

Influence and importance of diabetes: the five-year outcomes in patients who underwent percutaneous coronary intervention

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Abstract

The incidence of diabetes is on a boom in the world. Coronary heart disease is the most common macrovascular complications of diabetes. Strict control of blood glucose levels contribute to the betterment of the patient and reduce the cost of treatment.

The aim is to show the influence and significance of diabetes in the five-year outcomes in patients who underwent percutaneous coronary intervention

Initially in the study included 800 patients who underwent percutaneous coronary angioplasty index. After the indexing procedure clinical monitoring is completed for 720 patients (90%) whose data after the completion of the follow-up period subjected to statistical analysis, which included descriptive statistics, a mutual comparison of the examined groups were used methods for testing the significance of differences numeric-factor analysis of variance (ANOVA) student's t test, rank sum test (Mann-Whitney U test) hi-square test. They were monitored and analyzed the parameters of cardiac status obtained on outpatient examinations, and data obtained by telephone contact with the patient. Patients involved in the study had a very good glyco-regulation, therefore there were no statistically significant differences in the five-year outcomes after percutaneous coronary intervention.

The study showed approximately equal distribution of the sexes patients who are suffering from diabetes, those with diabetes mellitus type 1 patients with type 2 diabetes.

There is no significance in survival, no matter what the patient is suffering from diabetes, has no significance because of the small number of deaths.

It is similar to myocardial infarction, no statistically significant differences between patients with diabetes and patients who do not suffer from diabetes in terms of myocardial infarction.

Ključne reči: estents, diabetes, coronary artery disease

Uticaj i značaj dijabetesa: 5-godišnje praćenje pacijenata koji su podvrgnuti perkutanoj koronarnoj intervenciji

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Apstrakt

Učestalost dijabetesa je u ogromnom porastu u celom svetu. Koronarna bolest srca predstavlja najčešću makrovaskularnu komplikaciju dijabetesa. Striktna kontrola vrednosti glukoze u krvi doprinosi boljitku pacijenta i smanjenju troškova lečenja. Cilj rada je da prikaže uticaj i značaj šećerne bolesti na petogodišnji ishod kod pacijenata kod kojih je rađena perkutana koronarna intervencija. Inicijalno u ispitivanju je uključeno 800 pacijenata koji su podvrgnuti indeksnoj perkutanoj koronarnoj angioplastici. Nakon indeksne procedure kliničko praćenje je kompletirano za 720 pacijenata (90%) čiji su podaci nakon zavšetka perioda praćenja podvrgnuti statističkoj analizi koja je uključila metode deskriptivne statistike a međusobno poređenje ispitivanih grupa korišćene su metode za ispitivanje značajnosti razlike jednofaktorska numrička analiza varijanse (ANOVA), student-ov t test, test sume rangova (Mann-Whitney U test) hi-kvadrat test. Praćeni su i analizirani parametri kardijalnog statusa dobijeni na ambulantnim pregledima, te podaci dobijeni telefonskim kontaktom sa pacijentom. Pacijenti koji su uključeni u ispitivanje imali su izuzetno dobru glikoregulaciju, s toga nije bilo statistički značajne razlike na petogodišnji ishod nakon perkutane koronarne intervencije. Istraživanje je pokazalo približno jednaku distribuciju polova pacijenata koji nisu oboleli od dijabetesa, onih koji boluju od dijabetes mellitusa tip 1 i pacijenata sa dijabetesom tip 2. Nema značajnosti u preživljavanju. Bez obzira što nijedan umrli pacijent nije oboleo od dijabetesa, nema značajnosti jer je mali broj umrlih. Slično je i za infarkt miokarda, nema statistički značajne razlike između pacijenata sa dijabetesom i pacijenata koji ne boluju od dijabetesa u pogledu infarkta miokarda.

Key words: stentovi, dijabetes, koronarna arterijska bolest

Introduction

The use of percutaneous coronary intervention (PCI) for the treatment of coronary ischemic disease experienced a dramatic expansion in the past two decades^{1,2}. At the same time, procedural success, safety and durability PCI dramatically improved due to continuous technological improvements, the periprocedural additional pharmacology and better understanding early and late outcomes of treatment. These improvements support the expansive use of PCI as definitive therapy^{3,4,5}. The incidence of diabetes is on a boom in the world. Coronary heart disease is the most common macrovascular complications of diabetes. Strict control of blood glucose levels contribute to the betterment of the patient and reduce the cost of treatment^{6,7}.

