

Aritmije i uređaji za elektroterapiju u 2015. godini: kratak osvrt na stanje u Republici Hrvatskoj

Arrhythmias and Electric Stimulation Therapy Devices in 2015: A Brief Overview of the Situation in the Republic of Croatia

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Bez pretjerivanja možemo reći da je 2015., u usporedbi s dosadašnjim godinama, bila godina u kojoj se mnogo toga novoga dogodilo u području aritmologije. Svakako je ključni događaj bio predstavljanje novih Smjernica Europskoga kardiološkog društva za liječenje ventrikulskih aritmija i prevenciju nagle srčane smrti¹ – dokumenta koji se željno iščekivao već niz godina jer je zadnja verzija objavljena 2006. godine². Ostale su novosti pregledno i detaljno prikazane u članku koji je objavljen u ovome broju časopisa *Cardiologia Croatica*³, a on uključuje prikaz glavnih novosti na dvama područjima – srčanih aritmija i kateterske ablacije te uređaja za elektroterapiju; ovdje ćemo ukratko navesti novosti i njihovu relevantnost u nacionalnom okviru.

U prošleme broju časopisa *Cardiologia Croatica* objavljen je prikaz aktualnih zbivanja u Republici Hrvatskoj vezanih za katetersku ablaciju fibrilacije atrija (FA) koji uključuje najsvježije podatke iz 2015. godine te koji svakako daje veliki razlog za optimizam glede dostupnosti i primjene ovog modaliteta liječenja FA i drugih aritmija koje se liječe ablacijom⁴ te stoga one neće biti ponovno komentirane u ovom osvrtu. Usporedo s velikim napretkom u intervencijskom liječenju FA prati se i znatni porast ukupnoga broja ablacija aritmija u Republici Hrvatskoj, što naše centre svrstava uz bok centrima u susjedstvu kao što su Mađarska, Austrija i Slovačka. Međutim, nužno je naglasiti da se dosta nade polaže u uspješno liječenje ventrikulskih aritmija primjenom ablacije, pri čemu podatci iz dosadašnjih studija ne daju jasan odgovor na pitanje ima li takav modalitet liječenja učinak na spontanu ventrikulsku tahikardiju i ventrikulsku fibrilaciju – a radi smanjenja rizika

It is no exaggeration to say that 2015 has been a year filled with new events in the field of arrhythmology in comparison with previous years. A crucial event was certainly the presentation of the new European Society of Cardiology Guidelines on Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death¹ – a document that had been eagerly expected for a number of years since the last version was published in 2006². Other news and developments are described clearly and in detail in an article published in this issue of *Cardiologia Croatica*³, which includes an overview of the main developments in two areas – cardiac arrhythmias and catheter ablation, and electrostimulation devices; herein we will briefly list the news and their relevance in the national context.

The previous issue of *Cardiologia Croatica* included an overview of recent developments in the Republic of Croatia regarding catheter ablation for atrial fibrillation (AF) that included the most recent data from 2015 and certainly provided ample reason for optimism regarding the availability and application of this modality of AF treatment, as well as other arrhythmias treated by ablation⁴; these developments will not be readdressed in this overview. In parallel with large advancements in interventional treatment for AF, there has been a significant increase in the total number of arrhythmia ablations in the Republic of Croatia, placing our centers shoulder-to-shoulder alongside centers in neighboring countries such as Hungary, Austria, and Slovakia. However, it is important to stress that significant hopes have been placed in the successful treatment of ventricular arrhythmias using ablation, but so far data from various studies have not provided a clear

od nagle srčane smrti. Trenutačna i buduća istraživanja trebala bi dati zadovoljavajuće odgovore na to pitanje.³

