Study with Nuclear Medicine technique about changes in serotonin nerve system in nerve transplantation in dementia

2000 Fiscal Year Final Research Report Summary

Study with Nuclear Medicine technique about changes in serotonin nerve system in nerve transplantation in dementia

Research Project

Project/Area Number

10670837

Research Category

Grant-in-Aid for Scientific Research (C)

Allocation Type

Single-year Grants

Section

一般

Research Field

Radiation science

Research Institution

Kanazawa University

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Project Period (FY)

1998 – 2000

Keywords

dementia / Alzheimer / learning disorder / acetylcholine / receptor / transporter / autoradiography

Research Abstract

The aim of this study was to investigate the correlation between cholinergic presynaptic functions and memorial ability in rats treated with β-amyloid protein, a model of Alzheimer's disease. In this study, β-amyloid protein was infused into the cerebral ventricle of rats for 14 days ; the eight-arm radial maze was used to evaluate spatial memorial ability. In the same time, vesicular acetylcholine transporter and muscarinic acetylcholine receptor density of frontal cortex, parietal cortex, temporal cortex and hippocampus were measured using high sensitive autoradiography. The performance of the eight-arm radial maze task was impaired in β-amyloid protein treated rats. In parietal cortex, vesicular acetylcholine transporter density was lower in β-amyloid protein treated rats than vehicletreated rats ; there was no difference in muscarinic acetylcholine receptor density between the two groups. These results suggest that the reduction in vesicular acetylcholine transporter density is related to memory impairment induced by β-amyloid protein. Our results also suggest that it may be possible that the condition of Alzheimer's disease can be evaluated by suitable labeled vesamicol analogue for single photon emission tomography or positron emission tomography.

Research Products (2 results)

All | Other

All | Publications (2 results)

[Publications] E.Ikeda: "Reduction of vesicular acethlcholine transporter in β-amyloid protein rats with memory impairment"Nuclear Medicine communications. 21. 933-937 (2000)

[Publications] E.Ikeda, K.Shiba, H.Mori, A.Ichikawa, H.Sumiya, I.Kuji and N.Tonami: "Reduction of vesicular acetylcholine transporter in β-amyloid protein rats with memory impairment"Nuclear Medicine Communications. 21. 933-937 (2000)

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