


CHARLES UNIVERSITY
Third Faculty of Medicine

LONG-TERM CARDIOVASCULAR OUTCOME IN PATIENTS AFTER PPCI FOR STEMI

WHAT IS THE RISK PROFILE FOR CARDIOVASCULAR MORTALITY?

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Background

- Overall mortality after pPCI for STEMI remains high approx. 20.0% over 5 years
- Outcome up to 1 year after PPCI for STEMI well known
  - Cardiovascular mortality – the leading cause of death in the first year
- Long-term (>5 years) mortality
  - dominance of non-cardiac death

Introduction

- What is cardiovascular mortality in the Czech population?
- What is the risk profile for cardiovascular mortality?
- What are the predictors for long-term cardiovascular mortality?

Methods

- Academic
- Two centres
  - Nemocnice České Budějovice, a.s.
  - FNKV
- Retrospective
- Total of 5263 patients
- Follow-up up to 12 years after pPCI for STEMI
- Time range 2008-2019
- State Institute of Health Information and Statistics

Baseline characteristics

- The mean follow-up duration was 5.1 years
- The mean age was 63.9 years at the presentation
- 70.7% of men
- Inferior/posterior STEMI was slightly more common than anterior STEMI
- Approx. 50% of patients had single-vessel disease
- Approx. 2/3 of patients had good left ventricle ejection fraction prior to discharge

Baseline characteristics of the study population

Baseline characteristics	
Age (years, mean ± standard deviation)	63.9 ± 12.8
Sex (female/male)	29.3%/70.7%
Medical history at presentation	
Known arterial hypertension	53.4%
Previous stroke	4.8%
Known renal insufficiency	2.5%
Known diabetes mellitus	22.0%
Previous myocardial infarction	14.8%
Previous heart failure	1.9%
Active smokers	56.7%
Clinical characteristics at presentation	
Pain to CathLab (min, mean ± standard deviation)	263.3 ± 266.6
Killip class	
Class 1	84.0%
Class 2	7.0%
Class 3	1.8%
Class 4	5.8%
STEMI localization	
Anterior STEMI	41.9%
Inferior/posterior STEMI	47.6%
Other	10.5%
Coronary angiography	
One-vessel disease	48.5%
Two-vessel disease	29.0%
Three-vessel disease	21.5%
Successful pPCI	95.9%
Clinical characteristics prior discharge	
LV EF %	
LV EF > 50%	62.5%
LV EF 30-49%	33.5%
LV EF < 30%	4.0%

STEMI – ST segment elevation myocardial infarction; pPCI – primary percutaneous coronary intervention; LV EF – left ventricle ejection fraction; CathLab – catheterization laboratory

