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FRACTIONAL FLOW RESERVE AND THE INSTANT WAVE-FREE RATIO HAVE EQUIVALENT AGREEMENT WITH FLOW BASED INDICES ACROSS THE ENTIRE SPECTRUM OF STENOSIS SEVERITY RESULTS OF THE CLARIFY STUDY RESULTS OF CLARIFY

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doi:10.1136/heartjnl-2013-304019.51

Background The instantaneous wave-free ratio (iFR) is a vasodilator-free pressure-only measure of the haemodynamic severity of a coronary stenosis comparable to fractional flow reserve (FFR) in diagnostic categorisation. In this study we use hyperaemic stenosis resistance (HSR), a combined pressure-and-flow index as an arbiter to determine when iFR and FFR disagree, which index is most representative of the hemodynamic significance of the stenosis. We then test whether administering adenosine significantly improves diagnostic performance of iFR.

Methods In 51 vessels intra-coronary pressure and flow velocity was measured distal to the stenosis at rest and during adenosine mediated hyperaemia. iFR (at rest and during adenosine administration, iFRa), FFR, HSR, baseline and hyperaemic microvascular resistance were calculated using automated algorithms.

Results iFRa had significantly lower values than FFR and iFR (median iFRa 0.73 (0.58, 0.85) versus median FFR 0.84 (0.70, 0.89) and median iFR 0.93 (0.83, 0.98) $p < 0.001$ for both). Despite this, differences in magnitude of microvascular resistance between indices did not significantly alter diagnostic agreement with HSR (ROC AUC: iFR 0.93 vs iFRa 0.94 and FFR 0.96, $p = 0.45$). When iFR and FFR disagreed (4 cases, 7.7% of the study population), HSR agreed with iFR in 50% of cases and with FFR in 50% of cases.

Conclusion iFR and FFR had equivalent agreement with classification of coronary stenosis severity by HSR. Further reduction in resistance by the administration of adenosine did not improve diagnostic categorisation. This suggests that basal iFR flow is sufficient to allow accurate discrimination of stenosis severity.