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Therapeutic impact of the stent visualization enhancement technique (StentBoost®) in percutaneous coronary intervention

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Background: Underdeployment and malapposition of stents during percutaneous coronary interventions (PCI) may lead to in-stent thrombosis and restenosis. Coronary angiography is limited for the analysis of the stent geometry and structure after deployment. Intravascular ultrasound remains the gold standard but its routine use is costly and time-consuming. StentBoost® (SB) is a new software developed by Philips Medical System®. which enhances stent visualization from a short digital cine run (30 frames/sec) acquired with a deflated balloon in place. SB allows a simple, real-time assessment of stent deployment.

Aims: To analyze the results of SB in a large series of unselected routine PCI, to compare them to results of PCI by conventional angiography, and to evaluate the additional value of SB for the assessment of stent deployment and procedure optimization.

Methods: We retrospectively analyzed 260 coronary lesions treated by stent implantation, during 166 consecutive PCI procedures performed between November 2010 and March 2011.

Results: A total of 275 stents were implanted, 45% of them were drug eluting stents (DES). Direct stenting was performed in 78%. Results of SB and angiography were concordant for 209 lesions: 195 stents correctly deployed (75%) and 14 underdeployed (5%), detected by both techniques. In 47 patients (18%), SB detected an underdeployment of the stent whereas angiographic result was good. A post-dilatation was performed, on the basis of SB only, in 89% of these cases (vs 6% and 79% in the other groups, respectively). The additional contribution of SB was higher for left main lesions and for DES, with an underdeployment rate of 72% (vs 2% and 27% in the other groups, respectively). The additional contribution of SB was higher for left main lesions and for DES, and was not affected by coronary calcifications.

Conclusions: This study confirmed the usefulness in current PCI practice of the stent visualization enhancement technique StentBoost®. SB revealed about 20% underdeployed stents not detected by conventional angiography, and allowed to optimize the procedure by ad hoc effective postdilatation.

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Five-year clinical outcome in patients with small vessel disease treated with drug-eluting versus bare-metal stenting

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Objective: To assess the clinical impact of drug-eluting stents (DES) vs. bare-metal stents (BMS) in the treatment of small vessel coronary lesions.

Background: Stenting is known to be more effective than balloon angioplasty in patients with small vessel coronary disease. However it is remains unclear if DES are more efficacious than BMS in this setting.

Methods: From January 2004 to December 2008, all patients were treated with percutaneous coronary intervention and stenting in native small coronary vessels (defined as a reference vessel diameter <3 mm) were enrolled irrespective of indication. Patients were divided into two groups according to type of stent used: BMS group and DES group. Procedural and long-term clinical outcomes were compared between the both groups.

Results: A total of 645 patients were enrolled (368 treated with BMS, 277 with DES). Clinical follow up was obtained in 99.3% (median follow-up: 3.3±1.2 years; range to 12-60 months). At five years, patients treated with DES showed significantly higher five-year major adverse cardiac events (MACE) – free survival (HR 0.51, 95% CI 0.33-0.78, log-rank P=0.002) and target vessel revascularization (TVR) – free survival (HR 0.44, 95% CI 0.25-0.78, log-rank P=0.005). There were no significant differences between the two groups regarding death, acute myocardial infarction and peri-procedure-myocardial infarction. The incidence of stent thrombosis was also similar in both groups.

Conclusions: DES is more effective than BMS in reducing MACE and TVR in small vessel disease. However, the use of BMS does not increase mortality or re infarction and so is reasonable to consider in selected cases.

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Stent thrombosis: a monocentric study in 800 patients

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Introduction: Stent thrombosis remains a major complication following stent implantation in contemporary percutaneous coronary intervention leading to high rates of death and non fatal myocardial infarction.

Objective: To evaluate the incidence, predictive factors, and prognosis of stent thrombosis in routine clinical practice.

Methods and results: The study consisted in a retrospective cohort study involving 800 consecutive patients (mean age: 59.8±11.1 years, 76 % males) who had a stent placement between 2007 and 2009. Mean follow-up was of 14±8 months.

Using the definition of Academic Research Consortium (ARC), the incidence of stent thrombosis was 4.12% (33 cases), divided in 23 cases (2.7 %) of definite ST, 6 cases (0.75 %) of probable ST and 4 cases (0.37 %) of possible ST.