Glavna novost u području prevencije pojave moždanog udara kod nevalvularne FA jest da su trenutačno u Europi dostupna sva četiri peroralna antikoagulacijska lijeka koja ne pripadaju skupini antagonista vitamina K (NOAC): dabigatran, rivaroksaban, apiksaban i edoksaban. Iako i dalje nemamo adekvatne studije koja izravno uspoređuje sva četiri lijeka, ipak postaje jasno da će u konačnici najvjerojatnije biti moguće očekivati da svaki od navedenih lijekova ima jasno definiranu skupinu bolesnika za koje će biti najbolji izbor, pri čemu je sigurno za očekivati da nijedan lijek neće biti apsolutno prikladan izbor za sve bolesnike s nevalvularnom FA. Nadalje, svakako je važno napomenuti da će najnovije promjene u politici pružatelja zdravstvenog osiguranja u Republici Hrvatskoj (pri čemu je važno imati na umu da su spomenuti lijekovi i dalje dostupni bolesnicima uz znatnu nadoplatu) imati utjecaja na stope propisivanja tih lijekova, i to tako da će i postojeći bolesnici odabirati varfarin na štetu NOAC-a, bez obzira na sve više rastuću količinu dokaza o superiornosti NOAC-a. U svjetlu sve većega broja studija koje se odmiču od klasičnog koncepta prema studijama koje primarno istražuju ishode (i sada uključuju komparativne dokaze uzimajući u obzir ishode orijentirane prema bolesnicima, a koristeći se podacima iz stvarnoga svijeta) navedeno je novi izazov u svakodnevnoj praksi. Svakako je pozitivna tendencija da je barem za jedan lijek (dabigatran) dostupan učinkovit antidot, pri čemu se može očekivati da će i za ostale lijekove to ubrzo biti slučaj jer su krvarenja i dalje značajan problem pri primjeni tih lijekova, a zbog nemogućnosti neutralizacije djelovanja lijeka konvencionalnim metodama.³

Nova opcija u prevenciji tromboembolijskih komplikacija dostupna od ove godine u našoj zemlji jest perkutana implantacija atrijskog okludera u aurikulu lijevog atrija.⁵ Riječ je o efikasnoj metodi koja se provedenim istraživanjima pokazala neinferiornom antikoagulantnoj terapiji, a za sada je indicirana i odobrena u bolesnika s nevalvularnom FA koji imaju kontraindikaciju za njezinu primjenu. Potrebna su dodatna prospektivna istraživanja kako bi se potvrdili navedeni rezultati i proširile indikacije za ugradnju okludera. Kao i za mnoge druge nove intervencijske metode još uvijek nije s osiguravajućim društvom ugovoreno adekvatno financiranje ovakve procedure.

Ponuda uređaja za elektroterapiju obogaćena je s nekoliko novih mogućnosti – elektrostimulatori bez elektroda (eng. *leadless pacemakers*), supkutani implantabilni kardioverterski defibrilatori (eng. *subcutaneous implantable cardioverter defibrillator*; S-ICD) i nosivi kardioverterski defibrilatori (eng. *wearable cardioverter defibrillator*).³ Količina dokaza da su navedene terapije sigurne za bolesnike i učinkovite polako se povećava te, iako treba očekivati da će biti idealan izbor za vrlo određene skupine bolesnika, glavni problem, pogotovo za prilike u Republici Hrvatskoj, ostaje visoka cijena takvih uređaja i, ne manje bitno, da će zbog cijene i indikacije za ugradnju tih uređaja posljedično biti vrlo uske. Nadalje, činjenica da elektrostimulatori bez elektroda trenutačno nude samo jednokomorne uređaje te da S-ICD-i ne nude mogućnost elektrostimulacije u bolesnika kojima je ona potrebna nalažu potrebu za daljnjim istraživanjima i tehnološkim poboljšanjima

answer to the question whether such a treatment modality has any effect on spontaneous ventricular tachycardia and ventricular fibrillation – with the aim of reducing risk from sudden cardiac death. Current and future research should give satisfactory answers to this question.³

