



Zbrinjavanje akutnog koronarnog sindroma u Općoj županijskoj bolnici Požega

Management of acute coronary syndrome in Požega General County Hospital

Vladimir Dujmović, Ile Raštegorac, Ivan Barišić*

Opća županijska bolnica Požega, Požega, Hrvatska
Požega General County Hospital, Požega, Croatia

SAŽETAK: U radu je prikazana problematika liječenja bolesnika s akutnim koronarnim sindromom (AKS) na području Požeško-slavonske županije uz kratak osvrt na povijesni pregled terapijskog pristupa od osnivanja koronarne jedinice do danas. Poseban naglasak je stavljen na strukturu bolesnika s AKS tijekom 2009. godine i na rani intrahospitalni mortalitet. Kako područje županije tada nije bilo aktivno uključeno u Hrvatsku mrežu primarne perkutane koronarne intervencije (PCI), temelj liječenja akutnog infarkta miokarda s elevacijom ST-segmenta predstavljala je sistemska fibrinoliza uz naknadnu PCI unutar 24-48 sati. Kod bolesnika s akutnim infarktom miokarda bez elevacije ST-segmenta i nestabilnom anginom pectoris, ovisno o riziku, nakon početnog konzervativnog zbrinjavanja inzistiralo se na što ranijem intervencijskom liječenju. Rezultati ovakvog zbrinjavanja bolesnika s AKS bili su usporedivi s područjima aktivno uključenima u Hrvatsku mrežu primarne PCI.

KLJUČNE RIJEČI: akutni koronarni sindrom, intrahospitalni letalitet, primarna perkutana koronarna intervencija, Hrvatska.

SUMMARY: In this article we presented the management of patients with acute coronary syndrome (ACS) in Požega-Slavonia county region with short review of historical compendium of therapeutic strategies after foundation of Coronary Care Unit until today. Particular emphasis was placed on structure of patients with ACS during 2009 year and on in-hospital mortality. Since our county region was not actively included in the Croatian primary percutaneous coronary intervention (PCI) network at that time, management for patients with acute ST segment elevation myocardial infarction was systemic fibrinolysis with subsequently performed PCI within 24-48 hours. In patients with acute non-ST-segment elevation myocardial infarction and unstable angina pectoris, the management depends on risk stratification, after initial conservative treatment we mostly insist on promptly performed interventional treatment. The results of this therapeutic strategy for ACS patients were comparable with the results of the regions which were actively included in the Croatian primary PCI network.

KEYWORDS: acute coronary syndrome, in-hospital mortality, primary percutaneous coronary intervention, Croatia.

CITATION: Kardio list. 2011;6(9-10):133-136.

Koronarna jedinica (KJ) u Općoj županijskoj bolnici (OŽB) Požega osnovana je 1982. godine, što je samo pet godina nakon osnivanja prve takve jedinice u jugoistočnom dijelu Europe — one u Kliničkom bolničkom centru "Sestre milosrdnice" Zagreb. Od tada se u OŽB Požega primjenjuju strategije intenzivnog liječenja bolesnika s akutnim koronarnim sindromom (AKS).

Područje o kojem skrbi OŽB Požega zemljopisno pripada zapadnom dijelu Slavonije i obuhvaća 85.831 stanovnika. U Odjelu kardiologije smješteno je 13 bolničkih postelja, a KJ ima 4 kreveta.

Od osnutka pa do danas osnovu liječenja akutnog infarkta miokarda s elevacijom ST-segmenta (STEMI) u OŽB Požega predstavlja reperfuzijsko liječenje sistemskom fibrinolizom (najčešće streptokinazom). Od početka 2011. godine u suradnji s intervencijskim centrom u Općoj bolnici "Dr. Josip Benčević" u Slavonskom Brodu započeli smo novu eru u zbrinjavanju bolesnika sa STEMI — liječenjem primarnom perkutanom koronarnom intervencijom (PCI) te tako postali aktivni dio Hrvatske mreže primarne PCI.

