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Phospho-PKCs in A β 1-42-activated human T cells discriminate Alzheimer's disease from Lewy body dementia

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Alzheimer's Disease and Lewy Body Dementia are the most common neurodegenerative dementias of older age. Accurate diagnosis of these conditions has important prognostic and therapeutic implications, however, Lewy Body Dementia tends to be under-diagnosed or misdiagnosed as Alzheimer's Disease. In the latter, Amyloid-beta is thought to be produced in excess and subsequently deposited in the brain as plaques, forming the pathological hallmark of this condition. Interestingly, B- and T-lymphocytes have been implicated in the disease process both in terms of Amyloid- β removal and driving inflammation. Here, we explore the development of a diagnostic biomarker based on Amyloid-beta1-42-specific T-cells that should be present in Alzheimer's disease but not in Lewy Body Dementia or in other neurodegenerative conditions. We use multi-colour flow-cytometry to analyse cytokine production and Phospho-Protein-Kinase C expression of in vitro Amyloid-beta1-42 stimulated T-cells in patients with Alzheimer's Disease, Lewy Body Dementia, Inclusion Body Myositis and Cerebral Amyloid Angiopathy, as well as healthy age matched controls. We reveal that a subset of A-beta1-42-specific T-cells characterised by bright expression of Phosphorylated-Protein-Kinase C delta and zeta distinguishes Alzheimer's Disease from all other conditions. This new marker should be tested in prospective studies to facilitate the diagnosis of Alzheimer's disease and its discrimination from Lewy Body Dementia other neurodegenerative conditions.

Key words

AD; DLB; Immunobiological markers; P-PKC; Cytokines