NUS-13 The fractional anisotropy of cerebral gliomas on diffusion tensor magnetic resonance imaging

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Introduction: Unlike conventional diffusion-weighted magnetic resonance imaging (MRI), diffusion-tensor imaging (DTI) permits the calculation of an apparent average diffusion constant (AADC) and fractional anisotropy (FA). DTI characterizes diffusive transport of water and provides additional structural information of the brain tissue. Several studies have described the DTI abnormalities of brain tumors, including an increase in AADC within the tumoral tissue and a decrease in FA within and around the tumor.
Method: We used DTI to describe deviation or distortion of fibers in normal white matter (WM), tumoral WM, peritumoral WM and WM adjacent to the brain tumor in a cohort of ten patients with confirmed cerebral gliomas. MRI scanning was performed using a 1.5 T GE Signa system with version 9.1 software. The FA from the specific areas on the side of brain tumor was compared to that of the corresponding WMs over the contralateral hemiphere using student's t test and compared among the specific areas using one way ANOVA
Results: The median age was 53 years old, and there were 5 females. The FA was reduced in the tumoral and peritumoral brain tissue ($P<0.001$). The abnormal FA in the tumor was much lower than that in peritumoral brain tissue ($p<0.001$). In the apparently distorted WM adjacent to the tumor, there were no difference in the FA between the two sides.
Conclusion: DTI maps may provide useful information about WM architecture and its alteration due to the tumors. FA provided details of anatomic information on relationships between tumors and nearby WM tracts, which may assist the interpretation of neurological findings and preoperative planning.

NUS-14 Visual cortical activations on functional magnetic resonance imaging upon stimulation of vision-implicated acupoints

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Introduction: Cho and colleagues previously reported very close correlations between the visual cortical activations on functional magnetic resonance imaging (fMRI) following stimulation with visual light and those following conventional acupuncture.
Method: In this study, we compared the brain activations on fMRI obtained during visual stimulation using light-emitting diodes (LED) flashing at 8 Hz with that obtained during conventional or electro- acupuncture (at 2 or 20 Hz) applied to 4 vision-related acupoints (BL60, BL65, BL55, and BL67) over the lateral aspect of the right foot in 18 healthy volunteers. fMRI was performed using a 1.5 T magnetic resonance scanner with standard scanning parameters. Activation periods of 30 s were alternated with rest periods of 30 s. First, fMRI was performed with visual stimulation. Next, fMRI was repeated with conventional and then electro- acupuncture.
Results: When compared to positive activations on fMRI over the visual cortex upon LED stimulation, similar activations were seen in 10 subjects during conventional acupuncture and in 8 and 7 subjects, respectively, during electro-acupuncture at 2 and 20 Hz. Negative activations were also seen bilaterally in the occipital lobes and temporal gyri in 13 subjects during conventional acupuncture.
Conclusion: Acupuncture may exert its effects via modulating the activity of relevant brain sites. Our results also show that electro-acupuncture is useful for future studies.