Naime, obzirom na prometno-geografske specifičnosti regije, jedini PCI centar koji zadovoljava vremenske uvjete transporta prema smjernicama Europskog kardiološkog društva (ESC) za liječenje bolesnika sa STEMI i rezultatima

Coronary Care Unit (CCU) in the Požega General County Hospital (PGCH) was established in 1982 which is only 5 years following the foundation of first of that kind of unit in the southeast part of Europe — the one in Clinical Hospital Center "Sestre milosrdnice" Zagreb. Since then intensive treatment strategy for acute coronary syndrome (ACS) patients has been continuously applied in PGCH.

The PGCH region is a part of western Slavonia, it contains 85.831 inhabitants. The Department of Cardiology has 13 beds and CCU has 4 beds.

Since its foundation until today, the therapeutic foundation for treatment of acute ST-segment elevation myocardial infarction (STEMI) in PGCH represents reperfusion therapy with systemic fibrinolysis (mostly streptokinase). From the beginning of 2011 in collaboration with interventional center in "Dr. Josip Benčević" General Hospital in Slavonski Brod, we started a new era in management of patients with STEMI — treatment with primary percutaneous coronary intervention (PCI) and in that way we have become an active part of the Croatian primary PCI network.

Particularly, considering road network and geographical specific features of our county, the only PCI center which meets the time interval criterion in accordance with



velikih kliničkih studija (PRAGUE 1 i 2)¹⁻³ s ovog područja nalazi se u 40 kilometara udaljenom Slavenskom Brodu.

Strategija liječenja bolesnika s akutnim infarktom miokarda bez elevacije ST-segmenta (NSTEMI) i nestabilnom anginom pektoris (NAP) u OŽB Požega temeljena je na početnom konzervativnom zbrinjavanju te potom odluke o invazivnom liječenju obzirom na stratifikaciju rizika prema preporukama ESC⁴.

Cilj rada je prikazati ukupan broj bolesnika s AKS tijekom jedne kalendarske godine, kao i broj bolesnika u pojedinim podskupinama (STEMI, NSTEMI, NAP) te ukupni intrahospitalni letalitet, kao i smrtnost u pojedinim podskupinama bolesnika s AKS u odnosu na primjenjenu strategiju liječenja.

Ispitanici i metode

Tijekom 2009. godine prospektivno je praćen broj bolesnika, strategija liječenja, kao i ishodi liječenja svih bolnički liječenih pacijenata s AKS.

Dijagnoza AKS, kao i izbor načina liječenja bio je sukladan smjernicama ESC. Kod bolesnika sa STEMI analizirao se udio pacijenata liječenih fibrinolitičkom, odnosno konzervativnom terapijom, kao i broj bolesnika koji su nakon fibrinolize upućeni na ranu elektivnu PCI. U grupi bolesnika sa NSTEMI i NAP analiziran je način liječenja, pratio se broj bolesnika liječenih samo konzervativno, kao i broj onih kod kojih je bilo indicirano intervencijsko liječenje. Analiziran je i broj premještenih bolesnika u svim podskupinama AKS.

Podaci su prikazani kao apsolutni brojevi i postotci ukupnog broja bolesnika.

Rezultati

Ukupno je bilo hospitalizirano 146 bolesnika s AKS, od čega 61 (41,8%) bolesnik sa STEMI, 59 bolesnika sa NSTEMI (40,4%) i 26 (17,8%) bolesnika s NAP.

Obzirom na raspodjelu bolesnika prema spolu od ukupnog broja bolesnika s AKS, bilo je 87 (59,6%) muškaraca i 59 (40,4%) žena. Unutar pojedinih podgrupa bolesnika s AKS distribucija prema spolu je bila sljedeća: NAP — 18 muškaraca (69,2%) i 8 žena (30,8%); NSTEMI — 26 muškaraca (44,1%) i 33 žena (55,9%); STEMI — 43 muškaraca (70,5%) i 18 žena (29,5%).

Raspodjela bolesnika s obzirom na životnu dob: NAP (muškarci: 45-73 godina, srednja životna dob 54,1 godina; žene: 51-87 godina, srednja životna dob 65,4 godina), NSTEMI (muškarci: 46-84 godina, srednja životna dob 65,5 godina; žene: 50-89 godina, srednja životna dob 70 godina), STEMI (muškarci: 33-90 godina, srednja životna dob 50 godina; žene: 40-84 godina, srednja životna dob 75 godina).