The main development in the prevention of stroke in non-valvular AF is that all four peroral anticoagulation drugs not in the vitamin K antagonist group (NOAC) are currently available in Europe: dabigatran, rivaroxaban, apixaban, and edoxaban. Although we still do not have adequate studies directly comparing all four drugs, it is becoming clear that ultimately each drug will likely have a clearly defined group of patients for which it will be the best choice; consequently, none of the drugs will be the absolutely appropriate choice for all patients with non-valvular AF. Furthermore, it is certainly important to note that the newest changes in health insurance provider policies in the Republic of Croatia (bearing in mind that these drugs are still available to patients for significant additional payment) will affect the prescription rates of these drugs, causing even existing patients to choose warfarin over NOAC despite the growing evidence on the superiority of NOAC drugs. In light of the increasing number of studies diverging from the classical concept of examining outcomes (that now include comparative evidence taking into account patient-oriented outcomes using data from the real world), the above is a new challenge for everyday practice. It is certainly a positive trend that an effective antidote is available for at least one drug (dabigatran) and that this is expected to soon be the case for the other drugs as well, given that bleeding is still a significant problem in the application of these drugs due to the inability of conventional methods to neutralize their effect.³

Percutaneous implantation of an atrial occluder in the left atrial auricle is a new option in the prevention of thromboembolic complications that has become available in our country this year.⁵ This is an efficient method that has shown itself not to be inferior to anticoagulation therapy in various studies, and is currently indicated and approved in patients with non-valvular AF with contraindications for anticoagulation therapy. Further prospective studies are needed to verify these results and broaden the indications for occluder implantation. As with many other new interventional methods, adequate financing of this procedure has not yet been arranged with the insurance fund.

There are now several new options among electric stimulation therapy devices – leadless pacemakers, subcutaneous implantable cardioverter defibrillators (S-ICD), and wearable cardioverter defibrillators.³ The evidence indicating that these treatments are safe and effective is slowly growing, and while it is to be expected that they will emerge as the ideal choice for very specific patient groups, the main problem, especially given Croatian circumstances, remains the very high price of these devices and, not less important, that the indications for the implantation of these devices will remain very narrow due to their price. Furthermore, the fact that only single chamber leadless pacemakers are currently available, and that S-ICD does not provide electrostimulation in patients who require it, indicate the need for further research and technological improvements that will make these treatment modalities more attractive to a wider patient population. It

koja će te modalitete liječenja učiniti atraktivnijima za širu populaciju bolesnika. Nužno je naglasiti da su ta dva rješenja u vrlo usko definiranim populacijama bolesnika pružila željno očekivanu alternativu jer do sada nije bilo alternativne mogućnosti liječenja. No, s obzirom na to da se ne može očekivati (prema trenutačno dostupnim podacima) da će broj bolesnika u tim vrlo određenim populacijama bolesnika biti velik, u konačnici će to značiti da će se takvi uređaji ugrađivati u malome broju centara u Republici Hrvatskoj – zasigurno, manjem od onog gdje se sada ugrađuju klasični transvenski uređaji – elektrostimulatori i implantabilni kardioverterski defibrilatori (ICD).

Donekle izdvojena cjelina jesu uređaji za elektroterapiju koji nude mogućnost telemonitoringa. Iako je navedeno vrlo zanimljivo, zbog činjenice da (gotovo) svi moderniji uređaji nude tu mogućnost, šira primjena bit će znatno ograničena dok se ne naprave adekvatni modeli plaćanja tih usluga zdravstvenim ustanovama jer količina podataka koja postaje dostupna telemonitoringom znači dodatno radno opterećenje. Nadalje, ako se i razriješe ove teškoće, čini se da će i dalje određeni broj bolesnika radije dolaziti na kontrole i susret sa zdravstvenim osobljem jer je to isto tako važno u percepciji bolesnika za vlastiti boljitak (u tijeku su studije koje to istražuju, a preliminarni su rezultati dobiveni u privatnoj komunikaciji).

Također je važno istaknuti da je konačno i pokazano da pri ugradnji ICD-a više nije nužno provoditi testiranje, no samo u slučaju rutinske i nekomplikirane ugradnje; navedeno je potkrijepljeno rezultatima *Nordic ICD Trial*.⁶

U Hrvatskoj se nastavila tendencija znatnog porasta broja implantiranih uređaja za elektroterapiju. Sa 635 ugradnji srčanih elektrostimulatora na milijun stanovnika Hrvatska se svrstala uz bok susjednim zemljama kao što su Mađarska, Slovenija i Slovačka (**slika 1**). Posebno treba istaknuti veliki porast broja ugradnji složenih i skupih uređaja. U Hrvatskoj

must be noted that these two treatments have provided an alternative treatment in very narrowly defined patient populations that was surely needed, since there had previously been no treatment alternative. However, since it is not to be expected (based on currently available data) that the number of patients in these very specific populations will be large, these devices will ultimately only be available in a small number of centers in the Republic of Croatia – surely smaller than the number of centers that currently offer classical transvenous devices – pacemakers and implantable cardioverter defibrillators (ICD).

