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Relationship of serum Beta-Synuclein with blood biomarkers and brain atrophy in frontotemporal lobar degeneration and Alzheimer's disease

Patrick Oeckl, Sarah Anderl-Straub, Adrian Danek, Janine Diehl-Schmid, Klaus Fassbender, Klaus Fliessbach, Steffen Halbgebauer, Hans-Jürgen Huppertz, Holger Jahn, Jan Kassubek, Johannes Kornhuber, Bernhard Landwehrmeyer, Martin Lauer, Johannes Prudlo, Anja Schneider, Matthias Schroeter, Petra Steinacker, Alexander Volk, Matias Wagner, Juliane Winkelmann, Jens Wiltfang, Albert Ludolph, Markus Otto

State of the art: Measurement of the presynaptic protein Beta-Synuclein in blood is an emerging biomarker candidate to study synaptic alterations in Alzheimer´s disease (AD) and other neurological disorders. Here we asked for a detailed analysis in comparision with already existing blood biomarkers and structural changes in the brain.

Methodology: For this we investigated serum Beta-Synuclein by quantitative mass spectrometry in patients froomo German FTLD consortium (n=374. Here we studied disease-associated changes in relation to the established blood markers pTau181 and neurofilaments (NfL) and its correlation with brain atrophy using structural magnetic resonance imaging.

Results: Serum Beta-Synuclein was increased in AD compared with cognitively unimpaired individuals but not in behavioral variant frontotemporal dementia, semantic, non-fluent (and logopenic variant of primery progressive aphasia, progressive supranuclear palsy and corticobasal syndrome. Beta-Synuclein mainly correlated with atrophy in temporal brain structures and was significantly associated with cognitive scores in AD.

Conclusion: We provide evidence that serum Beta-Synuclein changes are strongly related to temporal synaptic degeneration. There is a clear difference of Beta-Synuclein to the markers NfL and pTau181 providing information for additional pathological processes and complement the existing panel of blood markers.

Conflicts of interest

none