Visuospatial Function and Language Function in Healthy Senior and Mild Cognitive Impairment

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Abstract. The aim of the present study was to investigate the characteristics of visuospatial functions and language functions of healthy elderly and the elderly with mild cognitive impairment (MCI). The subjects of study were 174 healthy elderly and 71 elderly with MCI over the age of 65. As the result of Independent t-test, healthy elderly group had significantly higher mean value of RCFT-copy and K-BNT than MCI group. There was no significant difference, however, in reading and writing ability. In this study, there were significant differences in the performance of visuospatial functions and confrontational naming ability between healthy elderly and the elderly with MCI.

Keywords: Mild cognitive impairment, Visuospatial functions, Confrontational naming ability

1 Introduction

Approximately 71.3% of dementia patients are known to have Alzheimer's disease [1]. Though complete treatment method of Alzheimer's has not been developed yet, it has been reported that there are possibilities to prolong cognitive decline or improve symptoms if sustained interventions are performed with medication or cognitive therapy from the stage of mild cognitive impairment (MCI) which is the previous stage before dementia [2]. Thus, MCI is clinically important in not only the early discovery of Alzheimer's disease but maximizing the treatment effect. MCI is a state in which there is decline of cognitive functions but ability to perform daily living is preserved and it is defined as the intermediate stage to dementia in the normal aging process [3]. Prevalence rate of MCI is reported as diverse as 16~21% [3] and 15% of MCI cases progress into Alzheimer's [4]. Since prevalence rate of MCI in Korea was reported to be 27.8% as of 2012 [1], interest in the treatment and prevention of MCI is gradually on the increase.

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As patients with MCI are high-risk group for Alzheimer's, exact understanding of the characteristics of MCI is clinically vital because it not just becomes a critical strategy in the early prevention and intervention of MCI but also can protract the progress into Alzheimer's. Even though numerous studies have been conducted on the decline of cognitive functions of MCI, consistent result has not been drawn out [5, 6]. This tendency to inconsistent results of the preceding studies implies that difference in cognitive characteristics between healthy elderly and patients with MCI may vary depending on the types of cognitive functions.

The aim of the present study was to investigate the characteristics of visuospatial functions and language functions of healthy elderly and the elderly with MCI and provides a basic material for early detection and intervention of MCI.

2 Methods

2.1 Subjects

The subjects of the present study were 174 healthy elderly and 71 elderly with MCI over the age of 65.

Standards for the selection of subjects were as follows; first, those who were not diagnosed as having dementia by medical institutions; second, those who do not have neurogenic communication disorders such as aphasia; third, those who can read and write; fourth, those who do not have visual or auditory problems for tests; fifth, those who do not have moderate or severe depression; sixth, those who do not have neurological diseases such as Parkinson's or Huntington's disease.

2.2 Analysis

Visuospatial functions was assessed by using Rey-Osterrieth Complex Figure (RCFT-copy) [7] (Fig 1). Language functions were assessed with confrontational naming ability by using Korean Boston Naming test (K-BNT) [8] while writing and reading abilities were assessed with 1 item by using Korean-Mini Mental State Examination (K-MMSE) [9].

Visuospatial and language functions of healthy elderly and MCI were compared by using Independent t-test and Chi-Square test.

3 Results

There was significant difference in visuospatial functions and naming ability (p<0.05). Healthy elderly group had significantly higher mean value of RCFT-copy and K-BNT than MCI group (p<0.05). There was no significant difference, however, in reading and writing ability.


4 Discussion

In this study, there were significant differences in the performance of visuospatial functions and confrontational naming ability between healthy elderly and the elderly with MCI. In order to investigate the causal relationship between visuospatial functions & confrontational naming ability and MCI, longitudinal studies are required to be conducted in the future.

References