



# RISK STRATIFICATION AND EFFECTS OF PHARMACOTHERAPY IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION (AMI) BASED ON DATA FROM A PILOT AMI REGISTRY

Peleska J.<sup>1,2</sup>, Grunfeldova H.<sup>1,3</sup>, Charalampidi K.<sup>1,3</sup>, Faltus V.<sup>1,2</sup>, Monhart Z.<sup>4</sup>, Rysava D.<sup>5</sup>, Velimsky T.<sup>6</sup>, Ballek L.<sup>7</sup>, Hubac J.<sup>8</sup>, Tomeckova M.<sup>1,2</sup>, Jansky P.<sup>9</sup>

Centre of Biomedical Informatics<sup>1</sup>, Dept. of Medical Informatics, Institute of Computer Science AS CR<sup>2</sup>, Prague, Depts. of Medicine, Hospitals in Caslav<sup>3</sup>, Znojmo<sup>4</sup>, Kutna Hora<sup>5</sup>, Pisek<sup>6</sup>, Jindrichuv Hradec<sup>7</sup> and Chrudim<sup>8</sup>, Cardiocentre of Adults, University Hospital Motol<sup>9</sup>, Prague, Czech Republic

## Aim of the study:

The importance of variables in the pilot registry of patients with acute myocardial infarction (AMI) for their risk stratification and management was evaluated.

## METHODS:

Selected data of all hospitalized patients with AMI in years 2003-2005 from several Czech countryside regions corresponding to the population of ca 350 000 inhabitants were analyzed. The sample consisted of 2074 patients. Their risk factors (RF) were: hypertension (75.0%), dyslipidemia (51.2%), diabetes mellitus (42.2%) and smoking (23.4%). The detailed sample characteristics is given in Tables 1-3. There were 441 re-infarctions in different hospitalizations (RAMI), 555 ST-elevation MI (STEMI), 367 direct PCI (percutaneous coronary intervention) in STEMI, proportions of dPCI and thrombolysis in subsequent years (97/6, 179/7, 126/2). The in-hospital mortality (HM) was 10.9%, the combined end point HM + heart failure (Killip Class II, III, IV - HF) in 25.8%.

## RESULTS AND DISCUSSION:

Diabetes, dyslipidemia or hypertension were proven as the risk factors for RAMI (Fig. 1). All of them showed significant increase in relative odds (DM 1.599, DLP 2.206, HY 1.709 in RO). The effect of female gender was the opposite (0.693 RO) and the effect of smoking was not significant. Patients with RAMI died (Table 2) and had HF (27.94% vs. 16.46%) more frequently than patients with the first infarction.

The odds of death (Fig. 2) were associated especially with presence of DM (1.640 RO) in a model of various variables involved. Heparin given during the first 24 hours and the prior + acute peroral therapy with statins and predominantly beta-blockers significantly reduced the odds of death. A similar reduction can be seen paradoxically also with hypertension and dyslipidemia which could be explained by effects of appropriate drugs beyond blood pressure and cholesterol reducing effect, respectively.

Another model (Fig. 3) for the combined end point HM+HF showed similar results with the exception of a negative influence of intravenous nitroglycerin (1.745 RO) which is probably result of selection bias, because this medication was indicated in angina and heart failure.

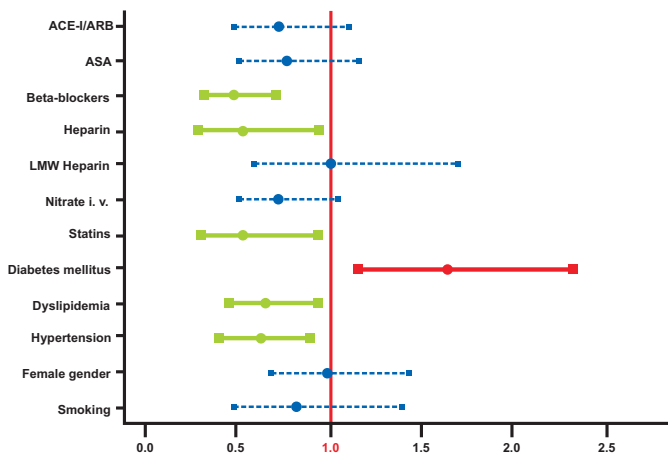


Figure 2: Considered drugs and risk factors in the model of Relative Odds of Death.

