

Poster ME-3

Discrimination of Brain Centers Associated with Visually Evoked Sexual Arousal in Men and Women: Functional MRI

김형중 · 정광우 · 서정진 · 강형근 · 은성중 · 정용연 · 정태웅

Department of Radiology, Chonnam National University Medical School

Purpose : To identify cerebral center related with visually evoked sexual arousal in healthy human, furthermore to compare the typical, cerebrocortical activation patterns between men and women using a non-invasive BOLD functional MRI.

Materials & Methods : A total of 27 volunteers, 16 men (mean age 24) and 11 women (mean age:35), with sexually potent underwent to functional MRI on a 1.5T MR scanner(GE Signa Horizon). The BOLD fMRI data were obtained from 7 oblique planes using gradient-echo EPI with 50ms TE, 6000ms TR, 26cm×26cm FOV, 128×128 matrix, and 10mm slice thickness. Sexual stimulation paradigm began with a 1 minute rest with a non-erotic video film and a 4 minute stimulation by an erotic film. The brain activation maps and their resulting quantification was analyzed by SPM99 program, together with a software developed by Cho et al. The index of activation was used to compare the number of pixels activated by each task in each volunteer, where the significance of the differences was evaluated by using Students t-test. In addition, perceived sexual arousal responses were assessed using 5-point scale ranging from 1(no change) to 5(maximum increase).

Results : In the case of the average of enhanced signal intensity (%), almost all cerebral regions were more predominant in men over women, especially in the superior frontal gyrus, parietal lobe, insula gyrus, occipital lobe, cingulate gyrus, inferior frontal gyrus and corpus callosum. This finding is coincident with the result that the scores on subjective sexual arousal with erotic film, measured by 5-point scale, were dominant in men ranging from 2-4(3.0 ± 0.4 , mean \pm SD) compared with women ranging from 2-3(2.7 ± 0.5 , mean \pm SD). Also, note that total activation(total sum of pixel intensity) with the erotic visual stimulation was in the following order: limbic area(men, 16.8 ± 7.1 ; women, 17.4 ± 7.2), paralimbic area(27.6 ± 10.5 ; 23.3 ± 11.4), and temporal association area and others(91.8 ± 46.6 ; 79.0 ± 47.2). Especially, total activation was highest in the inferior temporal lobe for both men and women; and was lowest in caudate nucleus and globus pallidus for men, and putamen, globus pallidus and insula for women.

Conclusion : Our findings might be useful not only to understand different neuronal mechanisms for sexual arousal between men and women but also to study for sexual arousal disorder in the near future.