The aim is to show the influence and significance of diabetes in the five-year outcomes in patients who underwent percutaneous coronary intervention

Material and Methods

Initially in the study included 800 patients from the Institute for Cardiovascular Diseases Dedinje who underwent percutaneous coronary angioplasty index -implantation drug-eluting stents, sirolimus (Cypher) and the paclitaxel (Taxus). After the indexing procedure clinical monitoring is completed after 5 years with 720 patients (90%) whose data after the completion of the follow-up period subjected to statistical analysis.

They were monitored and analyzed the parameters of cardiac status obtained on outpatient examinations, and data obtained by telephone contact with the patient. Significant adverse cardiac events, MACE (major adverse cardiac evenats) are defined as follows. Death is defined as the cardiac or noncardiac origin. The death of unknown cause was recorded as cardiac origin. On the basis of ischemic changes in the ECG and / or an increase in CK three times the upper limit of the laboratory reference value, an increase in troponin T above the upper limit of reference values were used for the definition of myocardial infarction. All reintervention within the stent implanted during the index procedure, as well as 5 mm proximal or distal edges of the stent implnted classified as re-target lesion revascularization, TLR (target lesion revascularization). Other percutaneous coronary intervention on the same blood vessel outside the defined zones are defined as repeat revascularization of the target blood TVR (target vessel revacularization).

For data analysis used parametric and nonparametric methods of inferential statistics, depending on the proven distribution data.

For each comparison group tested methods were used for testing the significance of differences:

- Numeric-factor analysis of variance (ANOVA)
- Student's t test
- Rank sum test (Mann-Whitney U test)
- Hi-kvadr t test

To determine the significance of the impact of certain factors on the occurrence of thrombosis after a certain period of intervention methods were used to test the significance of association as follows:

- Univariate and multivariate logistic regression analysis

To determine the significance of the impact of certain factors on cardiac clinical outcomes during follow-up is also the method used to test the significance of relationship:

- Cox's proporcion hazardous regression model.

Results

Initially in the study included 800 patients who underwent percutaneous coronary angioplasty index after the index procedure clinical monitoring is completed after 5 years with 720 patients (90%) whose data after the completion of the follow-up period subjected to statistical analysis. The average age of the tested population 68,4+ -8.4 years, of which 585 patients were men (81.2%). Four patients (0.6%) performed death. Two patients (0.3%) death was noncardiac origin, so that in two patients (0.2%) fatal consequence of cardiac events. Myocardial infarction occurred in nine patients (1.25%). TLR events occurred in 31 patients, TVR in 72 patients. The overall incidence of MACE events was 14.3%, or 103 patients.

Table 1: The distribution of patients according to the presence of diabetes

diabetics					
		Frequeny	Percent	ValidPercent	cumulative percent
Valid	withoutDM	670	93,1	93,1	93,1
	DM 1	42	5,8	5,8	98,9
	DM 2	8	1,1	1,1	100,0
	Total	720	100,0	100,0	

Distribution of the pole in relation to the presence of diabetes

Pol * dijabetičari

0		diabetics				Total
1		2				
Pol sex	1	Count	547	31	7	585
		% within sex	93,5%	5,3%	1,2%	100,0%
		% within diabetes	81,6%	73,8%	87,5%	81,3%
	2	Count	123	11	1	135
		% within sex	91,1%	8,1%	,7%	100,0%
		% within diabetes	18,4%	26,2%	12,5%	18,8%
Total		Count	670	42	8	720
		% within sex	93,1%	5,8%	1,1%	100,0%
		% within diabetes	100,0%	100,0%	100,0%	100,0%

Statistic Chi-Square=1,799; p=0,407

Table 2. Approximately even distribution of the poles (see%) compared to DM (0, 1 or 2)

Overview of survival after percutaneous coronary intervention in relation to the presence of diabetes
smrt * dijabetičari

0		diabetics				Total
1		2				
smrt death	0	Count	666	42	8	716
		% within death	93,0%	5,9%	1,1%	100,0%
		% within diabetes	99,4%	100,0%	100,0%	99,4%
	1	Count	4	0	0	4
		% within death	100,0%	,0%	,0%	100,0%
		% within diabetes	,6%	,0%	,0%	,6%
Total		Count	670	42	8	720
% within death			93,1%	5,8%	1,1%	100,0%
% within diabetes			100,0%	100,0%	100,0%	100,0%

Statistic Chi-Square=0.300 p=0.861

Table 3: No significant (p = 0.861), all who have died (4 patients) did not have DM.

