Abstract

Mild cognitive impairment (MCI) is a borderline condition between normal aging and dementia and is characterized by subjective complains of memory impairments that go beyond those expected considering age and education. Yet subjects are not demented, and their functional status remains intact (Peterson et al. 1999). It is suspected that this group includes a substantial number of patients with pre-clinical Alzheimer’s Disease (AD), since the follow-up of this group indicates a conversion rate from MCI to AD of 12 to 25% per year and 50% convert in 5 years. Normal controls by contrast, convert to AD on an average of 1-5% per year, depending on age. The identification of people at potential risk of dementia, could be helped by an early therapeutic intervention and also, it may lessen distress for both patient and family, minimize the risk of accidents, and perhaps even prevent the onset of the dementig process itself. Neuropsychological assessment is relevant to make a differential diagnosis between normal and pathological aging, to distinguish between different types of dementia, to define the patterns of strength and weakness and to suggest the likely pattern of underlying cerebral pathology. The Single Photon Emission Computerized Tomography (SPECT) is one of the recent neuroimaging techniques that contribute with information about the regional blood flow. Several studies of regional blood flow in AD patients demonstrate relative temporal and parietal hypoperfusion in AD. SPECT imaging conducted while the patient is engaged in a cognitive task or under sensory stimulation are referred to as activation studies. Activation studies afford unique opportunities to explore brain metabolic changes related to specific cognitive operations and to establish hypothesis of the neural networks supporting very discrete cognitive functions. Recent functional neuroimaging studies used during cognitive tasks have added to our understanding of the neural anatomy of cognition in both normal and pathological states; therefore the application of this technique to the study of patients with mild cognitive impairment could provide additional information for the early identification of this disease. Although activation studies have been used with EA, there are very few studies that have used activation methods to study MCI. Using SPECT, Riddle et al. (1993) studied ten patients with EA and nine age-matched normal controls with a verbal memory activation task and found significant differences between the groups only during the activation task. Since the differential diagnosis between normal aging, MCI and depression is still a matter of controversy, activation studies could provide objective data for the early and objective diagnosis of this group. We performed SPECT perfusion imaging during a basal and during a recognition verbal memory task in a group of normal and MCI subjects. Twenty-three subjects were studied ten controls and thirteen with MCI, matched by age and education. Patients and controls were not receiving psychotropic drugs. The
Clinical Memory Unit and the Geriatric Service, of the Instituto Nacional de Nutrición Salvador Zubiran of Mexico City referred the subjects.

**Keywords**

Dementia, mild cognitive impairment, SPECT, activation, Alzheimers disease, functional neuroimaging.