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The evaluation of correlation of amyloid peptides with imaging in the diagnosis of Dementia patients

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Dementia is a major health problem in elderly in both developed as well as developing countries including India. Alzheimer's disease (AD) and vascular dementia are the common causes of dementia among the elderly patients. In AD, pathology starts with the formation of small, soluble oligomers of $A\beta_{1-42}$ which on accumulation forms neuronal plaques which lead to the neuronal death. Though there are several imaging and laboratory biomarkers available for the diagnosis of dementia patients but most are invasive (CSF) and expensive and not readily available. So plasma sampling will be cheaper, less invasive and well suited for old age patients. The present study used plasma level of amyloid peptides in the diagnosis of AD. We screened 152 old age patients and enrolled 47 (>50yrs) demented patients and 33 healthy controls, who fulfilled the diagnostic criteria for dementia, AD and mild cognitive impairment (MCI). $A\beta_{1-40}$ and $A\beta_{1-42}$ plasma level was estimated by ELISA kit. We had also done FDG PET scan of 17 AD, 12 MCI patients and correlate plasma amyloid peptide with PET scan. $A\beta_{1-42}$ level was significantly high in AD patients as compared to controls. We found a significant correlation with the FDG PET scan and the ratio of plasma amyloid peptides $A\beta_{1-40}$ and $A\beta_{1-42}$ in the parietal association area, temporal association, frontal association, posterior cingulate and global average. So $A\beta_{1-42}$ amyloid peptide by ELISA method can be used as an additional diagnostic biomarker in the dementia patients from the diagnosis of Alzheimer's disease.

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