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

Hiroshi Azuma, *Kimiyoshi Hirakawa, *Yasunari Niimi, **Takeshi Aso, **Satoshi Obayashi and Hidehisa Hamasaki

Institute for Medical and Dental Engineering, Departments of *Neurosurgery, and **Gynecology and Obstetrics, Tokyo Medical and Dental University

2-3-10 Surugadai, Kanda, Chiyoda-ku, Tokyo 101, Japan.

Summary

To investigate the role of local endothelin-1 (ET-1) in the neointima formation, we performed a balloon denudation on the rabbit carotid artery. Four weeks after the denudation, regeneration of endothelial cells almost completed and a marked intimal hyperplasia was observed. The tissue level of ET-1-like-immunoreactivity was significantly increased even at 24 and 72 hrs after the denudation, and 9.3 times higher than in the control in 4 weeks. On the same time course, the proliferating cell nuclear antigen-positive cells clearly appeared. Bmax values for [^{125}I]-ET-1 (ligand for ET_A and ET_B receptors) and [^{125}I]-IRL1620 (ET_B receptor selective ligand) bindings were significantly greater in the hyperplastic artery without changes in Kd values. The [^{125}I]-ET-1 binding sites not inhibited with BQ123 (ET_A receptor selective antagonist) were significantly increased in the hyperplastic artery. ET_B receptors were more densely localized in the neointima. The chronic administration of BQ123 at plasma concentrations being sufficient to antagonize the ET_A receptors had no effect on the neointima formation. We concluded from all results that ET-1 would be involved in the neointima formation after the endothelial removal and the ET_A receptors would not play a role in this process.