be used to identify transcription factors binding sites and thus the complete set of target genes in an unbiased way allowing the design of functional studies to further explore the role of certain genes and polymorphisms in the development and pathogenesis of Alzheimer's disease.

P4-017 POST-MORTEM BETA-AMYLOID PLAQUES CORRELATE WITH FRONTAL CORTICAL BIOPSY FINDINGS

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Background: Amyloid ß (Aß) aggregate accumulation in the brain is thought to initiate AD pathogenesis and can be detected years before dementia. We analyzed whether Aß in frontal cortical biopsies obtained during evaluation of suspected normal pressure hydrocephalus (NPH) correlate with later autopsy findings. **Methods:** Original series included 468 patients with suspected NPH studied by ICP monitoring and right frontal cortical biopsy immunostained for Aß and HPt. Altogether 267 patients had died. Hospital and autopsy records with systematic neuropathological evaluation were available from 10 patients. **Results:** In the biopsy, Aß aggregates were seen in 3 patients being extensive in two. All three out of 10 cases with Aß aggregates in their biopsy sample displayed Aß in post-mortem samples in an extent fulfilling criteria for phase 4 according to Thal. All remaining 7 patients lacking Aß in biopsy displayed Aß in the post-mortem samples but in a lesser extent (Thal 3 or less). The presence or absence of Aß in the biopsy correlated (Spearman's ρ 0.815, $p = 0.004$) with Aß phase defined at autopsy (Thal). **Conclusions:** High correlation between observation of Aß in a brain biopsy and post-mortem samples validates the clinical significance and research use of the surgically obtained frontal cortical biopsy.

P4-018 ABNORMAL BRAIN METALS CONCENTRATION IN ALZHEIMER'S DISEASE

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Background: Evidence suggests that imbalance of levels of metals in the brain may play a role in the development or progression of Alzheimer's disease (AD) and some of these metals have been implicated in the deposition of amyloid peptide (Aß). To address this question, we measured brain metals levels in AD, vascular dementia and control postmortem well-characterized cases and determined whether brain biometals levels are associated with Aß and neurofibrillary tangles burden and dementia. **Methods:** Subjects of the Brain bank of Brazilian Aging Brain Study Group were classified according to the clinical and neuropathological evaluations in AD ($n = 14$), vascular dementia ($n = 4$) and control ($n = 20$). The clinical diagnosis was established through a postmortem interview with an informant including validated scales and questionnaries. Neuropathological examinations were carried out based on accepted criteria, using immunohistochemistry. Neuropathologically, AD was defined by a CERAD = B and a Braak and Braak = IV. Small vessel disease, lacunae, or microinfarcts were considered as possible causes of dementia when at least three zones or strategic areas were affected. Levels of iron, zinc, rubidium, sodium and potassium were measured in the hippocampus using instrumental neutron activation analysis. Protocols were approved by the local ethics committee. The statistical analysis was performed using the SPSS Statistics Package v.14. **Results:** There was no difference in age and gender between the three groups. Significantly higher concentrations of iron ($p < 0.05$), zinc ($p < 0.01$) and sodium ($p < 0.001$) and significantly lower concentrations of rubidium ($p < 0.01$) and potassium ($p < 0.01$) were found in the hippocampus of AD compared to control cases. No differences in the metal concentrations between vascular dementia and controls individuals between vascular dementia and AD individuals were detected. Zinc and sodium were found to increase in tandem with levels of Aß ($p < 0.001$) and neurofibrillary tangles ($p < 0.001$). Iron was found to increase in tandem with levels of Aß ($p < 0.01$). Rubidium and potassium were found to decrease in tandem with levels of both Aß ($p < 0.001$ and $p < 0.01$ respectively) and neurofibrillary tangles ($p < 0.001$). **Conclusions:** Abnormal brain metals concentration is a characteristic of Alzheimer disease and is associated with brain amyloid peptide. However the exactly role of metals alterations in brain in the pathogenesis of AD is yet to be clarified.

P4-019 POSTSYNAPTIC PROTEIN PSD-95 EXPRESSION IS CORRELATED TO CLINICAL INDEXES IN THE ANTERIOR CINGULATE AND FRONTAL CORTEX OF ALZHEIMER'S DISEASE CASES

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Background: Previously we have shown modifications in presynaptic and postsynaptic proteins - mainly an increase in PSD-95 protein together with an increase in NMDAR1 expression - in the entorhinal (EC) and frontal cortex (FC9) of AD cases. This suggested postsynaptic reorganization in AD and possibly compensatory phenomena. Comparatively to other regions, the anterior cingulate cortex has been less studied and we now study the anterior cingulate area 24 (CG24) and subgenual area 25 (CG25). Nine AD cases have been clinically tested shortly before death. Tests comprise Mini-Mental State Examination (MMSE), Clinical Dementia Rating (CDR) and Neuropsychiatric Inventory (NPI). **Methods:** We used semi-quantitative and quantitative immunohistochemical methods for the estimation of proteins Abeta, Tau, synaptophysin, PSD-95, and NMDA receptor R1, in CG24 and CG25 compared to EC and FC9 from 24 control and AD cases. For nine AD cases correlations between pathological data including Braak stages and clinical scores were performed. **Results:** Both CG24 and CG25 were significantly affected by AD2 stained NFT in AD cases compared to controls, and CG25 appeared more affected than CG24 and FC9. Abeta deposits were significantly higher in AD in CG25 and almost significantly in CG24. Taking into account both controls and AD, age appeared as a significant factor for AD2. Neither Abeta nor AD2 or Braak stages were significantly correlated to clinical scores. However, a significant increase in PSD-95 protein expression - mainly in positive neurons - was observed in both CG24 and CG25, and appeared correlated in CG25 to MMSE, CDR and NPI scores, while in FC9, it was correlated only to MMSE and CDR. MMSE, CDR and NPI scores were nevertheless correlated between each other. Data on synaptophysin and NMDAR1 are in progress. **Conclusions:** Taken together, these data demonstrate that the cingulate cortex is damaged in AD, particularly subgenual area 25, but that Amyloid and NFT do not seem good correlates of clinical indexes. On the contrary, PSD-95 expression appears to correlate with clinical scores, including NPI in subgenual area 25. This highlights the role of PSD-95 protein for synaptic plasticity in a region playing an important role in mood and behavior.