Should Angiographically Intermediate Lesions Be Treated? FFR vs Visual Anatomic Assessment

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Background: Percutaneous coronary intervention (PCI) in flow-limiting coronary stenoses improves myocardial perfusion and reduces ischemia but is of doubtful value in non-obstructive lesions. Performance of PCI is commonly based on the angiographic findings, however the hemodynamic significance of coronary stenoses can be directly assessed by measurement of fractional flow reserve (FFR). We estimated the reduction in number of PCI procedures which might be achieved by routine measurement of FFR before decision for PCI in angiographically borderline stenoses.

Methods: FFR was measured for 20 lesions in 15 consecutive patients with angiographically borderline coronary stenoses who were candidates for PCI. FFR measurement (Volcano BrightWire II) was performed with incremental intracoronary injections of adenosine (mean final adenosine dose 112±24 mcg, range 36-120) or achievement of FFR<0.80.

Results: Mean FFR was 0.85±0.08 (range 0.71-1.00). FFR<0.80 was measured in only 5 stenoses (25%). In contrast, 2 experienced interventional cardiologists who were blinded to the FFR results considered 12 (60%) and 19 (95%) of these lesions respectively to be clinically significant by visual estimation.

Conclusions: Visual assessment overestimated the clinical significance of coronary stenoses by 35-70%. Routine assessment of angiographically borderline coronary stenoses by FFR may prevent the "oculostenotic reflex" and avoid unnecessary coronary interventions.