

Poster presentation

Plasma level of Amyloid β 42 Is independent of neuronal function in Alzheimer's Disease

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Background

Amyloid β 42 ($A\beta$ 42) accumulation is said to be one of the major pathogenic events in Alzheimer's disease (AD). Regional cerebral blood flow (rCBF) studies using SPECT aid the diagnosis of AD. We evaluated any correlation between rCBF in different regions of the brain and plasma $A\beta$ 1-42 in patients with AD. To date we have found no study in this concern. Any correlation between age and sex of the subjects with plasma $A\beta$ 42 and rCBF is studied too.

Materials and methods

Forty five subjects are included in the study. 29 patients (mean age 71 ± 9) with a diagnosis of AD fulfilled NINCDS-ADRDA criteria with a mean MMSE of 15 ± 9 , and 16 normal controls (age 64 ± 8) underwent SPECT brain imaging with HMPAO. RCBF was measured in different regions of the brain. Plasma samples were collected the same day which the subjects had underwent SPECT.

Results

A significant reduction of rCBF was observed in most regions of the brain of the patients comparing normal controls. Mean Plasma $A\beta$ 42 didn't differ between two groups (16.3 ± 15.5 pg/ml in AD, 12 ± 7.7 pg/ml in controls). There was no correlation between rCBF in any region, and plasma levels of $A\beta$ 42 in no group and also between sex and age.

Conclusions

Since rCBF is coupled to neuronal function we conclude that plasma $A\beta$ 1-42 concentration is independent of neuronal function and can not differentiate AD subjects from normal controls while rCBF is significantly reduced in most the brain regions in AD. In AD rCBF and plasma $A\beta$ 42 measurements are not affected by sex and age.