

AMI data from the Estonian Myocardial Infarction Registry

Tiia Ainla MD, PhD

Department of Cardiology

University of Tartu

Background

- Cardiovascular disease is the main cause of death in Estonia (2003 accounted for 54% of all causes of death)
- Developed countries have shown a decline in coronary artery disease (CAD) mortality during past three decades
- In Estonia CAD mortality has been high since mid1960s
- Decline of CAD mortality is partially due to improved treatment of acute myocardial infarction (AMI) and secondary prevention methods

Background

- In Estonia is the lack of reliable data of different aspects of AMI
- To get comprehensive information and to achieve systematic approach in AMI, the creation of myocardial infarction registry is essential

Background

- The population of Estonia is 1 356 045 million
- Area: 45 227 km² (15 counties)

Administrative division of Estonian territory



Development of EMIR - *past*

- The Estonian Myocardial Infarction Registry (EMIR) was initiated in January 2001 in the Tartu University Clinics
- In April 2001 the EMIR Science Council was formed
- During 2001-2004 six county hospitals joined (South and Southwest Estonia)
- Belongs to the Tartu University Clinics
- Financial support from pharmaceutical companies and Estonian Science Foundation grants

EMIR purposes

- To standardize AMI diagnosis, to equalize and to improve the quality of AMI treatment
- The long-term purpose is to reduce mortality and morbidity among the treated patients

Methodology

- Internet-based secure database
- Database includes unselected AMI patients who have been treated in hospitals joined to the registry (ICD-10 codes I21-I22)
- The criteria for the diagnosis of AMI are based on the consensus document for the redefinition of MI
- Information reported on case record form that includes 78 defined variables (*personal identification data, risk factors, symptoms, ECG, complications, pharmacological treatment, interventional procedures, outcome etc*)

Development of EMIR - present

- Data collection has temporarily been stopped due to problems related to the requirements of the personal data protection act
- Case record form is updated according to the CARDS (*Clinical Audit Registration Data Standards*) standardized form
- Developing and improving of data collection system
- Negotiations with the Estonian Ministry of Social Affairs concerning the possibility of becoming national registry

Development of EMIR - future

- To expand the registry all over Estonia in order to cover all in-hospital treated AMI cases
- To link EMIR data with National Mortality Database and to the Estonian Health Insurance Database
- To participate in collaboration projects

Publications

- Bakler T, Eha J, Teesalu R. Ägeda müokardiinfarkti ravi müokardiinfarktiregistri andmetel. *Eesti Arst* 2003;82: 340-2.
- 2) Bakler T, Baburin A, Teesalu R, Rahu M. Comparison of management and 30-day mortality of acute myocardial infarction in men versus women in Estonia. *Acta Cardiol* 2004; 59: 275-81.
- 3) Ainla T, Ristimäe T, Eha J, Soopõld Ü, Kütt L, Teesalu R. Gender differences in the treatment of patients with ST-elevation myocardial infarction: implication for the re-evaluation of revascularisation strategies in elderly females. *Seminars in Cardiology* 2004; 10(2): 95-100.
- 4) Ainla T, Baburin A, Eha J, Teesalu R. Vanuse mõju ägeda müokardiinfarkti haigete ravikäsitlusele ja -tulemusele. *Eesti Arst* 2005; 84: 13-7 .
- 5) Maier B, Balzi D, Ainla T, Zeller M, Kallischnigg G, Barchielli A, Teesalu R, Cottin Y, Theres H, Buiatti E, Eha J, Beer J-C. Guideline based hospital care and outcome of patients with ST-elevation myocardial infarction in four different European regions: Data from AMI-Florence, BHIR, EMIR, RICO. (Vastuvõetud *Bundesgesundheitsblatt*)
- 6) Ainla T, Baburin A, Rahu M, Teesalu R. The association between hyperglycaemia on admission and 180-day mortality in acute myocardial infarction patients with and without diabetes. (Vastuvõetud *Diabetic Medicine*)

