# RISK STRATIFICATION AND MANAGEMENT OF PATIENTS WITH ACUTE MYOCARDIAL INFARCTION


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**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 Fig. 1 and Tables 1-3. There were 639 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%.

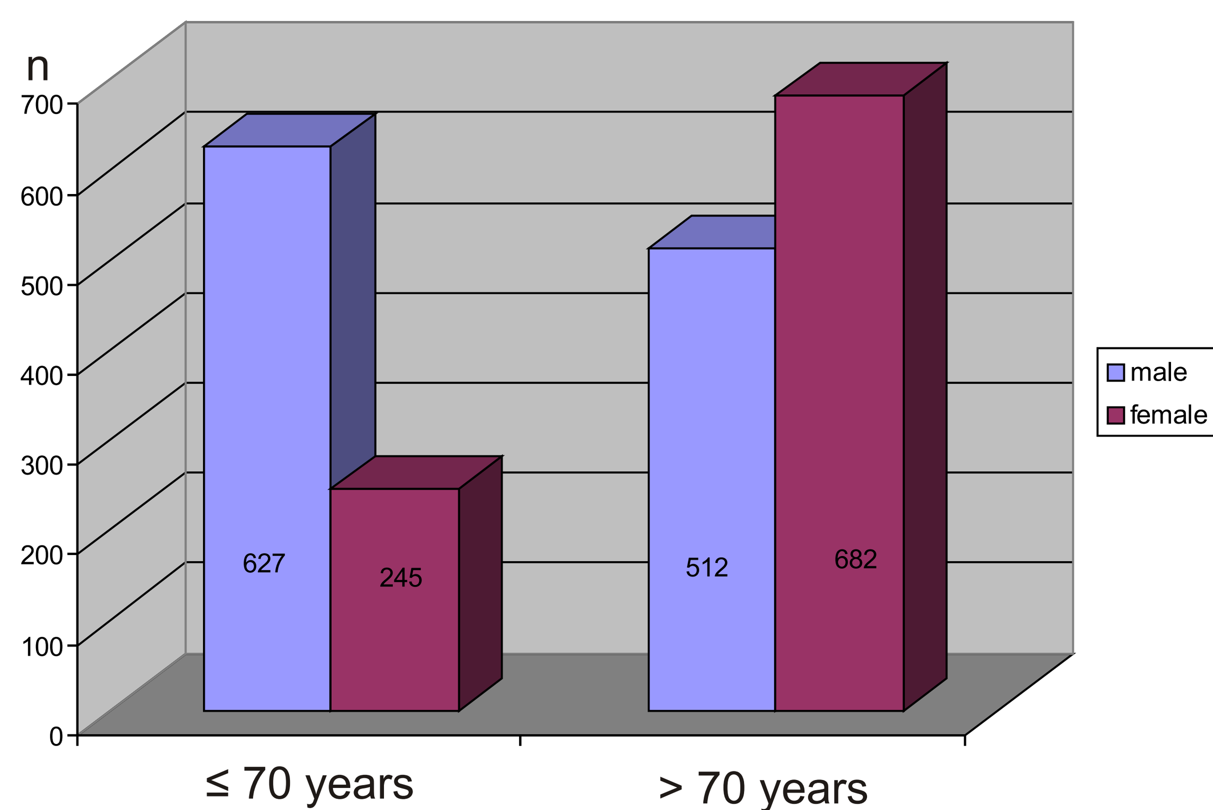


**Figure 1:**
AMI population according to gender and age groups

## RESULTS AND DISCUSSION:

Diabetes, dyslipidemia or hypertension were proven as the risk factors for RAMI (Fig. 2). 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. 3) 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. 4) 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.

