Clinical and neuroimaging heterogeneity in the transition from normalcy to dementia

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The incidence of dementia in the elderly, especially Alzheimer's disease (AD) doubles every 5 years, and estimates of prevalence showed the presence of dementia in 7-8% of the individuals age 65-75 and 45% after age 85. Therefore, there are significant scientific efforts to understand the transition from normalcy to dementia, which is essential to develop primary and secondary prevention therapies. Although there are extensive data on the incidence of dementia in mild cognitive impairment (MCI) subjects, there are few data on the incidence MCI in cognitively normal subjects. Those data that do exist showed the majority of the elderly subjects after age 80 develop an MCI syndrome, and that more than half of them progressed to dementia. Because neuroimaging studies have shown that hippocampal atrophy and amyloid deposition in MCI subjects are predictors of conversion to AD, it has been suggested that MCI or normal subjects with amyloid deposition or hippocampal atrophy have a pre-AD state. However, recent studies showed that progression from normal cognition to MCI, or from normal to MCI to dementia is not always linear. In addition, there are subjects with brain atrophy or amyloid deposition who do not necessarily progress to dementia, while others can do it within a relatively short period of time. This suggested that the pathophysiology of the transition from normal to dementia is complex. There are undetermined factors that can “accelerate” conversion from normal to dementia in patients with pre-AD pathological features, and that there are other factors that can “protect” them from developing a clinical dementia syndrome.

Biography
Oscar L Lopez is Professor of Neurology and Psychiatry at the University of Pittsburgh, School of Medicine, Director of the Alzheimer's disease Research Center of Pittsburgh, and Chief of the Cognitive and Behavioral Neurology Division in the Department of Neurology. His primary research interest has focused on the distribution (incidence and prevalence), behavioral manifestations, risks, and long term outcomes of dementia, especially Alzheimer's disease, and he has published classic papers examining the patterns of progression of all clinical forms of Alzheimer's disease. He has conducted a large scale study in the clinical diagnosis of mild cognitive impairment (MCI), and he is currently conducting studies of the factors that modulate the transition from normal to MCI and to dementia in relationship to cerebral amyloid deposition.

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