U intervencijske centre premješteno je ukupno 97 bolesnika (66,4% od svih bolesnika s AKS) i to 41 bolesnik sa STEMI (67,2% od svih sa STEMI), 35 sa NSTEMI (59,3% od svih sa NSTEMI) i 21 bolesnik s NAP (80,8% od svih sa NAP).

Od ukupnog broja bolesnika sa STEMI njih 31 (50,8%) je bilo liječeno sistemskom fibrinolitičkom terapijom strep-

guidelines of the European Society of Cardiology (ESC) for treatment of STEMI patients and the results of the large clinical studies (PRAGUE 1 and 2)¹⁻³ is located in 40 km distant city of Slavenski Brod.

The therapeutic strategy for patients with acute non-ST-segment elevation myocardial infarction (NSTEMI) and unstable angina (UA) in PGCH is based on initial conservative treatment and consequent interventional therapy considering the risk stratification in accordance to ESC guidelines⁴.

The aim of this article is to present the total number of ACS patients during one calendar year as well as the number of patients in separate subgroups (STEMI, NSTEMI, UA) and total inhospital mortality as well as mortality in separate subgroups of ACS patients in the context of applied therapeutic strategy.

Patients and methods

During 2009, a number of patients and the treatment strategy as well as therapeutic outcome for all hospitalized ACS patients were prospectively monitored and analyzed.

Diagnosis of ACS and the selection of therapeutic method were compliant with the ECS guidelines. In STEMI patients group we have analyzed a part of patients who underwent fibrinolytic, or rather conservative therapy as well as number of patient who were transferred to early elective PCI after fibrinolytic therapy. In the group of NSTEMI and unstable angina patients, we also analyzed the treatment method and monitored the number of patients treated with conservative therapy only as well as the number of those in whom interventional treatment was indicated. We also analyzed the number of transferred patient in all subgroups of ACS patients.

Data were shown as absolute values and as percentage of total number of patients.

Results

Totally 146 ACS patients have been hospitalized, of whom 61 (41.8%) were STEMI patients, 59 (40.4%) were NSTEMI patients and 26 (17.8%) were unstable angina patients.

Considering the distribution of patients by sex, of total ACS patient number, there were 87 (59.6%) male and 59 (40.4%) female patients. Within each ACS patient subgroup, distribution by sex were the following: UA — 18 male (69.2%) and 8 female patients (30.8%); NSTEMI — 26 male (44.1%) and 33 female patients (55.9%); STEMI — 43 male (70.5%) and 18 female patients (29.5%).

Considering the patient's age distribution, there were: UA (male patients: 45-73 year, mean age 54.1; female patients 51-87 year, mean age 65.4); NSTEMI (male patients: 46-84 year, mean age 65.5; female patients 50-89 year, mean age 70), STEMI (male patients 33-90 year, mean age 50; female 40-84 year, mean age 75).

Totally 97 patients were transferred to interventional centers (66.4% of all ACS patients), 41 STEMI patients (67.2% of all STEMI patients), 35 NSTEMI patients (59.3%



tokinazom i ti bolesnici su hospitalizirani najkasnije unutar 6 sati od početka bolova (ukupno vrijeme ishemijske). U subakutnoj fazi bolesti (ukupno vrijeme ishemijske 12-24 sata) bilo je hospitalizirano 28 (45,9%) bolesnika. Dva su bolesnika (3,3%) s perakutnim STEMI (ukupno vrijeme ishemijske do 1 sat) premještena u intervencijske centre zbog liječenja primarnom PCI.

U podskupini bolesnika sa NSTEMI od ukupnog broja, njih 35 (59,3%) je bilo upućeno nakon početnog konzervativnog zbrinjavanja na intervencijsko liječenje. Od ukupnog broja bolesnika sa NAP njih 21 (80,8%) je bilo upućeno u intervencijske centre zbog hitne PCI.

Tijekom 2009. godine smrtni ishod tijekom bolničkog liječenja registriran je u pet bolesnika sa STEMI i jednog sa NSTEMI. Izraženo u postotcima, intrahospitalni letalitet bolesnika sa STEMI iznosio je 8%, a u skupini sa NSTEMI 1,7%. Ukupni intrahospitalni letalitet bolesnika s AKS u OŽB Požega tijekom 2009. godine iznosio je 4,1%.

