

## Neurološke komplikacije nakon uvođenja rutinskog desnog transradijalnog pristupa koronarnoj angiografiji

### Neurological complications after the introduction of routine right radial access for coronary angiography

Irzal Hadžibegović<sup>\*1</sup>,  
Đeiti Prvulović<sup>1</sup>,  
Krešimir Gabaldo<sup>1</sup>,  
Ognjen Čančarević<sup>2</sup>,  
Martina Menegoni<sup>1</sup>,  
Domagoj Mišković<sup>1</sup>,  
Božo Vujeva<sup>1</sup>

<sup>1</sup>Opća bolnica "Dr. Josip Benčević", Slavonski Brod, Hrvatska

<sup>2</sup>Klinička bolnica Dubrava, Zagreb, Hrvatska

<sup>1</sup>General Hospital "Dr. Josip Benčević", Slavonski Brod, Croatia

<sup>2</sup>University Hospital Dubrava, Zagreb, Croatia

**KLJUČNE RIJEČI:** koronarografija, radijalni pristup, femoralni pristup, komplikacije.

**KEYWORDS:** coronary angiography, femoral access, radial access, complications.

**CITATION:** *Cardiol Croat.* 2016;11(10-11):462. | **DOI:** <http://dx.doi.org/10.15836/ccar2016.462>

**\*ADDRESS FOR CORRESPONDENCE:** Irzal Hadžibegović, Opća bolnica "Dr. Josip Benčević", Andrije Štampara 42, HR-35000 Slavonski Brod, Croatia. / Phone: +385-91-533-3091 / E-mail: [irzalh@gmail.com](mailto:irzalh@gmail.com)

**ORCID:** Irzal Hadžibegović, <http://orcid.org/0000-0002-3768-9134> • Đeiti Prvulović, <http://orcid.org/0000-0002-8041-1197> • Krešimir Gabaldo, <http://orcid.org/0000-0002-0116-5929> • Ognjen Čančarević, <http://orcid.org/0000-0002-1285-8042> • Martina Menegoni, <http://orcid.org/0000-0002-4295-9039> • Domagoj Mišković, <http://orcid.org/0000-0003-4600-0498> • Božo Vujeva, <http://orcid.org/0000-0003-0490-3832>

**Uvod:** Lokalne vaskularne komplikacije, hematomi i krvarenja najčešće su komplikacije invazivnih koronarnih zahvata i značajno su rjeđe u slučaju radijalnog pristupa u odnosu na femoralni. Neurološke komplikacije invazivnih koronarnih zahvata vrlo su rijetke te za sada nema dokaza o njihovoj povećanoj učestalosti nakon radijalnog pristupa.<sup>1</sup>

**Pacijenti i metode:** Analizirane su razlike u vaskularnim i neurološkim komplikacijama nastalim unutar 24 sata od koronarnih intervencija između dva 9-mjesečna razdoblja u kateterizacijskom laboratoriju u Slavonskom Brodu: od siječnja do rujna 2015. godine kada je 82% procedura bilo učinjeno transfemoralno i od siječnja do rujna 2016. godine kada je 87% procedura bilo učinjeno transradijalno. Razdoblje tranzicije s rutinskog femoralnog u predominantno desni radijalni pristup između rujna 2015. i siječnja 2016. nije uključen u analizu.

**Rezultati:** U navedenom razdoblju 2015. bilo je ukupno 584 procedura, od čega 18% transradijalno i to uglavnom zbog očekivanog neuspješnog femoralnog pristupa. Zabilježeno je 11 (1,88%) lokalnih vaskularnih komplikacija ili krvarenja te 1 slučaj (0,17%) prolazne cerebralne ishemične atake (TIA), i to sve nakon femoralnog pristupa. Tijekom istog perioda 2016. bilo je ukupno 913 koronarnih procedura, od čega 87% transradijalno. Udio neuspješnih radijalnih procedura s konverzijom u femoralni pristup bio je 6%. Zabilježene su 4 (0,44%) lokalne vaskularne komplikacije ili krvarenja, i to sve nakon femoralnog pristupa. Zabilježena su ukupno 4 (0,44%) cerebrovaskularna incidenta, i to 2 TIA i 2 ishemijska inzulta od čega jedan sa zaostalim deficitom i jedan sa smrtnim ishodom. Zajedničke značajke bolesnika s neurološkim komplikacijama bile su: ženski spol, dob veća od 80 godina, šećerna bolest, poznata vaskularna bolest, prethodni cerebrovaskularni incident, akutni koronarni sindrom i desni radijalni pristup.

**Zaključak:** Radijalni pristup pokazao se sigurnim i učinkovitim, uz značajno smanjenje broja vaskularnih komplikacija i beznačajno povećanje broja neuroloških komplikacija, čija je učestalost ostala ispod 0,5%. U slučaju bolesnika s pridružene više od dvije navedene "neurorizične" kliničke značajke izbor bi trebao biti lijevi radijalni pristup ili alternativno femoralni pristup.

**Introduction:** Local vascular complications, hematomas or bleeding are the most common complications of invasive coronary interventions and are significantly lower if performed transradial than transfemoral. Neurological complications of invasive coronary procedures are very rare, and for now there is no evidence of their increased rate after radial access.<sup>1</sup>

**Patients and Methods:** We analyzed the differences in complications of coronary interventions between two 9-month periods in the catheterization laboratory in Slavonski Brod: January to September 2015, when 82% of the procedures were done transfemoral and from January to September 2016, when 87% of procedures were done transradial. The transition period between September 2015 and January 2016 was not included in the analysis.

**Results:** In specified period in 2015 there were 584 procedures, of which 18% transradial. There were 11 (1.88%) local vascular complications or bleeding, and 1 case (0.17%) of transient cerebral ischemic attack (TIA) after femoral approach. During the same period in 2016, there were 913 coronary procedures, of which 87% transradial. There were 4 (0.44%) local vascular complications or bleeding, all of which after femoral approach. There were 4 (0.44%), cerebrovascular incidents: two TIA and two ischemic strokes of which one with remaining deficit, and one with a fatal outcome. Common clinical features of patients with neurological complications were: female gender, age greater than 80 years, diabetes, known vascular disease, previous cerebrovascular incident, acute coronary syndrome, and right radial access.

**Conclusion:** Radial approach was proven to be safe and effective, with a significant reduction in the number of vascular complications and insignificant increase in the number of neurological complications, whose incidence remained below 0.5%. In the case of patients with associated three or more risk factors mentioned above, access site of choice should be left radial or alternatively femoral.

#### LITERATURE

1. Raposo L, Madeira S, Teles RC, Santos M, Gabriel HM, Gonçalves P, et al. Neurologic complications after transradial or transfemoral approach for diagnostic and interventional cardiac catheterization: A propensity score analysis of 16,710 cases from a single centre prospective registry. *Catheter Cardiovasc Interv.* 2015;86(1):61-70. **DOI:** <http://dx.doi.org/10.1002/ccd.25884>

RECEIVED:  
September 25, 2016

ACCEPTED:  
October 10, 2016

