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Original research article

Outcomes of patients hospitalized for suspected acute coronary syndrome, in whom the diagnosis was not confirmed: Results from the CZECH-1 and CZECH-2 registries

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ABSTRACT

Background: Suspicion of acute coronary syndrome (ACS) is one of the most common reasons for hospital admission. However, ACS is not confirmed in a high proportion of these patients during hospitalization. Very few details exist about these patients.

Aim: To evaluate the clinical characteristics and outcomes of hospitalized patients with a suspicion for ACS that has not been confirmed and compare these results with patients with confirmed ACS.

Methods and results: Data were used from the CZECH-1 and CZECH-2 registries, collected in November 2005 and October–November 2012. Both registries contain data from all consecutive patients who have been hospitalized with an initial diagnosis of ACS. ACS was not confirmed during hospitalization in 578 of 1921 patients (30.1%) in the CZECH-1 registry and in 372 of 1221 (30.5%) in the CZECH-2 registry. In both registries, higher proportions of females (52 vs. 36%; $p < 0.001$ and 46 vs. 33%; $p < 0.01$, respectively) were observed between patients with unconfirmed ACS compared to those with confirmed ACS. A history

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of myocardial infarction was known in 25% of the patients with unconfirmed ACS in both registries. On admission, atrial fibrillation or other non-sinus rhythm on ECG was present in 17% of patients with unconfirmed ACS, bundle branch block in 18%, ST depression in 8%, and ST elevation in 3.6%. Coronary angiography was performed on 36% of these patients in CZECH-1 and 27% of patients in CZECH-2 ($p < 0.01$). In-hospital mortality of the ACS unconfirmed patients was 1.2% in the CZECH-1 registry and 2.1% in the CZECH-2 registry ($p = \text{NS}$). 30-day and 1-year mortality in patients with unconfirmed ACS in the CZECH-2 registry were significantly lower compared to patients with confirmed ACS (3.5 vs. 6.6%; $p < 0.05$ and 6.5 vs. 13%; $p < 0.05$, respectively). Musculoskeletal pain and acute heart failure were the most common discharge diagnosis in patients with unconfirmed ACS.

Conclusion: Hospitalized patients in whom the suspicion of ACS had not been confirmed were more often female and a high proportion had abnormal ECG on admission. In-hospital mortality was very low, and the 1-year mortality was significantly lower compared to patients with confirmed ACS.

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Introduction

Clinical symptoms indicating acute coronary syndrome (ACS) are among the most common reasons for presentation to hospitals. Because of the challenge of determining an appropriate diagnosis and the poor clinical outcome of mistakenly discharged patients with myocardial infarction (MI), a high proportion of patients are admitted with possible ACS that subsequently is not confirmed [1,2].

Two large registries of patients with an initial diagnosis of ACS admitted to regional community hospitals or cardiocentres were created in 2005 and 2012 in the Czech Republic [3,4]. In both registries, ACS diagnosis was excluded during hospitalization in 30% of patients.

The aim of this study was to evaluate the clinical characteristics and outcomes of patients enrolled in the CZECH-1 and CZECH-2 registries in whom ACS was not confirmed.

Methods

CZECH-1 registry data were collected from 1 to 30 November 2007 in all 21 cardiocentres (PCI centres) and 15 regional community hospitals without catheterization availability. CZECH-2 registry data were obtained between 1 October and 30 November 2012 from 28 regional hospitals without catheterization availability and 4 cardiocentres with catheterization laboratories. Detailed descriptions of the participating centres have been presented previously [5]. One-year clinical follow-ups of 1002 of 1221 (82%) patients enrolled in the CZECH-2 registry were performed by the investigators between October 2013 and February 2014.

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]. Retrospectively, the correct final diagnosis of patients with unconfirmed ACS was evaluated in some CZECH-2 participating centres of the South Bohemia county.

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

Results

ACS was not confirmed during hospitalization in 578 of 1921 patients (30.1%) in the CZECH-1 registry and in 372 of 1221 (30.5%) in the CZECH-2 registry. There was a significant difference in the proportion of unconfirmed ACS patients between regional community hospitals and cardiocentres (Fig. 1).

Patient characteristics

The clinical characteristics of patients with unconfirmed ACS did not differ between CZECH-1 and CZECH-2 registry except of prevalence of dyslipidemia (39 vs. 48%, $p < 0.01$). Table 1 shows comparison of clinical characteristics between the unconfirmed and confirmed ACS patients.

Clinical examination and treatment strategy

Patients with unconfirmed ACS in the two registries did not differ in terms of their initial ECGs. Thus, we present these

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