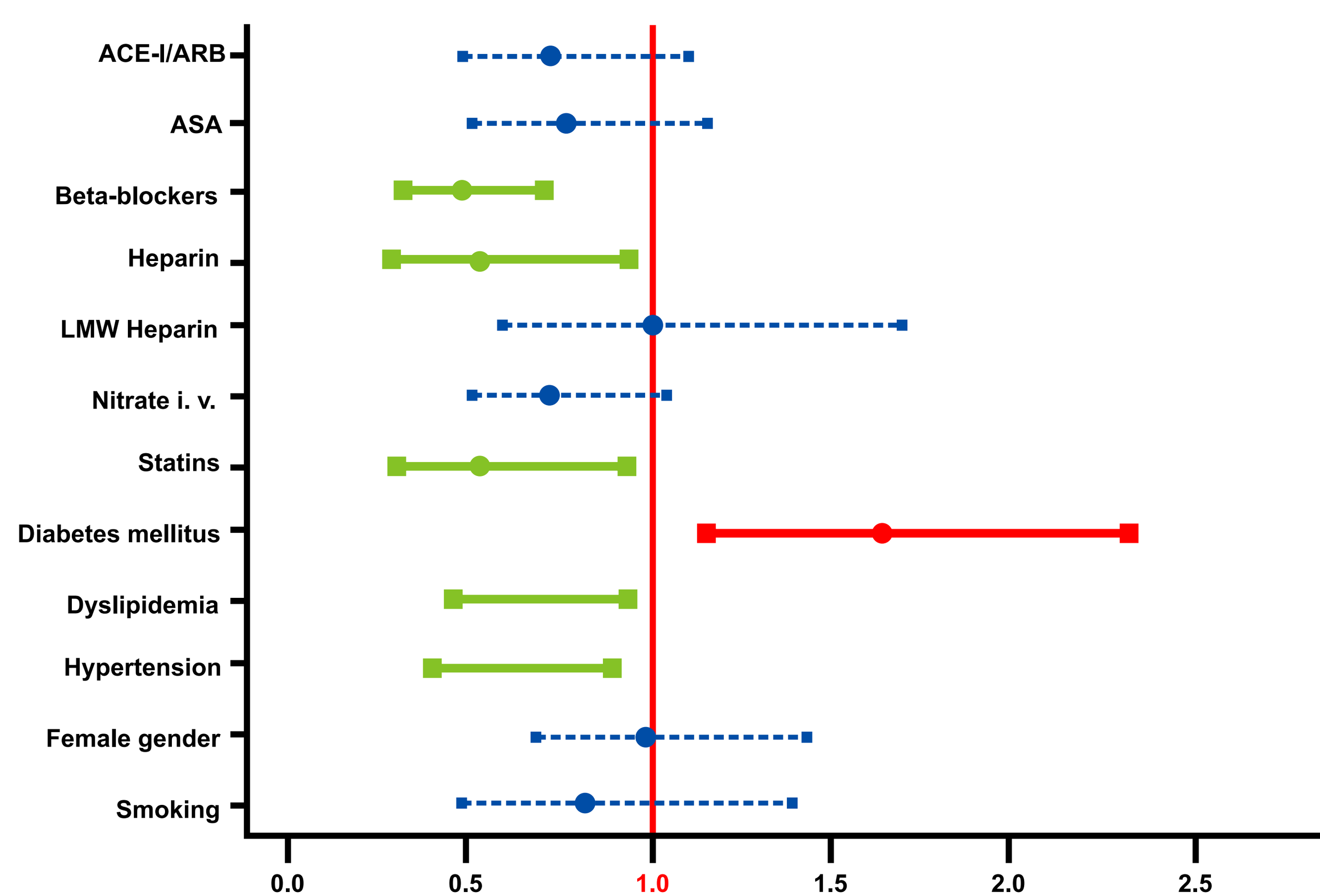


**Figure 3:**
Considered drugs and risk factors in the model of Relative Odds of Death.

Factors increasing odds — Not significant factors — Factors decreasing odds

| Number of events | 2074 | | |
|---|---|---|---|
| Age | 70,79 ± 11,9 | | |
| | **Men** | **Women** | **p** |
| **Number of events** | 1142 (55.06 %) | 932 (44.94 %) | |
| **Age** | 67.3 ± 12.2 | 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

| | |
|---|---|
| STEMI | 28.06 % |
| re-STEMI | 13.48 % |
| In-hospital mortality – first infarction | 8.96 % |
| In-hospital mortality – re-infarctions | 13.52 % |
| STEMI | |
| Reperfusion therapy | 55.15 % |
| Mortality with reperfusion therapy | 3.57 % |