- Independent predictive factors of stent thrombosis were: premature Clopidogrel discontinuation (hazard ratio (HR):2.1; 95% CI [0.9-4.8], p=0.008), Aspirin discontinuation (HR:4.3; 95% CI [1.8-15.6], p=0.03), pre intervention TIMI 0-1 flow (HR:7.6; 95% CI [2.3-25.1], p=0.001), thrombus (HR:4.32; 95% CI [1.1-12.5], p=0.04), stent diameter <2.8 mm (HR:3.9; 95% CI [1.5-9.7], p=0.004), Primary Angioplasty (HR:3.5; 95% CI [1.4-8.7], p= 0.08), rescue Angioplasty (HR:3.9; 95% CI [1.5-9.7], p=0.04) and CRP level >20 mg/l (HR:3.5; 95% CI [1.5-8.4], p=0.04).

Stent thrombosis was a strong independent predictive factor of later mortality (HR:72.3; 95% CI [25.4-206.1], p<0.0001).

Conclusion: The incidence of stent thrombosis in our routine practice was substantially higher than the rates reported in clinical trials. ST was a serious complication affecting immediate and long term prognosis. Premature antiplatelet therapy discontinuation was incrimented in a great number of our patients due to the cost of this treatment.

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High-on thienopyridine platelet reactivity in elderly coronary patients

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Objectives: The aim of this study was to compare on-treatment platelet reactivity of elderly patients (>75 yrs) treated by thienopyridines in comparison with younger patients (< 75 yrs).

Background: Elderly patients represent a growing and challenging population for whom the effect of dual antiplatelet therapy on platelet inhibition has not been specifically addressed.

Methods: The Senior Platelet study included 1271 coronary patients chronically (>14 days) treated by low dose aspirin and a thienopyridine (clopidogrel 75mg n= 1027, clopidogrel 150mg n=139 or prasugrel 10mg n=105).
Platelet response to clopidogrel and prasugrel was assessed by the VerifyNow assay and light transmission aggregometry. Response to treatment and rate of high platelet reactivity (HPR) and inhibition (HPI) were compared between the two age categories.

**Results:** On-treatment platelet reactivity with clopidogrel 75mg, 150mg or prasugrel 10mg was always higher in elderly patients (p=0.017) than in younger patients (p=0.0001) whatever the test used. The difference in PRU in response to ADP-PGE1 agonist between the two populations was +45; p<0.0001 in patients treated with clopidogrel 75mg, +30; p=0.17 in patients treated with clopidogrel 150mg and +20; p=0.08 with prasugrel 10mg. Elderly patients displayed a higher rate of HPR on clopidogrel 75mg than younger patients (38.2% vs. 18.2%; p=0.0001) (figure) and a lower rate of HPI (2.3% vs. 8.7%; p=0.01). Of note, diabetes and the distribution of the genotype for the loss of function allele 2C19*2 were similar in both population and could not explain the higher rate of HPR of the elderly.

**Conclusions:** Elderly patients present an impaired response to clopidogrel with a high rate of HPR. Clopidogrel 150mg and prasugrel 10mg blunt, but do not eliminate the difference in response observed between old and young patients.

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**017**

One year outcome in HIV-infected patients with myocardial infarction. Analysis from a French nationwide hospital medical information database

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**Background:** Risk of myocardial infarction (MI) in HIV infected patients is increased and short term prognosis is good. One year outcome remain to be determined in large scale study.

**Methods:** From the French nationwide hospital medical information database, all the consecutive patients hospitalized in the 1546 French hospital/cardiac care units for myocardial infarction from 1st January 2005 to 31st December 2009 were included. We compared one year outcome between patients infected or not by HIV.

**Results:** Among the 628454 patients included, 1286 (0.2%) was infected by HIV. At one year of follow-up, we observed an increased rate of recurrent MI in HIV-infected patients than non-infected patients (14.9% vs 12.9%; p=0.02) and respectively 14.9% vs 11.3% (p=0.01) in a sub-group of patients matched for age, sex and type of MI (ratio 1:2).

**Conclusion:** From our large scale nationwide study, HIV patients have an increased risk of recurrent MI during follow-up, thus emphasizing the benefit of secondary prevention in such patients.