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Different response to myocardial ischemia between culprit and non-culprit vesselsPhysiologic assessment for non-culprit vessels in acute coronary syndrome

Background It is not known whether such physiological responses are localized to culprit-vessels or globalized to whole myocardium. The goal of this study was to investigate whether the microvascular dysfunction differ between culprit and non-culprit vessels in ACS patients who underwent percutaneous coronary intervention (PCI).MethodsIn this study, immediately after the PCI and six months later, baseline aortic pressure (Pa) and distal intracoronary pressure (Pd), fractional flow reserve (FFR), coronary flow reserve (CFR), and index of microcirculatory resistance (IMR) of the target vessel were measured. These measures were then performed on non-culprit vessels. Delta FFR was defined as the difference of baseline Pd/Pa and FFR. Such physiological measures were compared between culprit and non-culprit vessels. The association between the IMR and delta FFR was investigated. ResultsIn comparison of baseline physiologic data between the two groups, culprit vessel group showed higher IMR, lower CFR and FFR, compared with non-culprit vessel group. Six-month follow-up data showed that IMR was not different between the two groups. In culprit-vessel analysis, delta FFR showed a modest correlation with IMR in baseline ($r = -0.25$, $p = 0.006$) and 6-month ($r = -0.30$, $p = 0.002$). Non-culprit-vessel analyses, whereas, showed that delta FFR was not significantly correlated with IMR in baseline ($r = -0.006$, $p = 0.932$) and 6-month ($r = -0.132$, $p = 0.065$).ConclusionThe physiological response to ischemic insult might occur locally. There was a negative correlation between IMR and delta FFR in culprit-vessels.