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

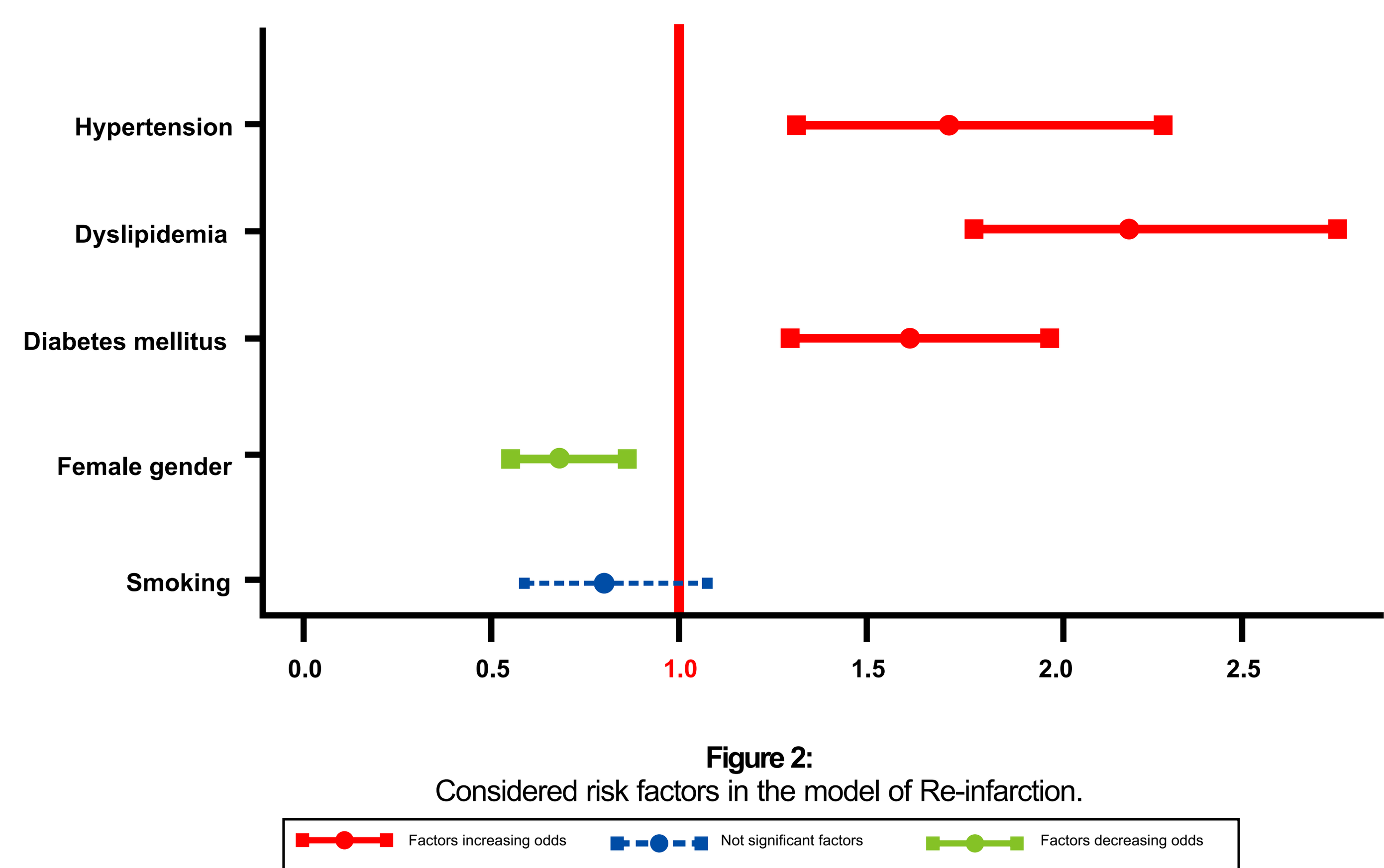


**Figure 2:**
Considered risk factors in the model of Re-infarction.

Factors increasing odds — Not significant factors — Factors decreasing odds

| | 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

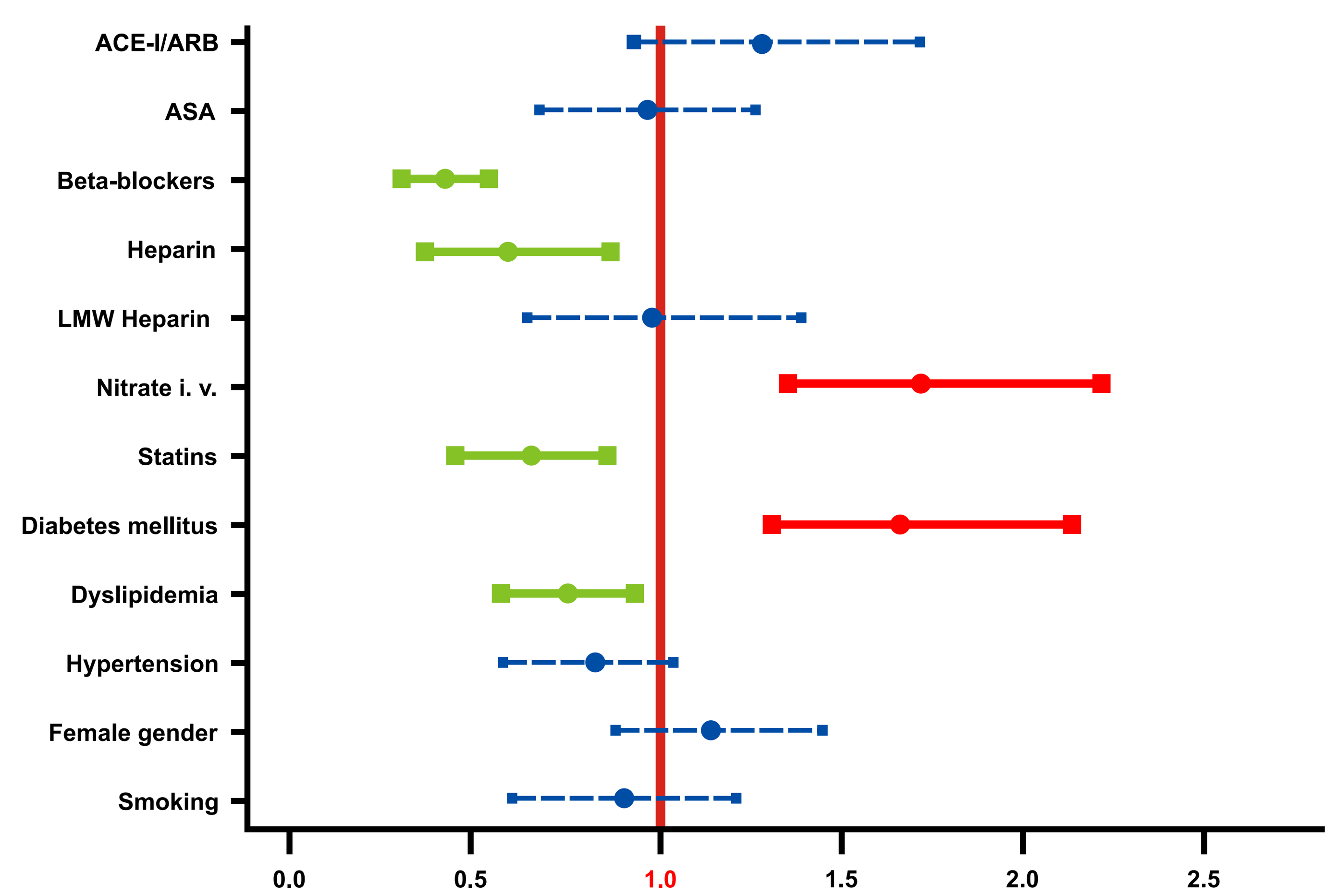


**Figure 4:**
Considered drugs and risk factors in the model of Relative Odds of Combined Endpoint (Heard Failure, Death).

Factors increasing odds — Not significant factors — Factors decreasing odds

## 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. These results can be used for the risk stratification of patients in intensive care units.


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