Prošireni sažetak / Extended abstract

Intervencijska kardiologija - dosezi

Interventional cardiology - State of the art

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Od doba Andreasa Gruentziga i prve perkutane koronarne intervencije (PTCA, PCI) 1977. god. uz uspjehe prisutne su i komplikacije (akutna, subakutna, kasna i vrlo kasna tromboza/okluzija stenta). Postavljanjem metalnih stentova (BMS), kasnije stentova obloženih lijekom (DES), uvođenjem dvojne antitrombotske terapije (DAPT) komplikacije su sve rjeđe, no i dalje prisutne, ali su se pojavili novi problemi (krvarenje, trajanje DAPT, rezistencija). Pojavila se nova generacija stentova sa ili bez biodegradibilnih polimera, obloženih novim lijekovima ili potpuno biodegradibilnih stentova koji se ispituju u kliničkim studijama. Sve je to dovelo do sve šire primjene PCI i kod rizičnijih skupina bolesnika te sve boljih rezultata kod stenoza glavnog stabla, bifurkacijskih stenoza, kroničnih totalnih okluzija (CTO), višežilne koronarne bolesti srca (KBS) i stenoza premosnica[1]. Postavljanje BMS nije stvar prošlosti. Kod bifurkacijskih stenoza BMS se preporučuju kod postavljanja jednog stenta, a DES kod postavljanja dva, no tada je veći rizik periproceduralnog infarkta. DES je kvalitetnije rješenje za CTO. Pojavnost kasnih i vrlo kasnih tromboza stenta češća je kod kroničnih bubrežnih bolesnika, CTO, starijih od 65 godina i ponovljene PCI. Druga generacija stentova nije se pokazala boljom od SES, mada su izvrsni rezultati Serruysa i sur s drugom generacijom bioresorbilnih EES[2]. Najuža indikacija za DES su inzulin ovisni dijabetičari, manje koronarne arterije ≤3 mm i duže stenoze ≥30 mm uz dobro postavljanje stenta.

Stent ili premosnica? SYNTAX studija daje prednost ugradnji premosnice (CABG) spram PCI sa DES kod većeg rezultata na Syntax ljestvici[3]. Elektivna PCI neprotektiranog glavnog stabla lijeve koronarne arterije je prema istoj studiji uspješna, ali je povezana s češćom revaskularizacijom nakon postavljanja DES, a nakon CABG je češći moždani udar. Kod bolesnika s višežilnom KBS ista studija daje prednost CABG naspram PCI, no ostala su otvorena pitanja (Taxus stent, trajanje dvojnog antitrombocitnog liječenja)[4]. CARDIO i ARTS II studije su dale podjednake rezultate PCI:CABG uz primjenu SES.

Rezultati FAME studije su pokazali da se nakon primjene fractional flow reserve smanjuje broj postavljenih stentova i komplikacija[5]. Colombova studija o uporabi IVUS prije postavljanja stenta nije pokazala manju učestalost komplikacija.

Rutinsko postavljanje intraaortalne pumpe (IABP) kod visoko rizičnih bolesnika nije preporučljivo prema BCIS studiji[6], iako još nema preciznije definicije optimalnog vremena postavljanja IABP u kardiogenom šoku, a bolji su rezultati kod postavljanja IABP prije intervencije.

From the time of Andreas Gruentzig and the first percutaneous coronary intervention (PTCA, PCI) in 1977 there were successes but also complications (acute, subacute, late and very late thrombosis/occlusion of the stent). By placing bare metal stents (BMS), drug-eluting stents (DES) later, the introduction of dual antiplatelet therapy (DAPT) complications are less frequent but still present, but there appeared new problems (bleeding, duration of DAPT, resistance on DAPT). A new generation of stents with or without biodegradibil polymer-coated, new eluting-drugs or completely bioresorbable stents that are being tested in clinical studies. All this led to the widespread application of PCI on the high-risk group of patients, and better results for left main stenosis, bifurcation stenosis, chronic total occlusion (CTO), multi-vessel coronary artery disease (CAD) and coronary artery bypass graft (CABG) stenosis[1]. BMS is not the past. At bifurcation stenosis BMS are recommended when one stent is going to be placed, DES for setting up two stents, but then there is a higher risk of periprocedural myocardial infarction. DES is a better solution for CTO. Prevalence of late and very late stent thrombosis is more common in chronic renal patients, CTO, aged 65 years or more and repeated PCI. The second-generation stents did not proved to be better than SES, although there are excellent results from Serruys et al with the second generation bioresorbable EES[2]. The narrowest indications for DES were insulin dependent diabetics, smaller coronary arteries ≤3 mm, and stenosis ≥30 mm long with a well-stenting.

