0041

Contrast-induced microvascular dilatation: implications for fractional flow reserve measurements

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Background The use of adenosine is sometimes considered as a limiting factor for of fractional flow reserve (FFR) measurements. The present study sought to quantify the potential of contrast medium (CM) to induce microvascular dilatation as assessed by changes in Doppler flow velocity measurements.

Methods In 30 patients, Doppler-derived flow velocity measurements were obtained in 10 right coronary arteries (RCA) and 20 left coronary arteries (LCA) free of significant stenosis. Flow velocity was measured at baseline and after 8 ml intracoronary (IC) bolus administrations of arterial blood at body temperature, saline and CM compared to intracoronary boluses of adenosine at room temperature. The hyperemic value was expressed in percent of the maximum flow velocity reached in a given artery (Qmax, %). To translate the IC adenosine dose into its effect on FFR, a model based on standard coronary physiology linked the degree of hyperemia to the relative distal coronary pressure (F/P).

Results Doppler flow velocity varied among 8 ml IC boluses of arterial blood, saline and contrast (p<0.001), and all pairwise comparisons were significant (p<0.001 for blood and contrast; p=0.041 for saline and blood; and p=0.013 for saline and contrast). Hyperemic response after injection of 8ml of CM reached 59±17% of that achieved maximum hyperemia. While Baseline, arterial blood and saline achieved respectively 38±12%, 45±14% and 51±14% of Qmax. The incidence of transient atrio ventricular blocks was 38% after injection of 200 μg, while it was not observed with CM. According to our theoretical model, when CM reached 59±17% of that achieved maximum hyperemia after adenosine in Doppler flow velocity it correspond to a Pd/Pa ratio of 0.85, where FFR is 0.79 and the resting Pd/Pa is 0.90.

Conclusion CM reaches approximately 60% of the maximal flow velocity as compared to Adenosine IC. This corresponds to a difference of only 6% when “translated” in terms of FFR.

The author hereby declares no conflict of interest

0090

Comparison between non-invasive coronary flow reserve, instantaneous wave-free ratio, and fractional flow reserve, to assess the functional significance of LAD stenosis of intermediate severity

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Introduction Assessment of the functional significance of left anterior descending coronary artery (LAD) stenosis of intermediate severity (IS) is challenging. A direct comparison of fractional flow reserve (FFR), instantaneous wave-free ratio (iFR), and non-invasive coronary flow reserve (CFR) has never been performed. Our objective was to test the usefulness of non-invasive CFR by comparison to invasive FFR and iFR in patients with LAD stenosis of angiographic IS and stable coronary artery disease.

Methods 58 stable consecutive patients (mean age, 68±10 years; with angiographic proximal or mid LAD stenosis of IS (40-70% diameter stenosis on quantitative coronary angiography), no previous anterior myocardial infarction, were prospectively studied. They underwent iFR which was calculated as a trans-lesion pressure ratio during a specific period of baseline diastole, FFR with intracoronary bolus adenosine (150μg), and CFR using intravenous adenosine (140μg/kg/min over 2min) in the distal part of the LAD, the same day. CFR was defined as hyperemic peak diastolic LAD flow velocity divided by baseline flow velocity, and FFR was defined as distal pressure divided by mean aortic pressure during maximal hyperemia.

Results The mean values of iFR, FFR, and CFR were 0.88±0.07, 0.81±0.08, and 2.4±0.6 respectively. A significant correlation was found between CFR and FFR (r=0.72, curvilinear relationship), FFR and iFR (r=0.63, linear relationship), and between CFR and iFR (r=0.44) (all, p<0.01). Using a ROC curve analysis, the best cut-off to detect a significant lesion based on FFR assessment (FFR <0.8, n=16) was iFR 50.86 with a sensitivity (Se) of 75%, specificity (Sp) of 81%, AUC 0.8±0.05; and CFR ≤2 with a Se of 82%, Sp of 85%, AUC 0.9±0.03, (all, p<0.001). Based on these cut-offs, discordant results between CFR and FFR were observed in 9 cases (accuracy 84%), between CFR and iFR in 14 cases (accuracy 76%), and between iFR and FFR in 11 cases (accuracy 81%)

Conclusion In stable patients with LAD stenosis of IS, non-invasive CFR is a useful tool to detect a significant lesion based on FFR. Furthermore, CFR is better correlated to FFR than to iFR, and its accuracy seems as good as iFR in this setting.

The author hereby declares no conflict of interest

0050

Bioresorbable vascular scaffold: preliminary experience of 200 patients and follow up at 18 months of the first 100

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Background Between February 2013 and May 2015, of 2,700 coronary angioplasty procedures realized in our institution, 200 patients aged 65.6 (23-94) underwent coronary stenting with Absorb Bioabsorbable Scaffold.

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Clinical data exercise angina in 30% of the patients, acute coronary syndromes in 61%, silent ischaemia in 7% and heart failure in 2%.

Procedural data all stents have been implanted under angiographic control, only 2 being imaged by IVUS, in de novo lesions, through a radial approach with 6 French guiding catheters, following mandatory predilatation. 67% of patients had single vessel disease, 33% multivessel disease. Left anterior descending artery was the target vessel in 64%, the left circumflex in 19% and the right coronary artery in 26%. 212 stents have been delivered with only one failure. 25 patients underwent metallic stenting of other arteries. Side branch angioplasty had to be performed in 4 cases.

In hospital follow up No death. One complication with no Q wave myocardial infarction secondary to side branch occlusion (diagonal branch). One transient ischaemic attack.

