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FOLLOW-UP STUDY ON PLASMA AND CEREBROSPINAL FLUID LEVELS OF B AMYLOIDS AND TAU PROTEINS IN PATIENTS WITH ALZHEIMER'S DISEASE

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Aims: Compare baseline and 6-month follow-up plasma and cerebrospinal fluid (CSF) levels of amyloid β peptides 1-40 ($A\beta_{1-40}$) and 1-42 ($A\beta_{1-42}$), total tau protein (T-tau) and phosphorylated tau at threonine 231 (P-tau₂₃₁) in patients with Alzheimer's disease (AD) and vascular dementia (VD).

Methods: 21 patients with AD and 7 patients with VD based on the criteria of Diagnostic Statistical Manual 4th edition were assessed at baseline and 7 with AD and 6 with VD were re-assessed 6 months later. Assessments included the Mini-Mental State Exam (MMSE), the Global Deteriorate Scale (GDS), plasma and CSF levels of $A\beta_{1-40}$ and $A\beta_{1-42}$, and CSF levels of T-tau and P-tau₂₃₁ (using a sandwich enzyme-linked immunosorbent assay).

Results: At baseline there were significant differences between AD and VD patients in the mean CSF levels of T-tau ($t=2.580$, $P=0.016$), P-tau₂₃₁ ($t=4.014$, $P=0.000$) and $A\beta_{1-40}$ ($t=2.766$, $P=0.010$). At baseline in AD patients, duration of illness was negatively correlated with CSF P-tau₂₃₁ levels ($r=-0.485$, $P=0.026$), MMSE scores ($r=-0.565$, $P=0.008$) and GDS scores ($r=-0.482$, $P=0.027$); and CSF $A\beta_{1-42}$ levels were positively correlated to MMSE scores ($r=0.565$, $P=0.008$) and negatively correlated with GDS scores ($r=-0.634$, $P=0.002$). In the AD patients plasma $A\beta_{1-40}$ levels increased significantly over the 6-month follow-up period ($t=-2.735$, $P=0.041$).

Conclusions: Plasma $A\beta_{1-40}$ levels increased significantly in AD patients after 6-months of follow-up, that means levels of plasma $A\beta_{1-40}$ could imply the development of Alzheimer disease. Moreover, CSF P-tau₂₃₁ and CSF $A\beta_{1-42}$ levels are associated with the severity of dementia and cognitive impairment.