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Gender differences in AMI patients

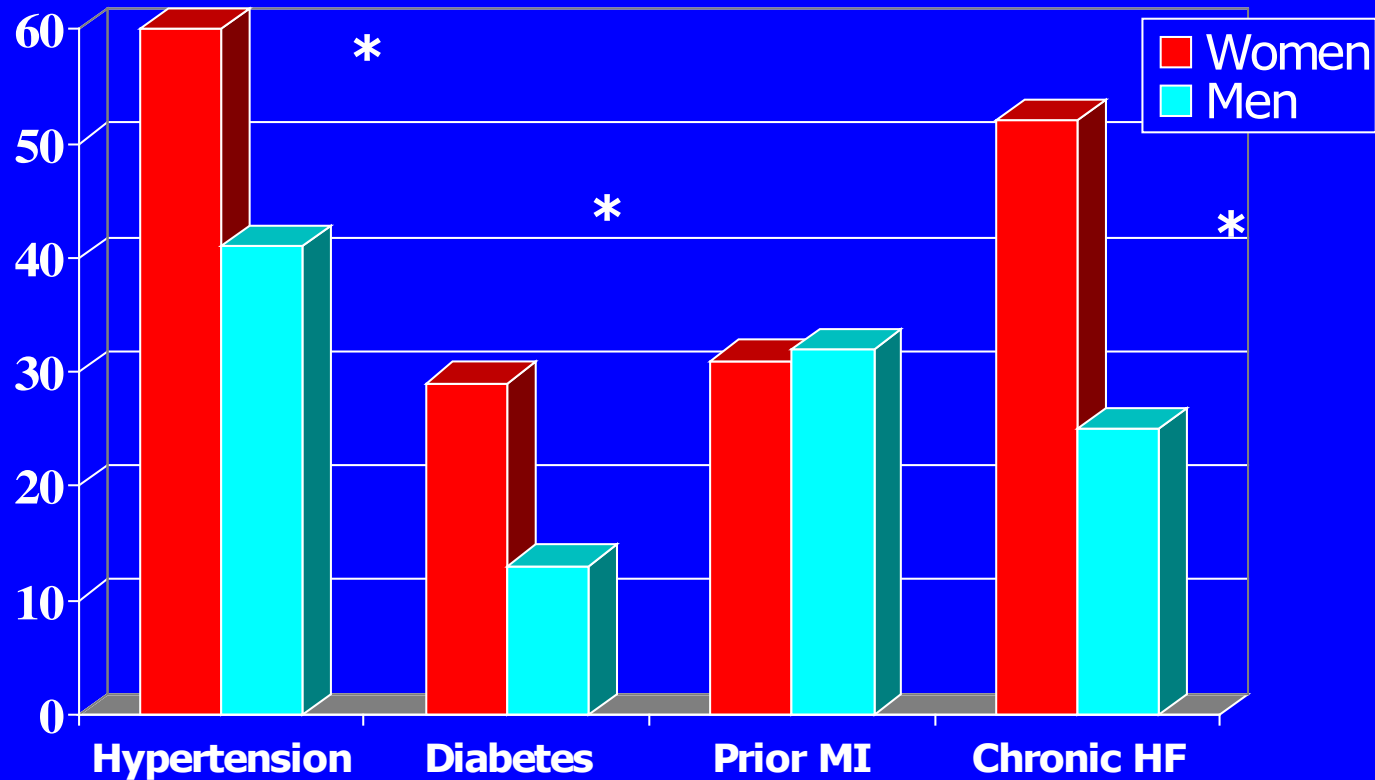
- There is conflicting information about gender differences in clinical characteristics, management and outcome of AMI patients
- Generally women are considered to have a worse prognosis early after AMI
- Researchers have reported that women are less likely to be given evidence-based management