Rasprava

Dobrobiti elektivne PCI u smanjenju smrtnosti i reinfarkta nakon uspješne fibrinolitičke terapije u bolesnika sa STEMI su još uvijek kontroverzni, kao i vrijeme izbora elektivne PCI nakon fibrinolitičke terapije⁵⁻⁷.

Rezultati Registra KJ OŽB Požega ukazuju da je rana bolnička smrtnost bolesnika sa STEMI kombiniranom strategijom liječenja (fibrinolitička terapija + rana elektivna PCI unutar 24 do 48 sati od fibrinolize) smanjena na ispod 10%. Ovo predstavlja zadovoljavajući uspjeh budući da područje koje pokriva OŽB Požega u navedenom razdoblju nije bilo aktivno uključeno u Hrvatsku mrežu primarne PCI unutar koje je smrtnost bolesnika sa STEMI iznosila 4,4%⁸.

Navedeni rezultat je u skladu i s rezultatima velikih kliničkih studija koje su potvrdile superiornost primarne PCI u liječenju bolesnika sa STEMI ukoliko se ona može izvesti obzirom na organizacijske mogućnosti (raspored PCI centara, prometna povezanost, vrijeme transporta iz županijskih bolnica 90-120 min do PCI centara). Važno je naglasiti da ovi rezultati podupiru mišljenja da je kombinacija farmakološke reperfuzije s ranim elektivnim PCI terapijski pristup usporediv s primarnim PCI u pogledu smanjenja rane smrtnosti i obzirom na to predstavlja dobru alternativu za zbrinjavanje bolesnika sa STEMI u područjima koja nisu pokrivena mrežom primarne PCI^{1,2,5-7}.

Kada je riječ o preostalim bolesnicima s AKS gdje pPCI još uvijek nije imperativ liječenja prema sadašnjim preporukama⁴, ovi rezultati se bitnije ne razlikuju od rezultata centara s intervencijskom kardiologijom.

Zaključno, možemo ustvrditi da usprkos nedostacima našeg područja koja se prvenstveno odnose na ograničenu prometnu povezanost uslijed specifičnog zemljopisnog položaja te organizaciju PCI centara tijekom 2009. godine, kombiniranim terapijskim pristupom (farmakološka reperfuzija s ranim elektivnim PCI) za bolesnike sa STEMI i naglaskom na intervencijskom liječenju onih sa NSTEMI i NAP uspio se smanjiti intrahospitalni letalitet bolesnika s AKS na samo 4,1% što predstavlja uspjeh za regiju koja nije bila aktivno uključena u Hrvatsku mrežu primarne PCI.

of all NSTEMI patients) and 21 UA patients (80.8% of all UA patients).

Of total number of STEMI patients 31 (50.8%) of them were treated with fibrinolytic therapy (streptokinase) and those patients were hospitalized latest within 6 hours after beginning of chest pain (total ischemic time). In subacute phase of disease (total ischemic time 12-24 hours) 28 (45.9%) STEMI patients have been hospitalized. Two patients (3.3%) with peracute STEMI (total ischemic time to 1 hour) were transferred to interventional centers because of primary PCI treatment.

In the sub-group of NSTEMI, 35 (59.3%) patients were after initial conservative treatment transferred because of coronary intervention. Of total number of UA patients, 21 (80.8%) of them were transferred to interventional centers for urgent PCI.

During 2009, lethal outcome during hospital treatment was recorded in five STEMI and one NSTEMI patients. Indicated in percentage, the early intrahospital lethality for STEMI patients was 8%, for NSTEMI patients it was 1.7%. Total early in-hospital mortality for ACS patients in PGCH during 2009 was 4%.

Discussion

Benefits of elective PCI in decreasing mortality and reinfarction after successful fibrinolytic therapy in STEMI patients are still controversial as well as the optimal timing to perform elective PCI after fibrinolytic therapy⁵⁻⁷.

Results of CCU registry in PGCH show that early hospital mortality in STEMI patients by applying combined therapy strategy (fibrinolytic therapy + early elective PCI within 24-48 hr after fibrinolysis) was decreased to below 10%. This is satisfactory success since PGCH region was not actively included in the Croatian primary PCI network during 2009 where the mortality of STEMI patients was 4.4%⁸.

