

Impaired Bradykinin-mediated Vascular Function is Associated with Coronary Atherosclerosis in Radial and Internal Mammary Arteries from CABG Patients

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Abstract : The functions of graft arteries, including both radial (RA) and internal mammary arteries (IMA), were evaluated to investigate how they were related to coronary atherosclerosis. Vascular stiffness, the endothelial function, and the tissue renin-angiotensin system were analyzed using organ chambers. Coronary atherosclerosis was estimated based on the severity of coronary stenosis as the coronary stenosis index (CSI). CSI was negatively correlated with the bradykinin-induced vasodilation of both graft arteries after pre-contraction with norepinephrine but not with 50 mM KCl, which inhibits endothelium-derived hyperpolarization factor (EDHF). CSI did not show any significant correlation with the acetylcholine response. The bradykinin response was not influenced by the ability of the conversion of angiotensin I to angiotensin II in the IMA and RA. The BK-induced vasodilation under 50 mM KCl and nitroglycerine-induced vasodilation in IMA with more BK-induced vasodilation after pre-contraction with norepinephrine were greater than those in IMA with less BK-induced vasodilation, but these same properties were not observed in the RA. EDHF and non-EDHF were differently attenuated in the RA and IMA in the advanced stages of atherosclerosis. An impaired BK-mediated vascular function might therefore influence coronary atherosclerosis.

Key words : bypass graft artery, vascular function, coronary atherosclerosis, bradykinin, endothelium-derived hyperpolarization factor