Impact of ageing on the measurement of endothelium-dependent vasodilation

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Abstract:
Two established methods to assess endothelium-dependent vasodilation in the peripheral circulation have been used in epidemiological research, the invasive forearm technique using intra-brachial infusion of acetylcholine (EDV) and flow-mediated vasodilation (FMD) of the brachial artery using ultrasound. Both EDV and FMD have proven to predict future cardiovascular events in patient populations and to be related to the major risk factors in large population studies, but both have methodological problems in the elderly. EDV is hampered by the fact that also endothelium-independent vasodilation (by nitroprusside infusion) is related to major cardiovascular risk factors and predict future cardiovascular events, so that little could be said about the specific function of the endothelium. FMD is markedly influenced by the impairment in brachial artery compliance seen even in the healthy elderly subjects, so that its use in the elderly has been questioned. The usefulness of other methods used in population studies, such as pulse wave analysis using a beta-2 receptor agonist as vasodilator and the hyperaemic blood flow velocity have to be further validated.

Key words: endothelium, vasodilation, age