REGULATORY MECHANISM BY SALT OF THE HYPERPLASTIC VASCULAR DISEASE FOLLOWING ENDOTHELIAL REMOVAL

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Summary

We examined regeneration of endothelial cells (ECs), neointima formation, decreased endothelium-dependent relaxation (EDR) and changes in the contents of L-arginine, N^G-monomethyl-L-arginine (L-NMMA), asymmetrical N^G,N^G-dimethylarginine (ADMA) and symmetrical N^G,N'^G-dimethylarginine (SDMA) in the regenerated ECs, 6 weeks after balloon denudation of the rabbit carotid artery. Regeneration of ECs was completed in 6 weeks and a significant neointima formation accompanied by the decreased EDR was observed. L-NMMA and ADMA contents in the regenerated ECs (23.5±4.3 and 21.2±2.0 pmol/mg DNA, respectively) were significantly higher ($p<0.05$ and $p<0.01$) than those in the control ECs (8.8 ±3.0 and 7.4±1.9 pmol/mg DNA, respectively), whereas L-arginine was significantly ($p<0.005$) decreased in the regenerated ECs (31,470±1,050 pmol/mg DNA) as compared to that in the control ECs (47,870±1,890 pmol/mg DNA). SDMA content was below the assay limits. L-NMMA and ADMA, but not SDMA, inhibited the EDR induced by acetylcholine in a concentration-dependent manner. The inhibition with L-NMMA and ADMA was prevented by an addition of L-arginine, but not by D-arginine. These results suggest that the accumulation of endogenous inhibitors for nitric oxide synthesis and decreased arginine content are associated with decreased NO production/release from regenerated ECs and neointima formation.