Poster PE-10

Functional Neuroanatomy of a Patient with Psychogenic Amnesia: fMRI

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목적 :

The purpose of this study is to evaluate the neuroanatomy associated with underlying brain functional disturbances in a patient with psychogenic amnesia using by fMRI.

대상 및 방법 :

A 22-year-old unmarried woman with psychological amnesia following severe stressful event. We performed functional MR imaging study using a 1.5T MRI scanner(GE medical system, Horizon Milwaukee, US). The patient viewed 3 kinds of face photographs: recognizable faces of familiar high school friends before amnesia, unrecognizable faces of familiar university friends after amnesia, and unfamiliar control faces. The BOLD based fMR images were acquired from 11 slices covering limbic areas using gradient-echo EPI (α/TR/TE=90°/3000ms/50ms). The functional MRI paradigm comprised seven repetitions of a 9 sec of rest(fixation cross) and a six repetitions of a 9 sec activation state(three kinds of photographs comprised randomly: 3 sec recognizable faces, 3 sec unrecognizable faces, and 3 sec unfamiliar control faces). Voxels were identified as significant only if they passed a height threshold of $z = 3.5$ and belonged to a cluster of at least 30 activated voxels.

결과 :

Compared with the activation patterns in both recognizable faces and unrecognizable faces stimulation, recognizable faces gave a significantly activation pattern in the limbic areas in which amygdala, hippocampus, parahippocampal gyrus, and insula showed dominant activation intensities. Well-known faces have the potential to elicit retrieval of affective responses and personal episodic incidents. And they may evoke activation of the limbic system, especially the amygdala that is connected with the hippocampal formation and further cortical and subcortical structures. The amygdala is primarily involved in the acquisition and expression of emotional memories. Also, hippocampal region has a role in the automatic aspects of face processing and is concerned with explicit judgments relating to the identity of faces. The lack of the activation in the hippocampal region might relate to an abnormality in the explicit components of the face judgment.

결론 :

Our findings showed that the psychogenic amnesic patient has abnormality in retrieval of emotional memories associated with the functional neuroanatomy of the brain.