

## **FROM SPECIMEN TO BIOMARKER? BIOBANKS IN DISCOVERY OF NOVEL CANDIDATE BIOMARKERS FOR NEUROLOGICAL DISORDERS**

**R. Ravid**

*Royal Netherlands Academy of Sciences, Brain Bank Consultants, Amsterdam, The Netherlands*

[rivkagravid@gmail.com](mailto:rivkagravid@gmail.com)

Biomarkers facilitate early detection and differential diagnosis and may act as predictor in the transition from MCI to AD. Currently there is no single internationally acceptable Biomarker which can be clinically/successful applied.

**Aims:** Collect high quality specimens and make them widely available for clinical and basic research. These specimens will be used to identify novel candidate Biomarkers, which will be reliable, non-invasive, simple to detect, inexpensive and potentially have a predictive value of disease progression.

**Methods:** The current search we perform for valid AD Biomarkers includes; clinical interview, clinical dementia rating scale (CDR), neuropsychological testing, neuroimaging (functional MRI and PET), genetic markers and the analysis of blood, CSF and urine obtained from living donor and validation in brain tissue correlates by postmortem autopsy. Biomarker detection in postmortem autopsy material is still problematic because of data fluctuation due to rapid post-mortem changes.

**Results:** Large scale specimen cohorts and clinical data-sets enabled the testing of the diagnostic accuracy and combined retrospective analysis of large number of specimens resulted in a more reliable quantification of Abeta (1-42), Tau and phosphorylated Tau in blood and CSF of AD patients. Genetic factors like the APOE  $\epsilon$ 4 genotype, seem to predispose patients to vulnerability in the medial temporal areas, which leads to memory loss. Cerebrospinal fluid (CSF) levels of the biomarker  $\alpha$ -synuclein are investigated as diagnostic tool in differential diagnosis of dementia with Lewy bodies (DLB) and Alzheimer's disease (AD).

**Conclusions:** Should CSF analysis be considered in patients with cognitive problems and will CSF-analysis become a routine procedure in people with memory complaints?

*Ravid R. and Fasano M.*

*Editorial "The importance of harmonizing and standardizing CNS Biomarkers and clinical trials in neurological disorders", *Future Neurology*, (2012) 7(6), 663–666*