Can the diagnosis of AD be made solely on biomarker evidence?

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Alzheimer`s disease (AD) is a progressive neurodegenerative disease characterized by the deposition of amyloid plaques and neurofibrillary tangles. Cerebrospinal fluid measures of amyloid-beta, total-tau, and phospho-tau are clinically available and allow detection in vivo of both amyloid and tau pathology. With the use of labeled tracers that bind amyloid plaques, amyloid PET is now clinically available for the detection of amyloid pathology and tracers for tau pathology are becoming available. Structural MR permits to study the progression of neurodegeneration. Therefore, AD is now a clinically and biologically entity with biological fluid and imaging evidences of pathology in vivo. We are able to identify individual with evidence of amyloid deposition with or without evidence of neurodegeneration before the clinical onset of disease or with presence of minimal clinical signs (preclinical or prodromal AD). Biomarkers in vivo have improved both the accuracy of diagnosis, distinction of clinical phenotypes and anticipation of diagnosis. This process is required because the clinical diagnosis is achieved when neurodegeneration may have started several years before and reached a severe stage. Starting optimal therapy at this stage would be ineffective. In conclusion, the diagnosis of AD depends on the definition of disease. If we define the disease based on the underlying pathology, we can reach a diagnosis based only on biomarkers. However AD is a complex disorder, determined by different type of pathological lesions and amyloid driven diagnosis may be limited among the elderly.