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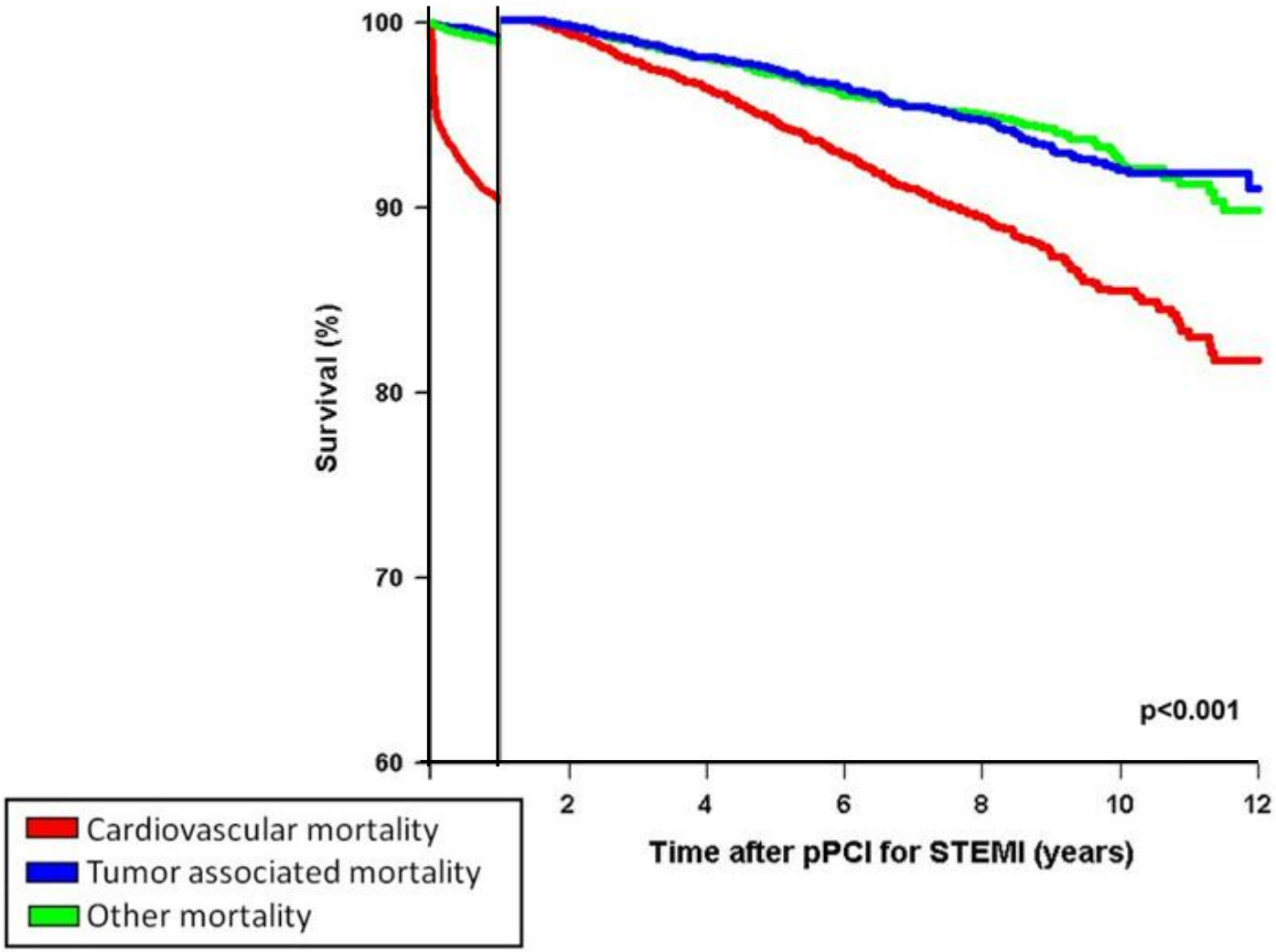
Results – mortality data

- Overall mortality was 26.5%
  - Cardiovascular mortality was 65.0%
    - Myocardial infarction-associated mortality was 27.2%
    - Dominance in both short-term and long-term follow-up
  - Tumor-associated mortality was 17.0%
  - Other mortality was 18.0%

Mortality overview



Klancik V, et al. Long-term follow-up in patients with ST-segment elevation myocardial infarction who underwent primary percutaneous coronary intervention. Eur Heart J Suppl. 2022;24(Suppl B):B16-B22. Published 2022 Mar 30.

Cardiovascular mortality

	No (n=4352)	Yes (n=911)	p-value
Baseline characteristics			
Age (years, mean ± standard deviation)	61.9 ± 12.0	73.7 ± 11.7	<0.001
Sex (female/male)	75.7%/85.7%	24.3%/14.3%	<0.001
Medical history at presentation			
Known arterial hypertension	14.0%	20.1%	<0.001
Previous stroke	22.2%	51.7%	<0.001
Known renal insufficiency	22.7%	56.3%	<0.001
Known diabetes mellitus	15.3%	24.3%	<0.001
Previous myocardial infarction	21.6%	35.1%	<0.001
Previous heart failure	9.9%	18.5%	<0.001
Active smokers	15.9%	8.1%	<0.001
Clinical characteristics at presentation			
Pain to CathLab (min, mean ± standard deviation)	261.6 ± 269.6	269.0 ± 256.4	0.102
Killip class			<0.001
Class 1	87.6%	12.4%	
Class 2	64.6%	35.4%	
Class 3	55.7%	44.3%	
Class 4	43.2%	56.8%	
STEMI localization			0.001
Anterior STEMI	81.2%	18.8%	
Inferior/posterior STEMI	84.9%	15.1%	
Coronary angiography			<0.001
1 vessel disease	88.7%	11.3%	
2 vessel disease	83.0%	17.0%	
3 vessel disease	70.1%	29.9%	
Successful pPCI	84.2%	15.8%	<0.001
Unsuccessful pPCI	49.2%	50.8%	
LV EF %			<0.001
LV EF > 50%	91.2%	8.8%	
LV EF 30-49%	77.2%	22.8%	
LV EF < 30%	39.7%	60.3%	