Distribution of myocardial infarction following percutaneous coronary intervention in relation to the presence of diabetes

im * diabetičari

0		diabetics				Total
1		2				
im	0	Count	661	42	8	711
		% within im	93,0%	5,9%	1,1%	100,0%
		% within diabetes	98,7%	100,0%	100,0%	98,8%
	1	Count	9	0	0	9
		% within im	100,0%	,0%	,0%	100,0%
		% within diabetes	1,3%	,0%	,0%	1,3%
Total		Count	670	42	8	720
% within im			93,1%	5,8%	1,1%	100,0%
% within diabetes			100,0%	100,0%	100,0%	100,0%

Statistic Chi-Square=0. p=0.712

Table 4: It is similar to IM. There is no significance, all of which were non-diabetic imalai IM (p = 0.712)

Distribution of TLR after percutaneous coronary intervention in relation to the presence of diabetes

TLR * diabetics

		diabetics			Total	
		2				
TLR	0	Count	646	35	8	689
		% within TLR	93,8%	5,1%	1,2%	100,0%
		% within diabetes	96,4%	83,3%	100,0%	95,7%
TLR	1	Count	24	7	0	31
		% within TLR	77,4%	22,6%	,0%	100,0%
		% within diabetes	3,6%	16,7%	,0%	4,3%
Total		Count	670	42	8	720
		% within TLR	93,1%	5,8%	1,1%	100,0%
		% within diabetes	100,0%	100,0%	100,0%	100,0%

Statistic Chi-Square =0 p=0.000

Table 5: Adverse event (TLR) are happening more often in patients with DM1 (p <0.001)

Distribution of TVR after percutaneous coronary intervention in relation to the presence of diabetes

TVR * diabetics

		diabetics			Total	
		2				
TVR	0	Count	604	37	7	648
		% within TVR	93,2%	5,7%	1,1%	100,0%
		% within diabetes	90,1%	88,1%	87,5%	90,0%
TVR	1	Count	66	5	1	72
		% within TVR	91,7%	6,9%	1,4%	100,0%
		% within diabetes	9,9%	11,9%	12,5%	10,0%
Total		Count	670	42	8	720
		% within TVR	93,1%	5,8%	1,1%	100,0%
		% within diabetes	100,0%	100,0%	100,0%	100,0%

Statistic Chi-Square=0.241 p=0.886

Table 6: There was no significant association between TVR and diabetics

Distribution of MACE after percutaneous coronary intervention in relation to the presence of diabetes

MACE * diabetics

		diabetics			Total	
MACE	0	Count	579	31	7	617
		% within MACE	93,8%	5,0%	1,1%	100,0%
		% within diabetics	86,4%	73,8%	87,5%	85,7%
	1	Count	91	11	1	103
		% within MACE	88,3%	10,7%	1,0%	100,0%
		% within diabetics	13,6%	26,2%	12,5%	14,3%
Total	Count	670	42	8	720	
% within MACE		93,1%	5,8%	1,1%	100,0%	
% within diabetics		100,0%	100,0%	100,0%	100,0%	

Statistic Chi-square 5.147 p=0.076

Table 7: Here is found the limit stat. significance (MACE connectivity and DM1).

Discussion

The average age of the population is uspitivane 68,4+ -8.4 years, of which 585 patients were men (81.2%). Four patients (0.6%) performed death. Two patients (0.3%) death was noncardiac origin, so that in two patients (0.2%) fatal consequence of cardiac events. Myocardial infarction occurred in nine patients (1.25%). TLR events occurred in 31 patients, TVR in 72 patients. The overall incidence of MACE events was 14.3%, or 103 patients.

Drug-coated stents are safe and effective means of percutaneous coronary interventions conducted for treatment of atherosclerotic coronary artery disease.

Application of drug-coated stents leads to lower rates of repeat revascularization (percutaneous coronary intervention or bypass surgery). Patients involved in the study had a very good regulation diabetes, therefore there was no statistically significant difference in the five-year outcomes after percutaneous coronary intervention. No significant (p = 0.861) in survival. Bez no matter what the deceased patient is diagnosed with diabetes, there is no significance because of the small number of deaths.

It is similar to IM, no statistically significant differences between patients with diabetes and patients who do not suffer from diabetes in terms of myocardial infarction.

The study showed approximately equal distribution of the sexes patients who are suffering from diabetes, those with diabetes mellitus type 1 patients with type 2 diabetes. Adverse event (TLR) are happening more often in patients with DM1 (p <0.001). Between the two groups there is no st. significant differences. Discovered marginal statistical significance (MACE connectivity and DM1).

Conclusion

Drug-coated stents are safe and effective means of percutaneous coronary interventions conducted for treatment of atherosclerotic coronary artery disease.

Drug-coated stents in the treatment of coronary diseases lead to a low incidence of major cardiac events (death, MI, TLR, TVR). Application of DES leads to lower rates of repeat revascularization (percutaneous coronary intervention or bypass surgery).

Patients involved in the study had a very good regilaciju diabetes, therefore there was no statistically significant difference in the five-year outcomes after percutaneous coronary intervention.

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