Gender differences of AMI patients: *study aim and methods*

- To compare the baseline characteristics, management and 30-day mortality of AMI in men and women in Estonia
- Study included patients from the EMIR, who were admitted to the Tartu University Clinics between January 2001 and February 2002
- Exclusion criteria were transfer from another hospital and development of AMI after CABG and invasive cardiac procedures
- Logistic regression analysis was used to estimate crude and adjusted odds ratios

Results: *gender differences in baseline characteristics*

Mean age - women 73.5 y vs men 65.6 y, $p < 0.001$



* $p < 0,05$

Results: *gender and management*

	Women, % N=167	Men, % N=228	Unadjusted OR (95% CI)	Age-adjusted OR (95% CI)
Aspirin	92.2	93.0	0.78 (0.36-1.71)	0.79 (0.34-1.83)
Anticoagulants	90.4	90.8	0.88 (0.43-1.79)	1.06 (0.50-2.24)
ACE inhibitors	71.9	63.6	1.39 (0.90-2.15)	1.36 (0.86-2.16)
Beta-blockers	68.3	74.6	0.70 (0.45-1.09)	0.91 (0.57-1.47)
Diuretics	74.9	44.7	3.56 (2.30-5.51)*	2.68 (1.69-4.25)*
Statins	33.5	53.1	0.45 (0.30-0.68)*	0.61 (0.39-0.96)*
Digitalis	19.2	10.5	1.99 (1.12-3.52)*	1.61 (0.88-2.93)

