Limited agreement between biomarkers of neuronal injury at different stages of Alzheimer's disease.

New diagnostic criteria for Alzheimer's disease (AD) treat different biomarkers of neuronal injury as equivalent. Here, we quantified the degree of agreement between hippocampal volume on structural magnetic resonance imaging, regional glucose metabolism on positron emission tomography, and levels of phosphorylated tau in cerebrospinal fluid (CSF) in 585 subjects from all phases of the AD Neuroimaging Initiative. The overall chance-corrected agreement was poor (Cohen $\kappa$, 0.24-0.34), in accord with a high rate of conflicting findings (26%-41%). Neither diagnosis nor APOE $\epsilon 4$ status significantly influenced the distribution of agreement between the biomarkers. The degree of agreement tended to be higher in individuals with abnormal versus normal CSF $\beta$-amyloid (A$\beta$1-42) levels. Prospective diagnostic criteria for AD should address the relative importance of markers of neuronal injury and elaborate a way of dealing with conflicting biomarker findings.