Electric stimulation devices that allow telemonitoring are a somewhat distinct group. Although telemonitoring is very interesting, the fact is that while (almost) all modern devices have this option, wider application will be severely limited until adequate payment models are arranged for health institutions that provide that service, since the amount of data that telemonitoring provides presents an additional workload. Furthermore, even if these difficulties are resolved, it seems that a certain number of patients will still prefer follow-up examination and direct contact with medical personnel, as this is also very important for the patients from their own perspective (studies examining this effect are still ongoing; preliminary results were obtained in personal communication).

In an additional important development, it has been finally demonstrated that testing is no longer necessary for ICD implantation, except for routine, non-complex implantations; this was corroborated by the results of the *Nordic ICD Trial*.⁶

The trend of a significant increase in the number of electrical stimulation devices being implanted has continued in Croatia. With 635 pacemaker implantations per million inhabitants, Croatia is shoulder-to-shoulder with neighboring countries such as Hungary, Slovenia, and Slovakia (**Figure 1**). Especially noteworthy is the large increase in the number of

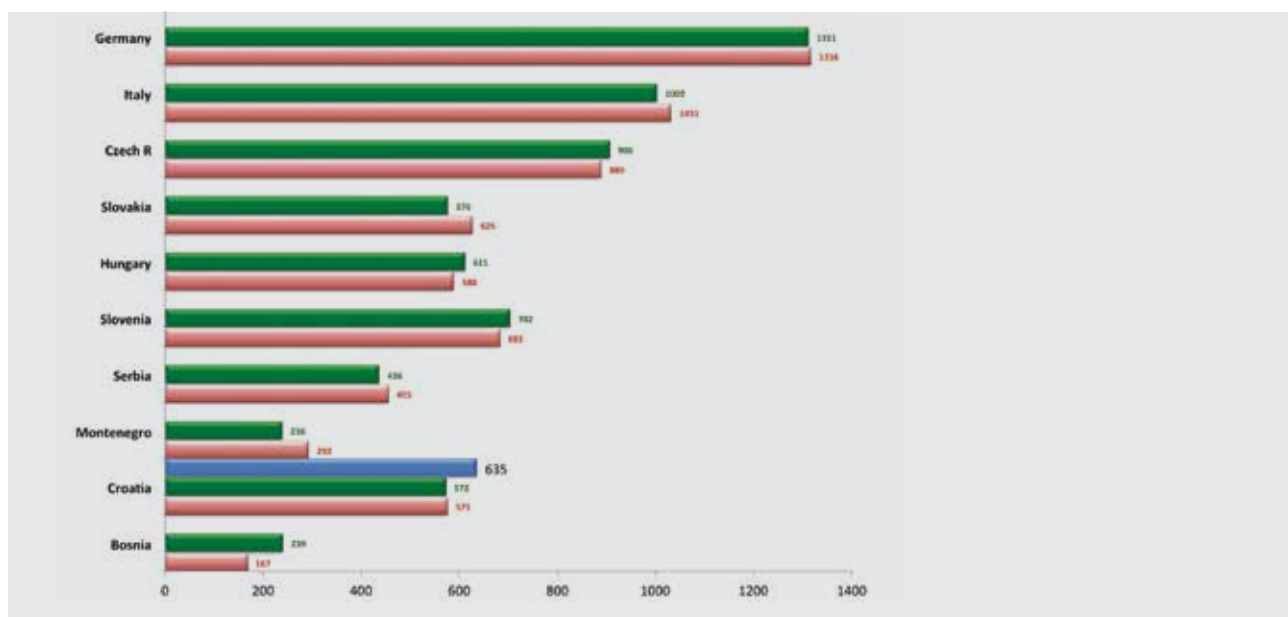


FIGURE 1. The number of pacemaker implantation per million inhabitants in different european countries in 2013 (green bar), 2014 (red bar), and 2015 (blue bar).

