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Reduced responsiveness is an essential feature of chronic fatigue syndrome: A fMRI study

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Abstract

Background

Although the neural mechanism of chronic fatigue syndrome has been investigated by a number of researchers, it remains poorly understood.

Methods

Using functional magnetic resonance imaging, we studied brain responsiveness in 6 male chronic fatigue syndrome patients and in 7 age-matched male healthy volunteers. Responsiveness of auditory cortices to transient, short-lived, noise reduction was measured while subjects performed a fatigue-inducing continual visual search task.

Results

Responsiveness of the task-dependent brain regions was decreased after the fatigue-inducing task in the normal and chronic fatigue syndrome subjects and the decrement of the responsiveness was equivalent between the 2 groups. In contrast, during the fatigue-inducing period, although responsiveness of auditory cortices remained constant in the normal subjects, it was attenuated in the chronic fatigue syndrome patients. In addition, the rate of this attenuation was positively correlated with the subjective sensation of fatigue as measured using a fatigue visual analogue scale, immediately before the magnetic resonance imaging session.

Conclusion

Chronic fatigue syndrome may be characterised by attenuation of the responsiveness to stimuli not directly related to the fatigue-inducing task.