Original research article

Trends in the treatment and outcomes of elderly patients with acute coronary syndrome: Results from the CZECH registries

K. Stašková [a], P. Toušek [b,*], F. Toušek [a], A. Malá [b], M. Želízko [c], D. Horák [d], M. Sluka [e], A. Vodzinská [f], R. Jančar [g], M. Aschermann [h], P. Jarkovský [i], P. Widimský [b]

[a] Regional Hospital, Department of Cardiology, České Budějovice, Czech Republlic
[b] Cardiocenter, University Hospital Královské Vinohrady and Third Faculty of Medicine, Charles University, Prague, Czech Republic
[c] Cardiocenter, Institute for Clinical and Experimental Medicine, Prague, Czech Republlic
[d] Cardiocenter, Hospital Liberec, Liberec, Czech Republlic
[e] Cardiocenter, University Hospital Olomouc, Olomouc, Czech Republlic
[f] Cardiocenter, Hospital Podlesí, Třinec, Czech Republlic
[g] Dpt. of Cardiology, Municipal Hospital Ostrava, Ostrava, Czech Republlic
[h] Second Department of Internal Medicine, Cardiology and Angiology, General University Hospital, First Faculty of Medicine, Charles University, Prague, Czech Republlic
[i] Masaryk University, Faculty of Medicine, Institute for Biostatistics and Analysis, Brno, Czech Republlic

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ABSTRACT

Background: The number of elderly patients in the population is rapidly increasing, and little is known about how adherence to recommended treatment strategies in elderly patients with acute coronary syndrome (ACS) has changed over time.

Aim: To analyze trends in the treatment and outcomes of elderly patients with ACS from two registries conducted in the Czech Republic over 10 years.

Methods and results: Data from the CZECH-1 and CZECH-3 registries were used in this study. These registries collected data in autumn 2005 and autumn 2015, and contain data from 1952 and 1754 unselected patients, respectively. All patients had been hospitalized with an initial diagnosis of ACS. There were 490 (25.7%) elderly patients in the CZECH-1 registry and 484 (28.1%) elderly patients in the CZECH-3 registry ($p = 0.045$) with an average age of 80.6 ± 4 and 82.1 ± 5 years ($p < 0.001$), respectively. ACS was confirmed in 345 (72%) and 352 (73.6%) elderly patients ($p = 0.781$), respectively. There was higher use of percutaneous coronary intervention (65.2% and 54.8%; $p < 0.001$), dual antiplatelet treatment, ACE inhibitors, and statins during treatment in the CZECH-3 compared to the CZECH-1 registry. No differences in hospital mortality of elderly patients with confirmed ACS were observed between registries (8.2% vs. 10.4%; $p = 0.790$).

* Corresponding author at: Cardiocenter, Third Faculty of Medicine, Charles University, Ruska 87, Prague 100 00, Czech Republic.
  E-mail address: petr.tousek@fnkv.cz (P. Toušek).

Introduction

The number of elderly patients in the population is rapidly increasing, and elderly patients presenting with acute coronary syndrome (ACS) have worse outcomes compared to younger patients [1–3]. This may be partially due to a decreased adherence to guideline-recommended therapies [4,5]. However, very little is known about whether adherence to treatment strategies in elderly patients with ACS admitted to different hospital types (with and without PCI capability) have changed over time, and if any changes have impacted patient outcomes. Therefore, we analyzed trends in the treatment and outcomes of elderly patients with ACS from two ACS patient registries established 10 years apart in the Czech Republic.

Methods

CZECH-1 registry data were collected from 1–30 November 2005 from 21 cardiac centers (PCI-capable centers) and 15 regional community hospitals without catheterization availability. CZECH-3 registry data were obtained from 33 regional hospitals and 10 PCI-capable centers between 12 October and 13 December 2015. All hospitals in the South Bohemian region, which has 625,000 inhabitants, participated in both registries.

The inclusion criteria for both registries were the same: hospital admission with a diagnosis of ST segment elevation MI (STEMI), non-ST segment elevation MI (NSTEMI), unstable angina pectoris (UAP), acute heart failure in patients with known coronary artery disease (CAD), chest pain with suspected ACS, resuscitation in the prehospital phase, or another initial diagnosis confirmed as ACS during hospitalization.

In-hospital mortality was evaluated in all enrolled patients. The final diagnosis and the confirmation or exclusion of ACS were performed according to the criteria for and definition of ACS [6,7]. Elderly patients were defined as patients aged 75 and over at the time of hospital admission.

Standard descriptive statistics were applied to the analysis, including absolute and relative frequencies for categorical variables and means with standard deviations for continuous variables. The statistical significance of differences between patient groups was computed using the maximum likelihood chi-square test for categorical variables and Mann–Whitney U test for continuous variables. The level of statistical significance was set at $p = 0.05$. SPSS 19 software for Windows (Release 19.0.1; IBM Corp., 2010) was used for the analysis.

Results

ACS was confirmed during hospitalization in 1313 of 1921 patients (69.8%) in the CZECH-1 registry and in 1280 of 1754 patients (73%) in the CZECH-3 registry ($p = 0.004$). There were 490 (25.7%) elderly patients in the CZECH-1 registry and 484 (28.1%) elderly patients in the CZECH-3 registry ($p = 0.045$), and ACS was confirmed in 345 (72%) and 352 (73.6%) patients ($p = 0.781$), respectively.

Patient characteristics

The average age of elderly patients differed significantly between registries (80.6 ± 3.9 in CZECH-1 vs. 82.1 ± 5 years in CZECH-3 registry; $p < 0.001$); the proportion of patients older than 90 years was 3.2 vs. 7.1% ($p = 0.053$), respectively. The percentage of females in the elderly ACS population did not differ between registries, but was significantly higher in the elderly patient population compared to the younger patient population (47% vs. 26% in CZECH-1 and 49% vs. 27% in CZECH-3 registry; $p < 0.001$). Table 1 shows a comparison of other clinical characteristics in elderly patients with confirmed ACS.

Treatment strategy in elderly ACS patients

Coronary angiography was performed in 253 (76%) elderly patients with confirmed ACS in the CZECH-1 registry and in 286 (82%) elderly patients in the CZECH-3 registry ($p = 0.235$). Of these patients, 54.8% and 65.2% ($p < 0.001$) underwent subsequent percutaneous coronary intervention (PCI) and 9.1% and 10.8% ($p = 0.478$) underwent coronary artery bypass graft (CABG), respectively. During coronary angiography, left main disease was more often found in patients in CZECH-3 registry (21% vs. 10.3%, $p = 0.003$). Regarding patients with ST segment elevation myocardial infarction (92 patients in CZECH-1 and 102 patients in CZECH-3 registry), urgent

Table 1 – Patient characteristics.

	CZECH-1 registry	CZECH-3 registry	p-Value
Female	47.2%	49.1%	0.366
Age, years (SD)	80.6 (3.9)	82.1 (5.0)	**<0.001**
Diabetes	42.1%	39%	0.664
Hypertension	80.7%	86.9%	0.082
Active smoking	26.7%	29.9%	0.095
Dyslipidemia	35.5%	52.8%	**<0.001**
Atrial fibrillation	Not collected	15.7%	–
History of MI	33.9%	33.3%	0.859
History of PCI	11.5%	22.4%	**<0.001**
History of CABG	6.2%	12.4%	**0.011**
History of stroke	14.5%	14.4%	0.993

MI – myocardial infarction, PCI – percutaneous coronary intervention, CABG – coronary artery bypass graft.
P value is <0.001.