P4004 | BEDSIDE
One-year outcome of patients with intermediate coronary lesions assessed by fractional flow reserve in addition to diagnostic coronary angiogram

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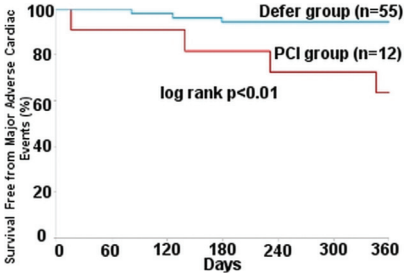
Background: Routine measurement of Fractional Flow Reserve (FFR) reduces adverse events in patients with Coronary Artery Disease (CAD) undergoing Percutaneous Coronary Intervention (PCI).
Objectives: The aim of the study was to investigate the clinical outcomes between deferral versus performance of PCI based on FFR measurements of intermediate coronary stenosis after a diagnostic Coronary Angiogram (CAG).
Methods: The FFR was measured with a coronary pressure guidewire through 4 or 5 Fr diagnostic catheters approached by radial (92.4%) or brachial (7.6%) artery in addition to CAG. Maximal hyperemia was obtained after administration of intravenous adenosine (150 – 180 μg/kg/min). In 70 patients including 98 intermediate coronary lesions, measurements of FFR was successful in 67 patients (95.7%) and 93 lesions (94.9%). Patients were divided into defer group (n=55) and PCI group (n=12) on the basis of FFR <0.75. Clinical event was defined as a composite of death, myocardial infarction, or any repeat revascularization.
Results: The FFR measurements could be safely performed with no complications related to diagnostic catheters, except one mild coronary spasm due to guidewire. Complete 1-year follow-up was obtained in 97.0% of patients (2 were lost to follow-up in the defer group). There was significantly better 1-year outcome in defer group (p<0.01). The rate of revascularization of deferred lesion was 2.5% (2 lesions).



Kaplan-Meier Survival Curves

Conclusions: The outcome of CAD patients with functionally nonsignificant lesions on the basis of FFR was excellent. Measurement of FFR at CAG could evaluate simultaneously anatomic and functional information and make an efficient decision of revascularization.

P4005 | BENCH
European Calcific Coronary Artery Disease (Euro-CCAD) study: the relationship between coronary calcification and flow limiting lesion in symptomatic patients

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Background and aim: This study is a part of the Euro-CCAD (Calcific Coronary Artery Disease) project, investigating the geographic prevalence of a low coronary artery calcification (CAC) score of <100 in patients who show clear evidence for flow-limiting lesions (FLL) on coronary angiography (CA). CAC is generally recognized as subclinical form of atherosclerosis. Recent findings suggest a relationship between the CAC score and severity of coronary plaque burden in the form of luminal narrowing.
Methods: Data from consecutive symptomatic intermediate risk patients (as defined by guidelines), who had both CA and calcium scoring, were compared between the USA and Europe (comprising Denmark, Germany, France and Spain). No patient had acute coronary syndrome, coronary intervention, valve disease or kidney failure.
Results: The inclusion criteria were fulfilled in 4,444 patients (60% males), mean age 59.3 years (SD 11.3 years). The prevalence of FLLs was higher in the USA at 53% than in Europe as a whole at 34% (p<0.001). There was a significant correlation between FLL and CAC prevalence (OR=3.0) and the prevalence of FLL in the continents (OR=2.0) (p<0.001). FLLs were found in 78% of those with CAC score >400, in 56% with CAC score 100-400, in 31% with CAC score 1-100 and in 10% of those with a zero CAC score. 68% of patients with CAC score >100 have coronary FLL, while 32% remain with no FLLs. In addition, 21% of patients considered to have insignificant disease based on a CAC score <100 have significant FLLs.
Conclusion: These findings support an association between FLL prevalence and severity of the CAC score. Nevertheless, one in five with CAC <100 have severe FLLs while one third with CAC >100 have no FLLs, indicating that the two are not synonymous. It also demonstrates that results from patients on one continent should not necessarily be extrapolated to another.