Out hospital follow up at 22 months (12-27) no stent thrombosis occurred. One patient died of cranial traumatism; two patients (1%) had restenosis at the margin of the BVS requiring repeated angioplasty.

Conclusion at nearly two years follow up, our data confirm the safety of the device and the low rate of reintervention.

The author hereby declares no conflict of interest

0234
Drug-eluting stents versus bare-metal stent in large coronary arteries

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Background Although drug-eluting stents (DES) have been shown to dramatically reduce restenosis and improve the rate of event-free survival, the benefit of DES appears to be limited to restenosis. In this retrospective, single-center study we aimed to compare the long-term outcomes of DES versus bare-metal stent (BMS) in large coronary arteries (diameter ≥ 3.5mm).

Methods A total of 164 consecutive patients (mean age 60 years) required percutaneous coronary intervention with stents ≥3.5mm in diameter, 84 were BMS and 80 DES. The primary endpoint was major adverse cardiac events (MACE) defined as angiographically defined in-stent restenosis (ISR), stent thrombosis and death from any cause.

Results A mean clinical follow up of 28 months was obtained. The DES group had higher rates of diabetes (65% vs 37%, p=0.001), previous CAD (74% vs 25%, p=0.001) and previous PCI (69% vs 31%, p=0.004). There was no significant difference between the two groups regarding the rate of hypertension, dyslipidemia, smokers and the mean left ventricular ejection fraction. There was a higher average stent length in the DES group (18.7 vs 16.3, p=0.011) as well as a lower average stent diameter (3.54 vs 3.63, p=0.003). There was a significant difference in MACE between the two groups in favour of DES (11.3% vs 23.8% BMS group, p=0.04) at 28 months. The rate of in-stent restenosis (ISR) was significantly reduced among patients receiving DES with ISR rates of 15.8% among patients receiving DES compared to 41.7% among those receiving BMS (p=0.025). There were no significant differences in the rate of death or stent thrombosis.

Conclusion In patients requiring stenting of large coronary arteries, there was reduced MACE in patients treated with DES. This benefit was primarily driven by decreased in-stent restenosis rate.

The author hereby declares no conflict of interest

0531
Retrospective monocentric study of coronary bifurcation lesions treated with a dedicated stent Nile Pax

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Aims To demonstrate the acute and early outcomes of the Nile PAX dedicated polymer-free paclitaxel-coated stents in the treatment of the coronary bifurcation lesions.

Methods and results The Nile PAX device incorporates a cobalt-chromium alloy with a side aperture in the mid-stent designed to optimize scaffold at the bifurcation carina and side branch (SB) ostium, while maintaining SB access during procedure. From January 2012 to December 2014, 36 patients were included in a retrospective, monocentric study. Lesion criteria were: vessel size 2.5-3.5mm in the parent vessel (PV) and 2.0-3.0mm in the SB, regardless of the lesion length. Average age was 63.1 years, 22% of patient had diabetes and 51% had acute coronary syndrome, while LAD/Dg was involved in 67% of cases. Percutaneous coronary intervention (PCI) Ad-Hoc was done for 40% of lesions. SB received additional stent in 8% of procedures and final kissing-balloon inflation was performed in 89% of procedures. There was three non-Q myocardial infarctions: one during hospitalization, and two up to 6 months.

In addition to these three Major adverse cardiac events (MACE), two other patients underwent a target lesion revascularization due to stent angina.

Conclusions Preliminary results of this retro-prospective monocentric study demonstrated encouraging results with the Nile PAX bifurcation DES in the treatment of coronary bifurcation lesions, including high device and procedural success.

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0468
Monocentric experience of drug eluting balloon in coronary angioplasty

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Introduction Instant restentosis (ISR) remains the weak point of coronary angioplasty despite the advent of drug-eluting stents. The drug eluting balloon (DEB), which in contact of the artery wall releases an antiproliferative agent, could be an option to treat ISR or some de novo lesions.

Methods Between October 2013 and December 2014 in our center, all patients treated with DEB for ISR or de novo lesions were identified. ISR was defined as a stenosis of more than 50% or a measuring FFR>0,8 to a site previously treated by stent. The lesion was first treated by compliant balloon then DEB (SeQuent Please®, laboratory Braun® B) was inflated for 30 seconds and then removed. Angiographic control was achieved and, in case of incomplete result or complication, a stent could be implanted.

Results Among the 48 patients treated with DEB, 23 were for ISR and 25 for de novo lesions. The average age of patients was 75.7 years. 31% of patients were part of a long-term antiaggregation for atrial fibrillation. The clinical presentation was mostly a stable angina (62%). In 26% of ISR, there was in DES restenosis, the average time of ISR was 2 years±5.9. The average diameter of the DEB used was 2.4mm±0.4 for an average length of 17mm±4.7mm. For five patients (10%) has a complement of stent implantation (DES in 60% of cases). The dominant antiaggregation were continued during 3.8 months. In-hospital, one death appeared. In the mean follow up of 6.5 months (maximum one year) no deaths were reported. After revascularization 8% of patients had a clinical relapse. 12.5% had a positive ischemic test. In 10.4% of cases, a significant restenosis in angioplasty site DEB (TLR) has been highlighted, and requiring a new revascularization. The average period for TLR was 7.6 months±4.2.

Conclusion The DEB is a safe option mainly for ISR and for small caliber arteries, or bifurcation lesions or in the elderly or in long-term antiaggregation. The clinical course is often satisfactory.

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0255
Reversed Single String technique for coronary bifurcation stenting—first report in vitro case demonstrations

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Objectives This work reports the concept and the practical feasibility of Reversed Single String bifurcation stenting technique by demonstrating three in vitro cases.

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