Legend: Factors increasing odds (red), Not significant factors (blue), Factors decreasing odds (green)

	Men	Women	p
Number of events	1142 (55.06 %)	932 (44.94 %)	
Age	70,79 ± 11,9	75,07 ± 9,966	p < 0.001
Smoking	34.87 %	9.50 %	p < 0.001
Diabetes mellitus	36.34 %	49.35 %	p < 0.001
Dyslipidemia	50.27 %	52.31 %	p = 0.387
Hypertension	67.91 %	83.57 %	p < 0.001
Re-infarctions	31.35 %	32.41 %	p = 0.645
Heart failure	17.49 %	23.78 %	p < 0.001

Table 1: Sample characteristics - age, gender, risk factors and complications

In-hospital mortality - total	10.90 %
In-hospital mortality - first infarction	8.96 %
In-hospital mortality - re-infarctions	13.52 %
HM + heart failure	25.8 %
Heart failure - first infarction	16.5 %
Heart failure - re-infarctions	27.9 %
STEMI	28.06 %
re-STEMI	13.48 %
Reperfusion therapy	55.15 %
Mortality with reperfusion therapy	3.57 %
Mortality without reperfusion therapy	20.08 %

Table 2: Types of AMI, re-infarctions, therapy and mortality

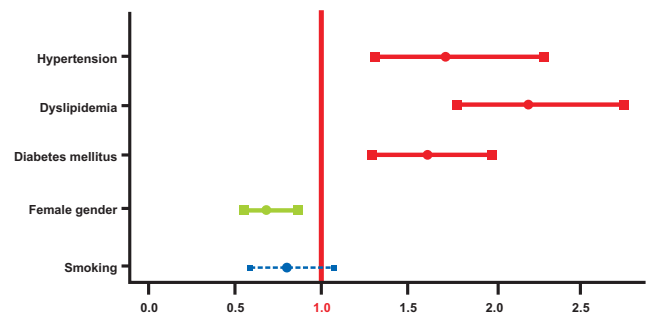


Figure 1: Considered risk factors in the model of Re-infarction.

	2003 %	2005 %
Aspirin	75.52	87.06
Ticlopidin	10.04	11.46
Clopidogrel	24,90	42.88
Beta-blockers	63.18	85.16
ACE-inhibitors	57.53	75.65
Statins	53.97	73.99

Table 3: Medication at discharge

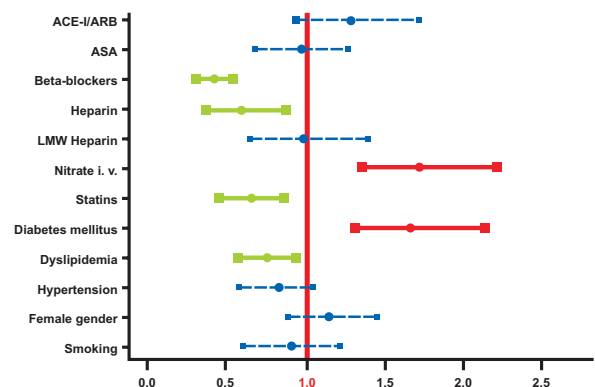


Figure 3: Considered drugs and risk factors in the model of Relative Odds of Combined Endpoint (Heart Failure, Death).

## CONCLUSIONS:

Diabetes mellitus was the most important risk factor for in-hospital mortality, whereas diabetes, dyslipidemia or hypertension for re-infarctions. The acute therapy with heparin, and prior + acute therapy with statins and predominantly beta-blockers was the most effective in death prevention.

Address for correspondence:

MUDr. Jan Peleška, Csc., e-mail: peleska@euromise.cz

CBI, Institute of Computer Science, Pod Vodárenskou věží 2, Praha 8, Czech Republic

Supported by the project 1M06014 ME CR.