P4006 | BEDSIDE
Suspected angina pectoris increases the risks of disability pension and premature exit from the workforce irrespective of the presence of coronary artery disease

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Aims: To evaluate risk of disability pension (DP) and premature exit from the workforce (PEW) in suspected stable angina patients with no obstructive coronary artery disease (CAD) compared to obstructive CAD and asymptomatic reference individuals.
Methods and results: We followed 4,415 patients with no prior cardiovascular disease having a first time coronary angiography (CAG) in 1998-2009 due to suspected stable angina and 2,914 reference individuals from the Copenhagen City Heart Study, all aged<65years, through registry linkage until 2009 for DP and PEW. Five-year DP-free survival probabilities age-adjusted to 55 years for the reference individuals, patients with normal coronary arteries, diffuse non-obstructive CAD, 1 stenotic coronary vessel (1VD), 2VD and 3VD, respectively, were in women 0.96/0.88/0.84/0.82/0.85 and 0.78 and in men 0.98/0.90/0.89/0.89/0.88 and 0.87. Significant predictors of DP were age, stable angina symptoms, BMI, diabetes, smoking, vocational status, civil status in men, income, educational level, and comorbidity. Compared to the reference population, risks of DP and PEW were significantly increased in all patients with no gender difference (P>0.2 for interaction). Thus, in pooled multivariable-adjusted analysis, patients referred to CAG for angina had a threefold higher risk of DP and about 50% higher risk of PEW, with little difference between patients with normal coronary arteries/diffuse non-obstructive CAD/1VD/2VD/3VD, the hazard ratios for DP being 2.7/3.0/3.3/3.1 and 3.2 (all P<0.001) and for PEW being 1.3/1.4/1.5/1.6 and 1.6 (all P<0.05).
Conclusions: Patients with suspected stable angina and normal coronary arteries, diffuse non-obstructive CAD and obstructive CAD have a threefold increased risk of DP regardless of angiographic findings.

P4007 | BEDSIDE
Echo-guided extracorporeal shock wave therapy for refractory angina improves regional myocardial blood flow as assessed by PET imaging

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Purpose: Low-intensity extracorporeal shock wave (SW) therapy (SWT) has been shown to improve symptoms and exercise tolerance in patients (pts.) with coronary artery disease (CAD) not suitable for conventional revascularization strategies. Induction of neovascularization and improvement of myocardial perfusion are mechanisms hypothetized to be involved.
Methods: 43 pts. with advanced CAD (mean age 67±10 years) not suitable for catheter-based or surgical revascularization were suffering from severe stable angina pectoris (CCS class III or IV) refractory to individually optimized medical treatment underwent a series of 9 echocardiography-targeted SW applications (3 SW applications/week during weeks 1, 5, and 9). The antero-septal wall (LAD territory) was targeted in 19, the lateral wall (RCX territory) in 18, and the inferior wall (RCA territory) in 6 pts. A series of 300-500 shock waves was applied per session. Anti-anginal medication (combination of 2 or 3 drugs) was kept unchanged. Regional myocardial blood flow (MBF) was measured quantitatively by NH3-PET at baseline and 4-6 weeks after completion of SWT.
Results: Complications of SWT did not occur, markers of myocardial cell damage were all negative during SWT. At follow-up, 30 pts. (64%) reported improvement of angina to a tolerable level. CCS angina class decreased from 3.1±0.6 to 2.5±0.6 (p<0.0001). Maximum ergometric workload increased from 78±53 to 90±46 watts (p=0.04). MBF in the LV region targeted by SWT improved from 119+42 mL/min/100g at baseline to 129±48 mL/min/100g at follow up (p=0.047), while there was no change in the opposite wall (136±52 vs. 137±53 ml/min/100g; p=0.9).
Conclusions: SWT improves symptoms in a sizeable number of pts. with chronic refractory angina. Regional improvement of MBF in the region targeted by SWT was also documented by PET imaging. Additional studies are warranted to clarify the role of SWT in the armamentarium for this challenging patient group.