

Correlative, clinical, and angiographic studies in patients with recurrent angina symptomatology after percutaneous coronary angioplasty

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The use of new generations of coronary stents substantially reduces the need for reintervention for lesions treated with the initial percutaneous coronary angioplasty (PCI). However, the progression of atherosclerosis followed by the appearance of new coronary lesions is a sensitive issue for the patient who cannot be guaranteed a future without other events after successful PCI as well as for the physician who must find solutions for a disease that is most often evolutionary.

Identifying patients at a high risk of recurrence of post-PCI symptoms would be an important step in finding therapeutic strategies that positively influence both the quality of life and the patient's prognosis as well as the costs of a possible readmission.

The purpose of the study is to evaluate the predictive factors of recurrence of post-PCI angina symptoms, predictors of target lesion revascularization (TLR) and non-target lesion revascularization (non-TLR), as well as predictors of the progression of coronary atherosclerosis.

We included the post-PCI patients readmitted in the Adult Cardiology Clinic at the Institute of Cardiovascular Diseases and Transplantation Tg. Mures from January 2012 to December 2015. We evaluated the following parameters:

- socio-demographic: age and sex
- cardiovascular risk factors: hypertension, smoking, diabetes, obesity, hypercholesterolaemia, myocardial infarction, or aortocoronary bypass
- comorbidities: chronic kidney disease and heart failure
- the results of the coronarography performed pre-PCI and at readmission
- details of the initial PCI: type of stent used, location, and implantation in special situations (bifurcation and venous graft)
- time interval between initial PCI and readmission
- readmission type: emergency or chronic
- reason for readmission: stable/unstable angina, NSTEMI, STEMI, or cardiological reassessment
- type of medication used up to the time of readmission: single or dual platelet antiaggregation, beta blocker, statin, and angiotensin-converting enzyme inhibitor (ACEI)
- non-invasive investigative methods used at readmission: exercise ECG test, echocardiography, myocardial scintigraphy, and computed coronary tomography
- type of treatment given at readmission: medical therapy, interventional, and aortocoronary bypass

We excluded the study group of patients who did not have coronary angiography at readmission. For patients with multiple post-PCI readmissions, we only considered the first post-PCI readmission.

The study included 180 patients. Depending on the presence or absence of angina symptoms at readmission, the patients were divided into 2 groups: the study group (symptomatic) and the control group (asymptomatic).

Ten patients in the symptomatic group experienced myocardial infarction at the hospital, of which 3 had ST elevation myocardial infarction (STEMI) and 7 had non ST elevation myocardial infarction (NSTEMI). Also, 36 patients had unstable angina type symptomatology and 101 were stable.

Six patients in the control group were hospitalised for staged PCI, and 2 for pre-surgical valvular investigations. Two patients had ECG exerting outpatient positive traits, and the rest were hospitalised for cardiological reassessment.

Predictors of recurrence post-PCI angina symptoms were advanced age and suboptimal ejection fraction (EF).

Predictors of post-PCI acute coronary syndrome were advanced age, hypertension, low EF, renal dysfunction, BMS in-stent restenosis (ISR), BMS ISR at the left descending artery, and statin non-compliance.

The independent predictor of TLR was impaired EF. BMS ISR was more common than DES ISR, and both were more common in the left anterior descending artery.

Non-TLR predictors were advanced age, multivascular lesions at pre-PCI coronarography, and right coronary artery disease at the index PCI.

Common predictors of TLR and non-TLR were emergency presentation and unstable angina symptoms.

The progression of coronary lesions occurred in two-thirds of the patients. Hypertension has been associated with coronary atherosclerosis progression. The use of DES and a greater number of DES in the left descending arteries is associated with a lack of progression of coronary lesions. The progression of stent distal coronary artery disease was most frequently produced at the left anterior descending arteries. The regression of coronary lesions was not recorded in any patient.

Effective control of risk factors and optimisation of medical therapy are still inappropriate stages in the post-PCI evolution of coronary disease patients.

Management of a patient with a complex clinical history with one or more previous revascularisations may be difficult to decide only in the presence of ECG exercise test results or anatomical information provided by invasive coronarography or computed coronary imaging.

An anatomic-functional approach that identifies and treats myocardial ischaemia rather than coronary artery stenosis can change both the prognosis and quality of life of a patient with known coronary artery disease, as well as the cost-effective treatment of a possible pathology.

Our study addressed a complex, growing pathology with the development of PCI techniques and the sometimes off-label application of this therapy.

It also took place in the context of a small number of studies on the subject in Romania and the lack of a national PCI registry.

The results of our study provide a picture of the casuistic and therapeutic approach to post-PCI pathology in our daily and real practice, with limits imposed by the existing technological resources. Although it was a monocentric study, we believe that the results obtained are generalisable and many are superposable to the results in the literature.

Additional studies to achieve a revascularisation stratification algorithm and identify other potential risk factors related to the use of contemporary stents are necessary steps to optimise the treatment of each coronary disease patient.