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Cardiovascular mortality

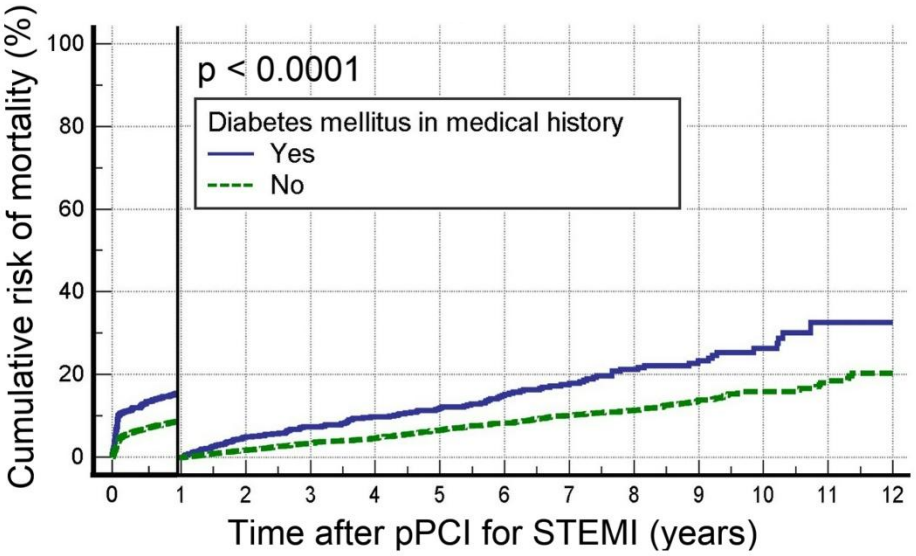
- Patients with cardiovascular mortality were significantly older at presentation (73.7 to 61.9 years); ($p < 0.001$)
- Women were significantly older than men (77.2 to 71.2 years); ($p < 0.001$)
- Smoker's paradox – significantly better cardiovascular mortality; ($p < 0.001$)
- “Pain to CathLab“ – not a significant predictor for long-term cardiovascular mortality