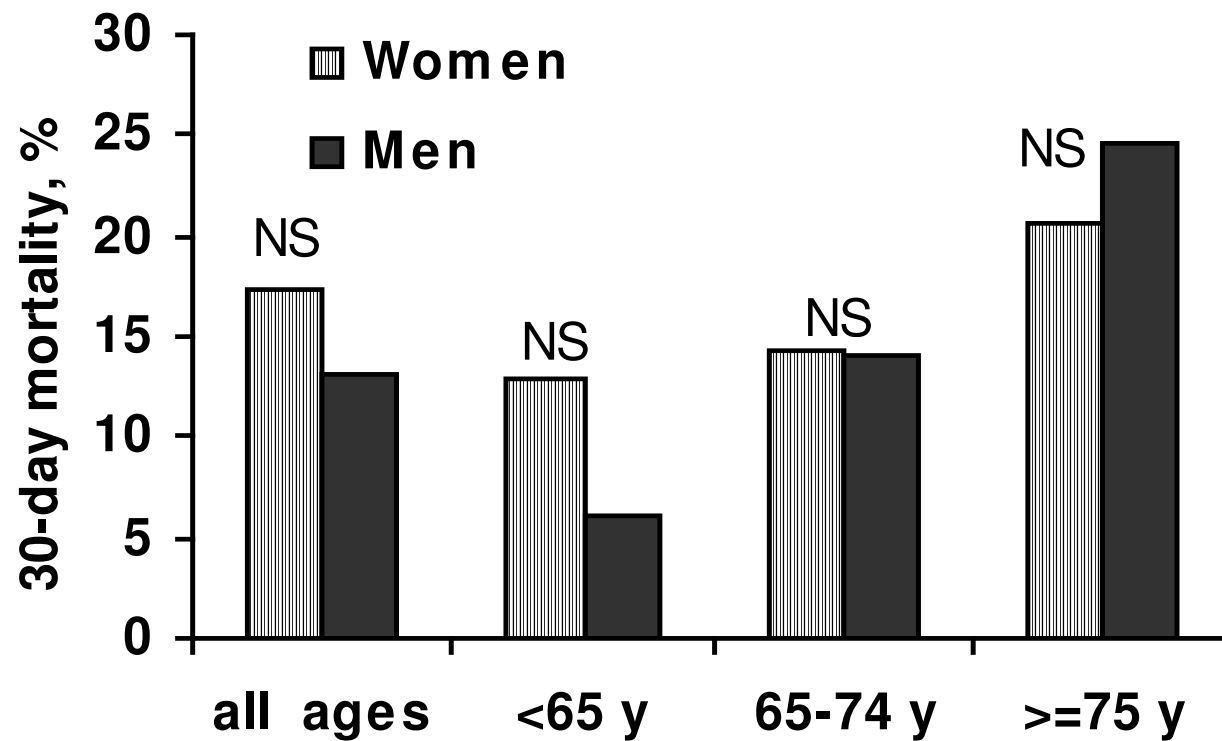
* p<0.05

Results: *gender and management*

	Women, % N=167	Men, % N=228	Unadjusted OR (95% CI)	Age-adjusted OR (95% CI)
Thrombolysis	15.6	25.4	0.53 (0.32-0.89)*	0.62 (0.36-1.06)
Coronary angiography	19.8	39.0	0.38 (0.24-0.60)*	0.68 (0.39-1.17)
PCI	15.6	26.3	0.52 (0.31-0.87)*	0.96 (0.54-1.72)

* p<0,05

Results: *gender and 30-day mortality*



Results: *gender and 30-day mortality*

	Women % N=167	Men % N=228	p		Age- adjusted OR (95% CI)	Age- and other covariates adjusted OR* (95% CI)
30-day mortality	17.4	13.2	0.247	Unadjusted 1.39 (0.80-2.41) (95% CI)	1.03 (0.57-1.85)	0.98 (0.44-2.20)

•By multivariate logistic regression analysis adjusting for age, diabetes, hypertension, prior MI, prior chronic heart failure, cardiac arrest outside hospital, Q-wave MI, anterior MI

Conclusions

- There are gender differences in risk profiles among AMI-patients
- Age is a more important determinant of the management and outcome in patients with AMI than gender
- The female gender is not an independent predictor of early mortality after AMI

