THE INFLUENCE OF AGEING ON MICROVASCULAR RESISTANCE AND ITS EFFECT ON FFR AND CFR DISCORDANCE

Poster Contributions
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Background: Discordance between Fractional Flow Reserve (FFR) and Coronary Flow Reserve (CFVR) is suggested to originate from diverging distributions of epicardial and microvascular/diffuse disease (MVD), and is linked to pertinent clinical outcomes. Since ageing is likely associated with a higher prevalence of microvascular dysfunction and diffuse disease, we evaluated the influence of age on the prevalence of FFR/CFR discordance.

Methods: Coronary pressure and flow were measured with sensor equipped guide wires, using either Doppler flow or thermodilution to assess CFR. Hyperemia was induced by either intracoronary bolus injection (40µg) of adenosine, or intravenous infusion (140µg/kg/min).

Results: In total, 327 patients with 419 stenosed vessels were investigated: 228 patients (299 vessels) with Doppler-derived flow, and 99 patients (120 vessels) with thermodilution-derived flow. With each decade increase in age, there was an 1.6-fold (95% CI: 1.1 - 2.3; p=0.017) increase in risk of an FFR/CFR pattern reflective of microvascular or diffuse disease (FFR>0.80, CFR<2.0), while there was a decrease in risk of an FFR/CFR pattern reflective of non-flow-limiting stenosis with a healthy microcirculation (FFR≤0.80, CFR≥2.0) (RR: 0.7 per decade increase in age; 95% CI: 0.5 - 1.0; p=0.022).

Conclusion: Ageing is associated with an increase in microvascular resistance and/or diffuse disease and influences CFR and FFR in opposite directions, which has pertinent clinical implications.