FROM SPECIMEN TO BIOMARKER? HARMONISATION OF BIOBANK SOP’S IN THE DISCOVERY OF NOVEL CANDIDATE BIOMARKERS FOR ALZHEIMER’S DISEASE (AD)

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Introduction: The fierce search for valid Biomarkers is still ongoing. Due to large diversity between individuals, centers and applied procedures, there is no single acceptable/clinically applicable Biomarker.

Aims:

1. To create a global collaborative Biobank network, high quality specimens and harmonized protocols.

2. Identify candidate Biomarkers which are reliable, non-invasive, simple to detect, inexpensive and have a potential predictive value of disease progression.

Methods: Our current search for Biomarkers includes; clinical interview, clinical dementia rating scale (CDR), neuropsychological testing, neuroimaging (functional MRI and PET), genetic markers and analysis of blood, CSF and urine from living donors and validation in autopsy brain correlates. Harmonized standard Operating Procedures (SOP’s) are in the make for collection, handling, storage and clinical documentation.

Results: Procurement of high quality specimens combined with standardized protocols, is ongoing in a large number of Biobanks, in Europe, The US, Asia and Australia; Harmonization of best practice and SOP’s occurs in the framework of ISBER, BBmri and P3G. There is still a large inter laboratory variation in the pre analytical procedures, assay performance and outcome. Recent large scale assays, testing of diagnostic accuracy and combined retrospective analysis resulted in a more reliable quantification of Abeta (1-42), Tau and phosphorylated Tau.

Conclusions: Large scale specimen collection/assessment by multicenter Biobanks, using harmonized protocols will enable statistically significant longitudinal followup studies and lead to routine clinical application. Biobanks applying highly robust assays and are vital to assess the validity of Biomarkers specific for AD.