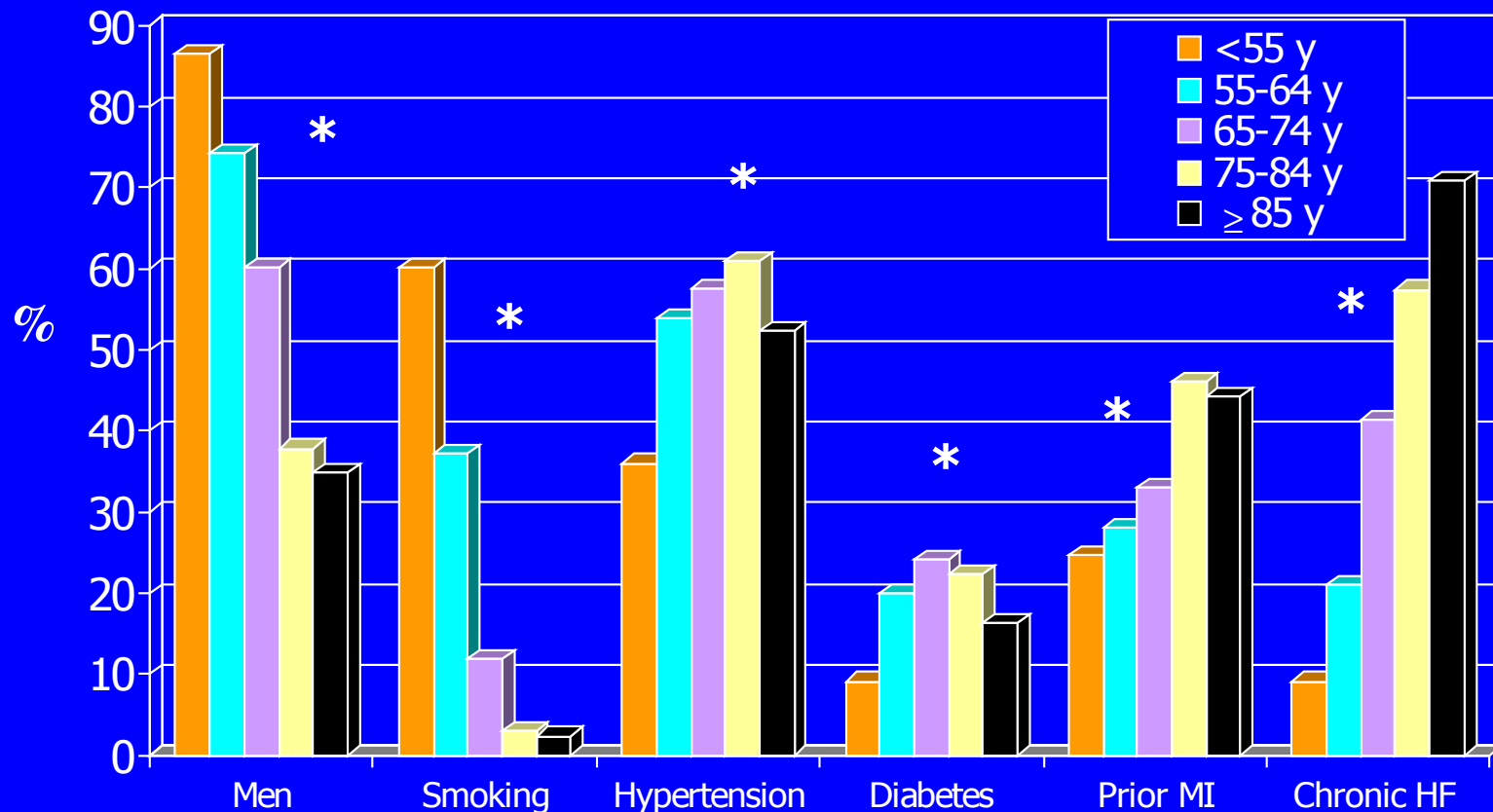
Age and acute myocardial infarction

- The elderly are the fastest-growing within the population in most countries
- The number of elderly patients suffering AMI is growing, emphasizing the importance of examining trends in management and outcomes in elderly and very elderly
- Short-term mortality of elderly patients with AMI remains high
- Previous quality of care studies have documented the underuse of evidence-based treatments for AMI in elderly patients

Age and AMI: *study aim and methods*

- To assess age-related differences in the risk factors, management and in-hospital mortality of patients with AMI
- Study included patients who were admitted between January 2001 and December 2003 to the Tartu University Clinics
- Exclusion criterion was transfer from another hospital
- Age trends were assessed by using the nonparametric test for categorical variables and quantile regression of medians for continuous variables

