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Detection of herpes simplex virus, cytomegalovirus and Epstein-Barr virus DNA in atherosclerotic plaques and in unaffected bypass grafts.

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Abstract

BACKGROUND: Herpes virus infections are suspected to be involved in the pathogenesis of atherosclerosis.

OBJECTIVE AND METHOD: Viral DNA of herpes simplex virus (HSV), Epstein-Barr virus (EBV) and cytomegalovirus (CMV) was analyzed by real-time PCR on 48 biopsies from atherosclerotic plaques extracted by end-arterectomy (46 coronary arteries, 2 carotid arteries), and in tissue from non-atherosclerosis vessels from the same patient as controls (23 internal mammary arteries, 43 saphenous veins).

RESULTS: HSV-1 DNA was detected significantly more frequently in plaques (35%) than in control veins (9%, $P = 0.006$). However, the frequency of HSV-1 DNA detection in the internal mammary artery grafts was as high as in plaques (22%, $P = 0.28$). CMV and EBV DNA were exclusively found in plaques but not in controls, with 10% for CMV ($P = 0.06$ versus veins, $P = 0.17$ versus graft arteries) and 2% for EBV ($P = 1.0$), respectively. HSV-2 was neither detected in plaques nor in controls. Herpes viral DNA was significantly associated only with arterial hypertension but not with other classical risk factors ($P = 0.02$), in accordance with the hypothesis that herpes viral infection may alter the vessel wall.

CONCLUSION: We conclude that herpes viral infections may have a role in atherosclerosis and that the presence of herpes viral DNA in the grafts used for bypass surgery might constitute a potential risk for atherosclerosis or restenosis.

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