Functional assessment of coronary stenoses: where or how much?

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Introduction: Recent guidelines proposed routine functional assessment of all 20-90% coronary artery stenoses without objective signs of myocardial ischemia within the chronic coronary syndromes^{1,2}. We present the results of functional assessment of coronary stenoses found in patients with stable angina pectoris and no evident myocardial ischemia during a one year period and analyze its impact on treatment strategy.

Patients and Methods: We evaluated clinical data, 2D quantitative coronary angiography, and functional assessment results in all patients undergoing coronary angiography for stable angina pectoris from October 2021 to October 2022.

Results: Out of 1088 patients who underwent coronary angiography because of stable angina pectoris, invasive functional testing was performed in 98 (9%) of patients. Median percentage of luminal stenosis assessed was 60%, with 25 (26%) patients having two or more different segments involved. In 98 patients a total of 127 stenoses were analyzed, with 66 (52%) stenoses in the left anterior descending artery (LAD), 22 (17%) in the circumflex artery (CxA) /marginal/diagonal, and 39 (31%) stenoses in the right coronary artery (RCA). All patients had non-hyperemic indices (instantaneous wave free ratio (iFR) or cRR) analyzed, with 10 (10%) patients with borderline results requiring additional fractional flow reserve (FFR). Positive iFR or cRR was found in 32 (48%) LAD stenoses, and only 4 (19%) and 9 (24%) stenoses in the CxA/marginal/diagonal and RCA, respectively. Positive mismatch of the iFR/ cRR with the FFR was found in 3/10 stenoses with borderline results. All patients with positive functional tests received percutaneous coronary intervention (PCI). There were no complications related to the pressure wire (Verrata) or the pressure microcatheter (TruePhysio) during functional assessment. There was one case of a trapped pressure wire during post-PCI assessment that required additional non-compliant balloon optimization of the proximal segment of the stent after successful removal of the pressure wire. In comparison to the same period in 2019, functional assessment increased significantly from 1.3% to 9%, whereas the proportion of elective PCI for stable angina pectoris among all PCI performed decreased from 55% to 45%.

Conclusion: Most non-LAD lesions were non-significant according to functional assessment. Functional testing is increasing according to guidelines, and it clearly affects the rates of PCI in chronic coronary syndromes.

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