Results: *age-related differences in baseline characteristics*

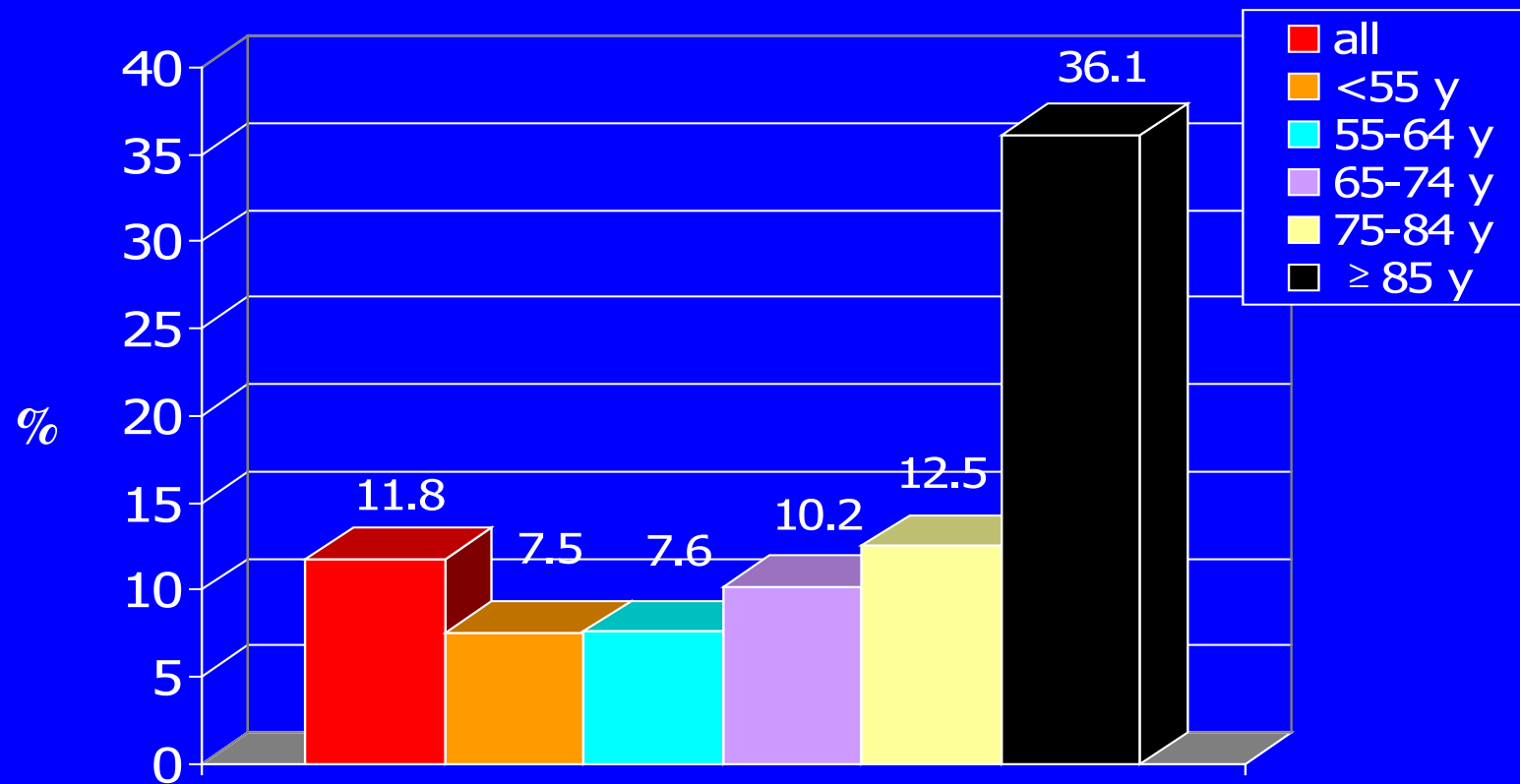


* Age trend $p < 0.05$

Results: *age and management*

	<55 y, % N=186	55 –64 y, % N=210	65-74 y, % N=383	75-84 y, % N=336	≥85 y, % N=86	p	Age trend, p
Aspirin	91.9	94.8	91.4	91.7	87.2	0.29	0.17
Anticoagulants	93.0	93.3	90.4	91.4	82.6	0.03	0.02
ACE inhibitors	67.7	67.6	70.5	73.5	51.2	0.00	0.63
Beta-blockers	76.9	76.2	70.6	69.9	51.2	0.00	0.00
Statins	63.4	58.1	44.6	26.5	11.6	0.00	0.00
Thrombolysis in STEMI	38.1	41.3	32.4	22.9	12.2	0.00	0.00
Primary PCI in STEMI	22.2	10.7	10.1	0.6	-	0.00	0.00

Results: *age and in-hospital mortality*



Conclusions

- Elderly patients with AMI have an increased prevalence of poor prognostic factors
- Elderly patients receive less often evidence-based therapies for AMI
- Elderly patients have a higher in-hospital mortality

**Thank you for your
attention!**