

**Compensatory change of opposite hippocampus after
temporal lobe surgery in patients with temporal lobe epilepsy :
Evidence from single-voxel proton MR spectroscopy**

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목적 : To evaluate compensatory change of opposite hippocampus after temporal lobe surgery in the patient with temporal lobe epilepsy by using single-voxel proton MR spectroscopy.

대상 및 방법 : Eighteen patients with intractable temporal lobe epilepsy (TLE) whose MR diagnosis was unilateral hippocampal sclerosis (n=11) or localized unilateral anterior temporal lobe lesion (n=7) and who underwent anterior temporal lobectomy were included in the study. Single voxel proton MRS of opposite hippocampus was carried out on the same day or within 1 week after MR imaging before temporal lobe surgery and after over 1-year post-surgical follow-up. Single voxel proton MRS were acquired using GE signa 1.5T scanner and spectroscopy system (TR, 1500-2,000; TE, 136-144). Region of interest (ROI) was placed in a similar position for all examination to cover the medial temporal lobes including most of the head and body of hippocampus and a part of amygdala, the parahippocampal gyrus. The MR spectra were evaluated with a focus on the metabolite ratio of N-acetylaspartate (NAA) to choline-containing phospholipids (Cho), creatine (Cr). The metabolite ratios of NAA/Cho and NAA/Cr were calculated from the relative peak height measurement. We evaluated change of the intensity ratio NAA/Cho between before and after surgery, to simplify quantification across patients, because observed decreases in the ratio of NAA/Cho can be interpreted in terms of neuronal or axonal damage.

결과 : Twelfth patients showed post-surgical increase of NAA/Cho ratio of the opposite hippocampus in 18 patients. Wilcoxon signed ranks test revealed statically significant increase of NAA/Cho ratio after post-surgical follow-up ($p < 0.05$). No difference was seen between hippocampal sclerosis and temporal lesion group. Also no difference was seen whether opposite normal temporal was right or left lobe.

결론 : The compensatory increase of NAA/Cho in the opposite temporal lobe can be interpreted as an increase of compensatory increase of neural cell or axon. This finding could be one of the evidences of recovery due to language function appearing in the opposite side of the brain after neuronal damage or surgery.