Serum Fragments of Tau for the Differential Diagnosis of Alzheimer's Disease - DTU Orbit (09/11/2017)

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Differential diagnosis of AD is still a challenge due to overlapping features with other types of dementia. Biomarkers for the differential diagnosis of AD can improve the diagnostic value of the disease and ensure an appropriate treatment of patients. The aim of this study was to evaluate the potential of two neo-epitope fragments of Tau as serum biomarkers for differential diagnosis of AD. The neo-epitope fragments of Tau were assessed in a cross-sectional cohort of subjects with AD, MCI, other dementias or subjects with non-dementia related memory complaints. The two Tau neo-epitope fragments were an ADAM10-generated fragment (Tau-A) and a caspase-3-generated fragment (Tau-C). The serum levels of the fragments were measured by two competitive ELISAs detecting Tau-A and Tau-C, respectively. Tau-A and Tau-C were able to separate subjects with AD and MCI from those with other dementias ($p < 0.0042$ and $p < 0.05$), and Tau-A could also discriminate between AD and MCI patients and subjects with non-dementia related memory complaints ($p < 0.05$). Tau-A showed a significantly greater discrimination between AD and MCI subjects and patients with other dementias when compared to CSF biomarkers t-Tau and p-Tau. The ability of Tau-A to differentiate between AD and MCI from other dementias was comparable with CSF Aβ1-42, t-Tau/Aβ1-42 and p-Tau/Aβ1-42. The separation between the diagnostic groups was significantly improved when the CSF biomarkers as well as age and BMI were used in combination with Tau-A (AUC = 0.87, 95% CI: 0.75-0.94) ($p < 0.0001$). In conclusion, this study shows that a neoepitope fragment of Tau detected in serum can provide guidance on the differential diagnosis of AD.

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