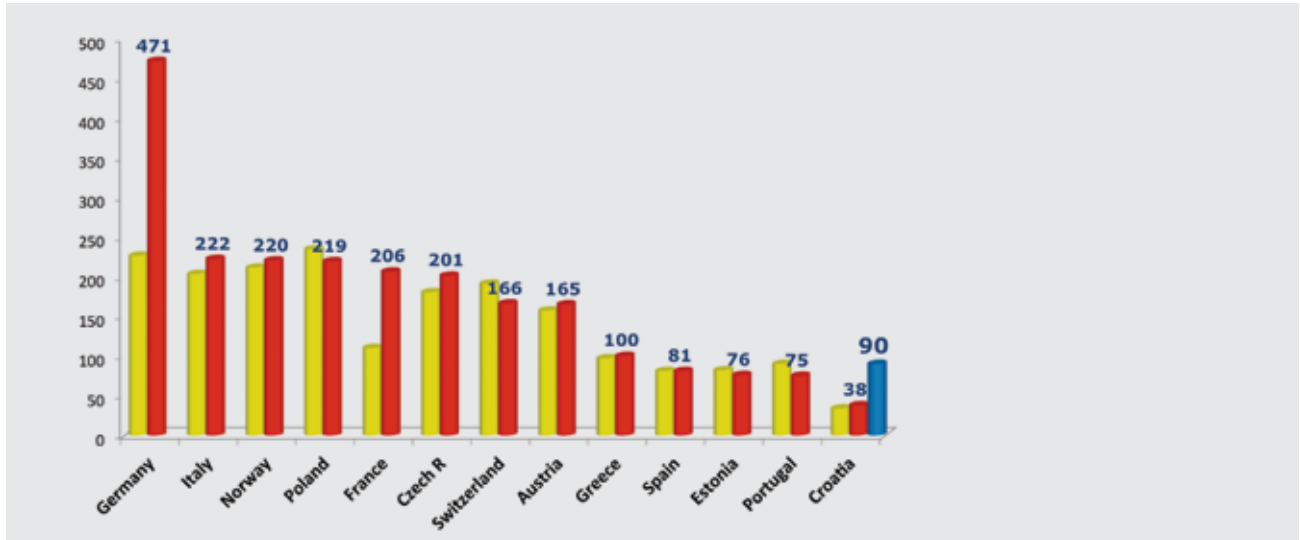


FIGURE 2. The number of implantable cardioverter defibrillator implantations per million inhabitants in different European countries in 2014 (yellow column), 2014 (red column), and 2015 (blue column).