The above result is in accordance with the results from the large clinical studies which have confirmed superiority of primary PCI in therapy of STEMI patients if the procedure can be performed considering organizational capability (distribution of PCI centers, traffic infrastructure, and transportation time from county hospitals to PCI centers within 90-120 min). It is also important to stress that these results support the opinion that the combination of pharmacological reperfusion with early elective PCI is a comparable therapeutic approach to primary PCI in the context of decreasing early hospital mortality and because of that it represents a good alternative therapeutic method for the treatment of STEMI patients in the areas which are not included in the network of primary PCI^{1,2,5-7}.

When it comes to the rest of ACS patients where primary PCI is still not a therapeutic imperative according to current guidelines⁴, our results are similar to the results of centers with interventional cardiology.

In conclusion, we can say that despite some disadvantages of our region which are primarily related to transportation connections due to our specific geographical location and the organization of PCI centers during 2009 by combining therapeutic approach (pharmacological reper-



Received: 9th Aug 2011; Updated: 25th Aug 2011

*Address for correspondence: Opća županijska bolnica Požega

Osječka 107, HR-34000 Požega, Croatia.

Phone: +385-34-254-438

E-mail: inbarisic@gmail.com

fusion with early elective PCI) for STEMI patients and by preferring mostly interventional therapy for NSTEMI and unstable angina patients we have decreased inhospital mortality of ACS patients to only 4.1% which is respectable success for the region which was not actively included in the Croatian primary PCI network.

Literature

1. Widimsky P, Groch L, Zelžko M, Aschermann M, Bedn-r F, Suryapranata H. Multicentre randomized trial comparing transport to primary angioplasty vs immediate thrombolysis vs combined strategy for patients with acute myocardial infarction presenting to a community hospital without a catheterization laboratory. The PRAGUE study. *Eur Heart J.* 2000;21(10):823-31.
2. Perez de Arenaza D, Taneja AK, Flather M. Long distance transport for primary angioplasty vs immediate thrombolysis in acute myocardial infarction (PRAGUE-2 trial). *Eur Heart J.* 2003;24(19):1798.
3. Van de Werf F, Bax J, Betriu A, Blomstrom-Lundqvist C, Crea F, Falk V, et al; ESC Committee for Practice Guidelines (CPG). Management of acute myocardial infarction in patients presenting with persistent ST-segment elevation: the Task Force on the Management of ST-Segment Elevation Acute Myocardial Infarction of the European Society of Cardiology. *Eur Heart J.* 2008;29(23):2909-45.
4. Rapezzi C, Biagini E, Branzi A. Guidelines for the diagnosis and treatment of non-ST-segment elevation acute coronary syndromes: the task force for the diagnosis and treatment of non-ST-segment elevation acute coronary syndromes of the European Society of Cardiology. *Eur Heart J.* 2008;29(2):277-8.
5. Sim DS, Jeong MH, Ahn Y, Kim YJ, Chae SC, Hong TJ, et al; Korea Acute Myocardial Infarction Registry (KAMIR) Investigators. Safety and benefit of early elective percutaneous coronary intervention after successful thrombolytic therapy for acute myocardial infarction. *Am J Cardiol.* 2009;103(10):1333-8.
6. Goodman SG, Cantor WJ. Drip-and-ship for acute ST-segment myocardial infarction: the pharmacoinvasive strategy for patients treated with fibrinolytic therapy. *Pol Arch Med Wewn.* 2009;119(11):726-30.
7. Cantor WJ, Fitchett D, Borgundvaag B, Ducas J, Heffernan M, Cohen EA, et al; TRANSFER-AMI Trial Investigators. Routine early angioplasty after fibrinolysis for acute myocardial infarction. *N Engl J Med.* 2009;360(26):2705-18.
8. Nikolić Heitzler V, Babic Z, Milicic D, Bergovec M, Raguz M, Mirat J, et al. Results of the Croatian Primary Percutaneous Coronary Intervention Network for patients with ST-segment elevation acute myocardial infarction. *Am J Cardiol.* 2010;105(9):1261-7.