Study on the therapy against post-ischemic reperfusion brain injury using neutralizing monoclonal antibody

1995 Fiscal Year Final Research Report Summary

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Research Project

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06671379

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Allocation Type

Single-year Grants

Research Field

Cerebral neurosurgery

Research Institution

Kanazawa University

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Research Abstract

The effects of the anti-L selectin antibody on expression of E selectin were studied in a rabbit model of post-ischemic brain reperfusion. Anesthetized rabbits underwent 2.5 hours occlusion of the internal carotid, middle cerebral, and anterior cerebral artery with the trans-orbital approach, followed by 3 and 6 hours reperfusion. Just after the start of reperfusion, they were treated with either i.v.2 mg of anti-L selectin neutralizing antibody

(treated group) or normal saline (untreated group). For these 2 groups, 1)the immunohisto-pathological study was carried out for evaluating the localization of the expressed E-selectin (Endothelial Leukocyte Adhesion Molecule : ELAM-1), and 2)The northern blotting was done for evaluating the expression of ELAM-1 mRNA with the single strand DNA probe of ELAM-1 by RT-PCR cloning using the oligonucleotide primer. Immmunohistopathologically, ELAM-1 expressed more strongly in the infarct area and its neighbor 3 hours after reperfusion than 6 hours. And it expressed not only in the small vessels but also in the cytoplasm of astrocytes and neurons around the infarct area. The administration of the neutralizing anti-L selectin antibody weakend the immunoreactivity to ELAM-1 in the 3 hours reperfusion model. Northern blotting showed no difference in expression of ELAM-1 mRNA between the treated group and the untreated one. In conclusion, L-selectin might play no role in upregulation of the ELAM-1 mRNA expression in the early stage of post-ischemic reperfusion brain injury. However, it might stimulate the release of ELAM-1, which is induced in the endothelial cells, astrocytes, and neurons by inflammatory cytokines and stored in them, to the extracellular space.

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