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High plasma Amyloid β42 and P-tau in mild cognitive impairment as risk factors of the disease

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Background

Patients with mild cognitive impairment (MCI) is reported to develop Alzheimer's disease (AD) at the rate of 12% per year, greatly exceeding the 1% to 2% incidence of normal controls. Several studies have shown an increase in plasma Aβ42 in MCI compared to normal and AD patients. The efficiency of Aβ peptides elimination in earlier stages of AD has proven in animal models. We found no study measuring phospho-tau (p-tau) level in plasma.

Materials and methods

We measured the plasma level of Aβ42 and p-tau181 in 7 patients with MCI, 29 AD and 16 normal controls who had also underwent brain SPECT imaging.

Results

Plasma levels of Aβ42 and p-tau were significantly higher in MCI (57.9±33.3 pg/ml) (44.5± 91.5pg/ml) comparing AD (16.3±15.5pg/ml) (3.4±10.7pg/ml) and normal group (12±7.7pg/ml) (00 pg/ml) ($p<0.000$) ($p<0.010$) respectively.

P-tau was not detectable in normal group but p-tau was detectable in (57%) (4/7) of patients with MCI and 4 patients with AD. 3 patients with MCI who had high plasma Aβ42 and detectable p-tau too, had shown bilateral Posterior temporoparietal hypoperfusion and one showed not-characteristic perfusion defects in SPECT.

Conclusions

Since high plasma Aβ42 and p-tau in our patients with MCI were accompanied by perfusion defect characteristic of AD which is said to be a sign of the progression of MCI to AD, we suggest the evaluation of plasma Aβ42 and p-tau as the risk factors of the disease in patients with MCI.