,55% *vs*. 51,04%; $p < 0,001$) oraz oszacowano u nich wyższe ryzyko operacyjne w obu modelach EuroScore. Śmiertelność w grupie pacjentów niezakwalifikowanych do CABG wyniosła 54,6% ($p < 0,001$) i częściej notowano u nich zawały serca (18,2% *vs*. 2,4%; $p < 0,01$). Pacjenci, którzy nie zgodzili się na CABG, byli starsi od chorych poddanych CABG (71,04 *vs*. 65,99; $p = 0,027$), mieli niższą LVEF (44,05% *vs*. 51,04%; $p = 0,004$) oraz istotnie rzadziej byli hospitalizowani z powodu niestabilnego przebiegu choroby wieńcowej (17,4% *vs*. 40,8%; $p = 0,03$). W koronarografii stwierdzono u nich w mniejszym stopniu zwężony LMCA (63% *vs*. 71%; $p = 0,027$). Oszacowano wyższe ryzyko operacyjne w modelu logistycznym EuroScore w grupie chorych leczonych zachowawczo niż u pacjentów poddanych CABG ($p = 0,042$). W grupie osób, które nie zgodziły się na leczenie kardiochirurgiczne, stwierdzono porównywalną śmiertelność jak wśród chorych poddanych CABG (17,4% *vs*. 11,4%). Większość pacjentów z grupy po wcześniej przebytym CABG wymagała ponownie leczenia rewaskularyzacyjnego. Największa grupa chorych (73%) była leczona inwazyjnie, w tym u 27% osób wykonano PCI LMCA, u 39% PCI innych naczyń natywnych, a u 7% PCI pomostów. W obserwacji odległej zmarło 13,3% chorych, 33% pacjentów było ponownie hospitalizowanych, w tym 10% z powodu nawrotu bólów dławicowych, a 23,3% z innych przyczyn. Śmiertelność w całej badanej grupie 253 chorych wyniosła 14,6%. W wieloczynnikowej analizie logistycznej czynnikami zwiększającymi ryzyko zgonu okazały się wiek, niska LVEF i leczenie zachowawcze.

Wnioski: Angioplastyka niezabezpieczonego LMCA w wybranych przypadkach klinicznych może być równie skuteczną metodą leczenia rewaskularyzacyjnego jak CABG. Dyskwalifikacja pacjentów z chorobą LMCA z leczenia rewaskularyzacyjnego wiąże się z bardzo wysoką (55%) śmiertelnością, wynikającą głównie z obecności chorób współistniejących. Dość dobre rokowanie osób leczonych zachowawczo z powodu braku zgody na CABG mogło wynikać z małej liczebności grupy i odmiennego profilu pacjentów (stabilny przebieg choroby, mniejszy stopień zwężenia pnia). Chorzy z zabezpieczonym LMCA stanowią grupę niejednorodną, wymagającą częstych zabiegów rewaskularyzacyjnych i obarczoną wysokim odsetkiem zgonów w obserwacji odległej.

Słowa kluczowe: choroba pnia lewej tętnicy wieńcowej, pomostowanie aortalno-wieńcowe, angioplastyka wieńcowa, leczenie zachowawcze

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