

Diffusion-Tensor Imaging of Cerebral Glioma at 3 T MRI: Analysis of Fractional Anisotropy and Mean Diffusivity of Tumor**이호연, 나동규, 송인찬, 김지훈, 장기현**

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목적 :

To determine whether fractional anisotropy (FA) or mean diffusivity (MD) at diffusion-tensor imaging (DTI) using a 3-T MR unit is different between low- and high-grade glioma and to evaluate the relationship between FA or MD values and T2 signal intensity.

대상 및 방법 :

DTI and conventional MR imaging including T2-, enhanced T1- and three-directional diffusion-weighted images (DWI) were obtained in 18 patients with cerebral gliomas (glioblastoma multiforme xx, anaplastic astrocytoma xx, and low-grade gliomas xx). FA, MD, T2-signal intensity, and conventional ADC values were measured at enhancing and non-enhancing lesions of tumors after coregistration of all images using SPM2. We compared FA, MD, and ADC values between enhancing and non-enhancing lesions of high-grade gliomas, and those of non-enhancing lesions between low- and high grade gliomas. Student t-test, one-way ANOVA, Pearson correlation coefficient and linear by linear association analyses were performed.

결과 :

MD, FA and ADC values of non-enhancing lesions indicated no statistically significant difference between high- and low-grade gliomas. But score test for trend using linear by linear association indicated that MD value was lower according to the higher grading of gliomas from low-grade glioma to anaplastic astrocytoma, and from anaplastic astrocytoma to glioblastoma multiforme ($p < .049$). The mean FA and MD values of enhancing lesions were lower than those of non-enhancing lesions ($P=0.05$ and $P=0.02$, respectively). There was a significant relationship between FA values and T2 signal intensity ($R=-.594$) and between MD values and T2 signal intensity ($R=.689$) in the non-enhancing lesions.

결론 :

FA and conventional ADC values of non-enhancing lesions were not significantly different between low- and high-grade gliomas, but MD values had a trend to be lower in the high-grade glioma. FA and MD values of non-enhancing lesion had a different relationship with T2-signal intensity.