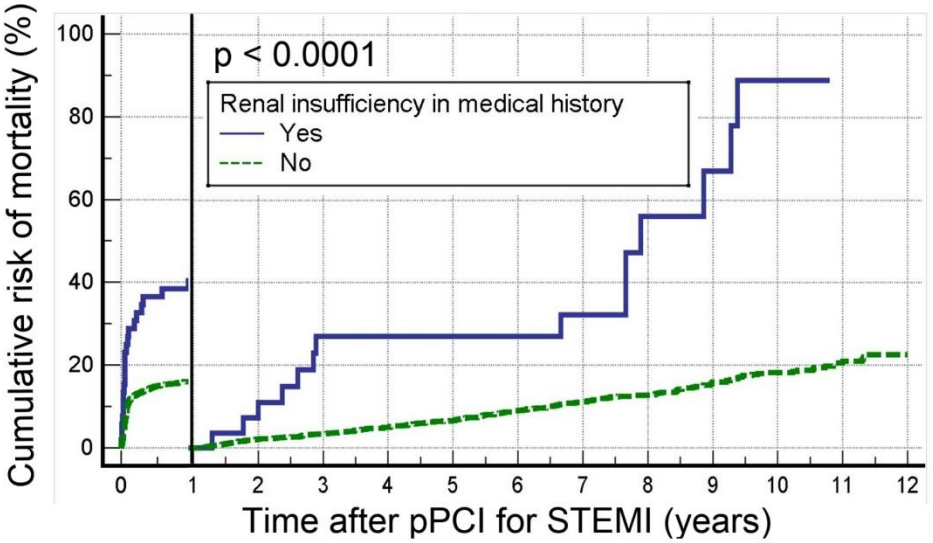
Cardiovascular mortality

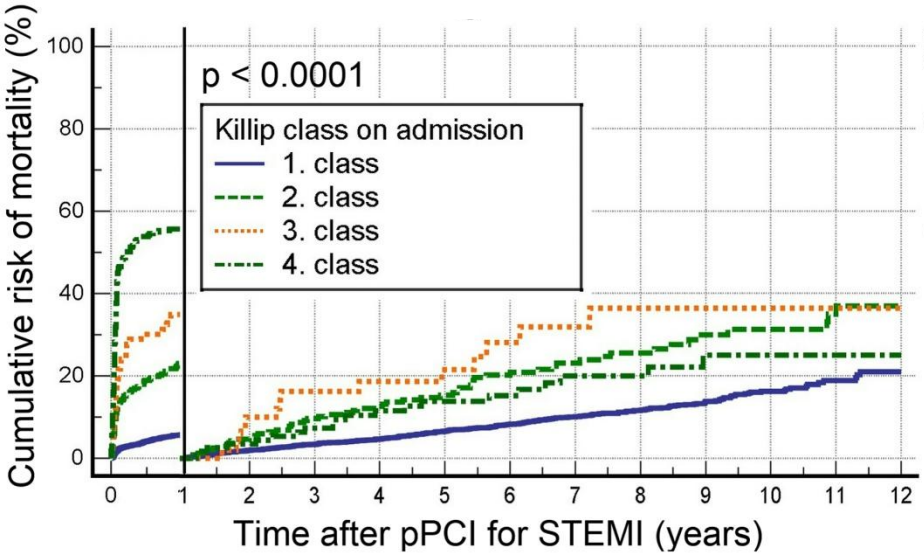
- Univariate predictors – at the presentation
  - Age, sex, arterial hypertension, stroke, renal insufficiency, diabetes mellitus, myocardial infarction, heart failure, active smoking, Killip class

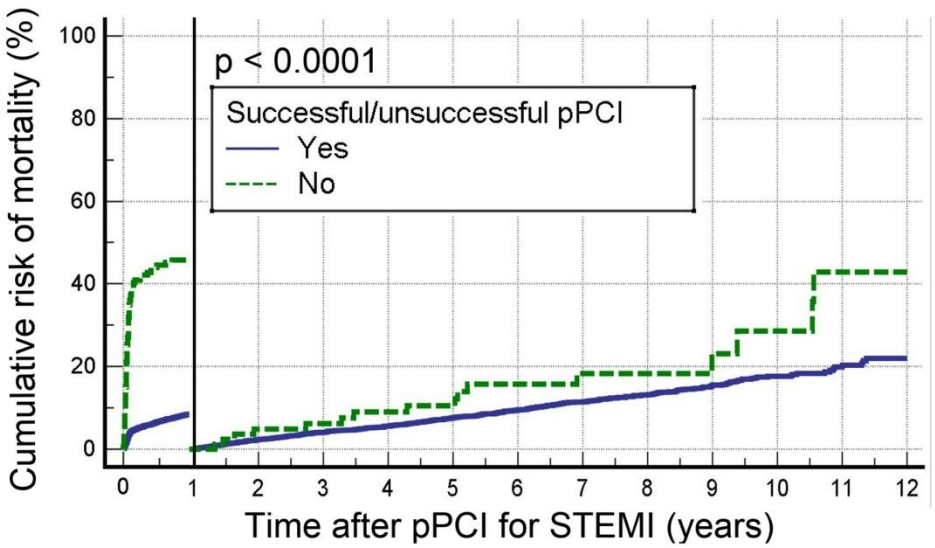
Multivariate analysis and predictors

Predictive model for cardiovascular mortality			
	Odds ratio	95% Confidence interval	p-value
Medical history at presentation			
Age	1.0950	1.0839 to 1.1063	<0.0001
Known diabetes mellitus	1.3915	1.0873 to 1.7808	0.0314
Known renal insufficiency	2.0586	1.1224 to 3.7757	0.0202
Previous heart failure	3.4773	1.6171 to 7.4774	0.0025
Clinical characteristics at presentation			
Killip class	2.0780	1.8760 to 2.3019	<0.0001
Successful/unsuccessful pPCI	1.0153	1.0049 to 1.0259	0.0019
pPCI – primary percutaneous coronary intervention			