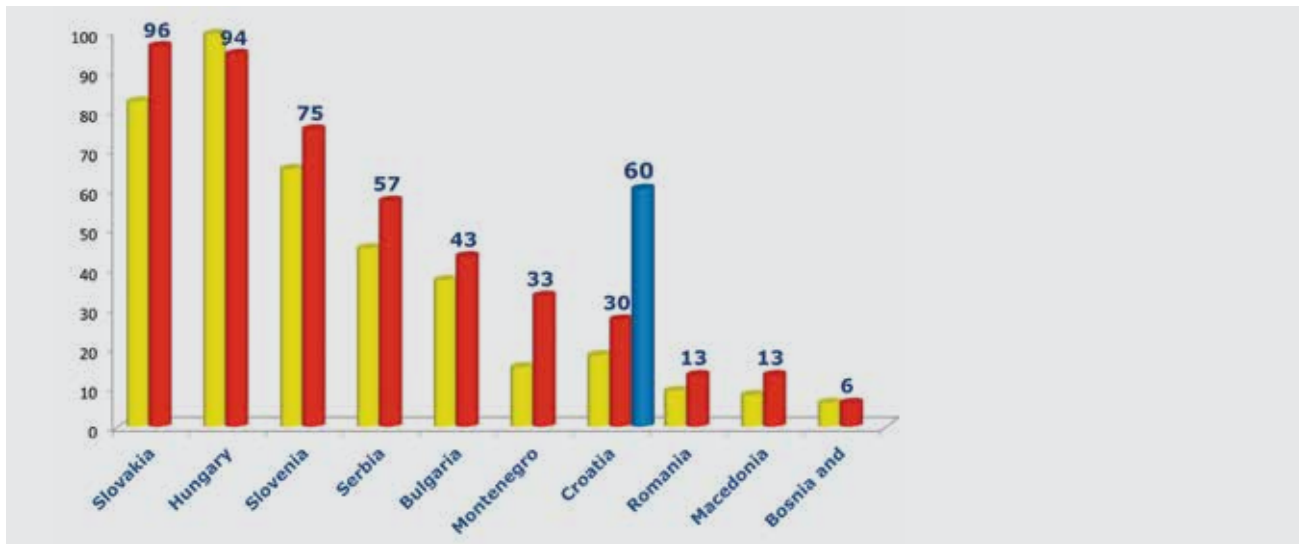


FIGURE 3. The number of cardiac resynchronization therapy implantations per million inhabitants in different European countries in 2014 (yellow column), 2014 (red column), and 2015 (blue column).

je u 2015. godine ugrađeno 388 kardioverterskih defibrilatora, što iznosi 90 uređaja na milijun stanovnika i znači gotovo 60 %-tni porast u odnosu prema prethodnoj godini (**slika 2**). Također pratimo i dvostruki porast broja ugradnji uređaja za srčanu resinkronizaciju. Ugrađen je ukupno 261 uređaj, čime smo dosegli broj od 60 implantacija na milijun stanovnika (**slika 3**). Unatoč tomu, Hrvatska još uvijek znatno zaostaje za europskim prosjekom od 120 implantacija uređaja za srčanu resinkronizaciju na milijun stanovnika. Razlog tomu leži u nekoliko činjenica, a to su prije svega složenost procedure uz još nedovoljan broj liječnika osposobljenih za izvođenje navedenih zahvata i neadekvatno financiranje ugradnji.

Na kraju pozivamo čitatelje da pročitaju cijeli članak *Steffel i sur.* kako bi se upoznali s novostima u području aritmija i uređaja za elektroterapiju u 2015. godini.⁹ Kako autori članka navode, iako su neka otkrića morala biti izostavljena (preliminarni rezultati), očekuje se da će, ako se istraživanja i inovacije

complex and expensive devices being implanted. In 2015, 388 implantable cardioverter defibrillators were implanted in Croatia, which is 90 devices per million inhabitants and represents an almost 60% increase in comparison with the previous year (**Figure 2**). Additionally, the number of cardiac resynchronization devices being implanted has doubled, for a total of 261 implanted devices, which is 60 implantations per million inhabitants and at the European average (**Figure 3**). Despite this, Croatia is still significantly behind the European average of 120 cardiac resynchronization device implantations per million inhabitants. There are several reasons for this, primarily the complexity of the procedure and the still insufficient number of physicians capable of performing these procedures, as well as inadequate financial support for these implants.

In conclusion, we invite our readers to read the article by Steffel *et al* in its entirety and familiarize themselves with news regarding arrhythmias and electric stimulation therapy

nastave istim tempom, i 2016. godina biti jednako uspješna, ako ne i uspješnija u području aritmija. Aktualna zbivanja u Republici Hrvatskoj svakako donose brojne izazove u implementaciji ovih spoznaja, pri čemu je ključna uloga Radne skupine za aritmije i elektrostimulaciju srca Hrvatskoga kardiološkog društva, koje je uvijek do sada radilo u najboljem interesu struke i bolesnika te će tako nastaviti i ubuduće.

devices in 2015.³ As the authors of the article point out, although some discoveries had to be omitted (preliminary results), it is expected that, if research and innovation continue at this pace, 2016 will be equally if not more successful regarding arrhythmia treatment. Recent developments in the Republic of Croatia certainly bring numerous challenges for the implementation of these discoveries, in which a key role will be played by the Working Group on Arrhythmias and Cardiac Pacing of the Croatian Cardiac Society that has always worked in the best interests of the field and the patients, and will continue to do so in the future.

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