Stent or bypass? SYNTAX study preferred CABG vs. PCI with DES when SYNTAX score[3] is high. Unprotected elective PCI of a left main coronary artery stenosis in the SYNTAX study is successful, but is associated with more frequent revascularization after placing DES, and stroke was more common after CABG. In patients with CAD the same study in patients with multivessel disease studies favors CABG toward PCI, but there remained an some questions (Taxus stent, the duration of DAPT)[4]. CARDIO and ARTS II studies have yielded similar results PCI:CABG with the use of SES.

FAME study results showed that fractional flow reserve reduces the number of stents and complications[5]. Colombo`s study with the use of IVUS and before placing stent did not show a lower incidence of complications.

Routine setting intra-aortic ballon pump (IABP) in high-risk patients is not recommended by BCIS Study[6], whereas there is no precise definition of the optimal time for placing IABP in cardiogenic shock, and better results are when IABP is placed before the intervention.

Najučinkovitija prevencija kontrastne nefropatije je infuzija fiziološke otopine prije intervencije, a najugroženiji su bolesnici s niskom sistoličkom funkcijom lijeve klijetke i uporabom veće količine kontrasta[7].

U akutnom infarktu miokarda izuzetno je važno što kraće vrijeme do intervencije, a manje od 90min od prvog pregleda i postavljanja dijagnoze do intervencije (door-to-ballon). Dodatno prekondicioniranje miokarda smanjuje infarcirano područje[8].

Postavljanje stenta, naročito DES, optimalnije je rješenje od PTCA kod bolesnika s perifernom vaskularnom bolesti, naročito kod distalnijih stenoza. Endarterektomija ili stent u revaskularizaciji karotidnih arterija ostaje dilema, kao i kod aneurizme abdominalne aorte. Kateterska renalna simpatička denervacija je dala dobre rezultate u liječenju rezistentne arterijske hipertenzije, čime se postiglo smanjenje sistoličkog tlaka za više od 10 mmHg u 84% bolesnika bez komplikacija. Buduće studije bi trebale pokazati učinkovitost metode kod bolesnika s umjerenim stupnjem arterijske hipertenzije[9].

Transkatetersko postavljanje aortalnog zaliska je uspješno, a dovodi i do poboljšanja sistoličke funkcije srca kod inoperabilnih, ali i visokorizičnih bolesnika[10]. Postavljanje MitraClip kod značajne mitralne regurgitacije u inoperabilnih bolesnika je dugoročno podjednako s operativnom korekcijom, ali su kratkoročni rezultati bolji[11].

Nakon transradijalnog pristupa tijekom PCI manje je vaskularnih komplikacija te se sve češće primjenjuje i u akutnom infarktu miokarda.

Ključne riječi: perkutana koronarna intervencija, aortokoronarno premoštenje, stentovi obloženi lijekovima.

The most effective prevention of contrast nephropathy is the infusion of saline before the intervention, and the most vulnerable patients are with low left ventricular systolic function and use of larger amounts of contrast[7].

In acute myocardial infarction is extremely important a shorter time until intervention and less than 90 minutes from the initial examination and diagnosis to intervention (door-to-balloon). In addition, preconditioning decreases myocardial infarction size[8].

Stenting in particular DES is optimal solution for PCI in patients with peripheral vascular disease especially in the distal artery stenosis. Endarterectomy or stent in the carotid artery revascularization remains a dilemma as with abdominal aortic aneurysms.

Catheter renal sympathetic denervation has good results in treating resistant hypertension, which can achieve reduction in systolic blood pressure more than 10 mmHg in 84% of patients without complications. Future studies should demonstrate the effectiveness of the method in patients with moderate hypertension[9].

Transcatheter aortic valve setting is successful and leads to an improvement in systolic function in inoperable, as well as high-risk patients[10]. Placing MitraClip in a significant mitral regurgitation in inoperable patients has same long-term results as surgery, but the short-term results are better[11].

After PCI with transradial access there are less vascular complications and therefore is increasingly used even in acute myocardial infarction.

Keywords: percutaneous coronary intervention, CABG, drug-eluting stent.

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