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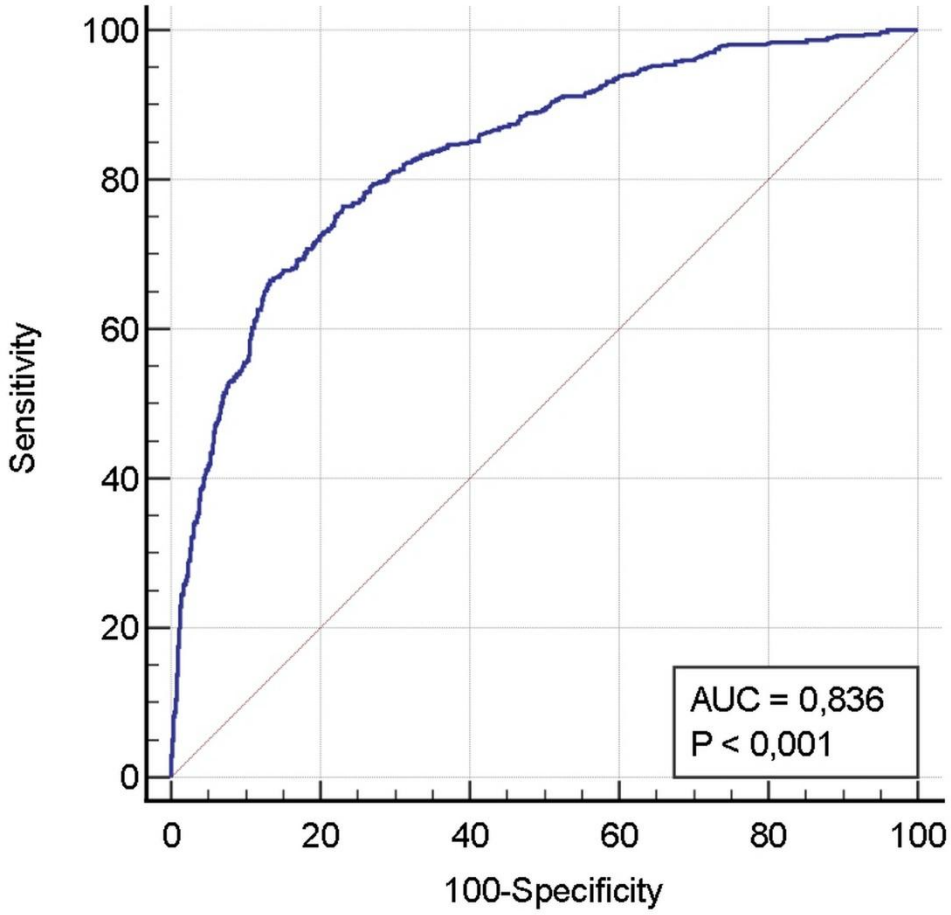
Equation of the predictive model

- logit p = −8.737
- + (0.330 x known diabetes mellitus)
- + (0.731 x Killip class)
- + (0.722 x known renal insufficiency)
- + (1.246 x past heart failure)
- + (0.015 x successful/unsuccessful pPCI)
- + (0.091 x age)

ROC curve



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Conclusion

- Cardiovascular diseases – the leading cause of long-term mortality in the Czech population
- Identification of high-risk patients
- Risk stratification
- More intensive secondary preventive care
  - Better compensation of comorbidities

  →Possible decrease in cardiovascular mortality

  →Potential improvement in quality of life

  → Possible reduction in socioeconomic consequences

Acknowledgements

- to State Institute of Health Information and Statistics for providing mortality data

Thank you for your attention!