뇌신경재활

게시일시 및 장소 : 10 월 19 일(토) 08:30-12:30 Room G(3F)

질의응답 일시 및 장소 : 10 월 19 일(토) 11:00-11:30 Room G(3F)

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The use of Diffusion Tensor Imaging Study for proving Motor Recovery : Case report

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Introduction

There is no well-known way to visualize motor recovery for stroke patients. The corticospinal tract(CST) is a main neural tract to control motor function. therefore, it is involved in control of both fine motor activity and gait function. In our clinical practice, Assessment of the CST state is important for successful stroke rehabilitation.

Case

The CST was tracked through two regions of interest placed on the anterior part of the mid pons level and upper pons level. The cut off value for stop tracking was FA < 0.15 and turning angle >60. A 51-year-old male patient with right hemiplegia from a cerebral hemorrhage has been admitted to our hospital for rehabilitation. His Muscle strength of right-side extremities was grade 1/5 by manual muscle test. A brain lesion involving the left basal ganglia, thalamus and internal capsule was detected on CT. DTI-based fiber-tracting displayed a reduced and partially interrupted fiber tract on the left CST. (fig. 1) He underwent four months of conventional rehabilitation, after then improvement in muscle strength of affected limb was observed. his muscle stregth of affected limb was grade 3/5 by manual muscle test on follow up DTI, It was observed that the fibers became thicker than before and that the connections continued to the primary motor cortex (fig. 2)

Discussion

DTI-based fiber-tracting displayed a reduced fiber tract on the left CST, and partially interrupted in the lesion area(fig. 1), But four months later, on follow up DTT, we observed that CST became thicker and connecting to primary motor cortex.(fig. 2)

Conclusion

In this study, As the muscle strength of stroke patient has been recovered, we assumed that there will be a change in the CST fiber, and in fact a change has been observed in the follow up DTI .The recovery of CST of affected side was based on the evidences of motor

recovery. Hence, significance of this report was that DTI is a useful way to visualize motor function recovery for stroke patients .

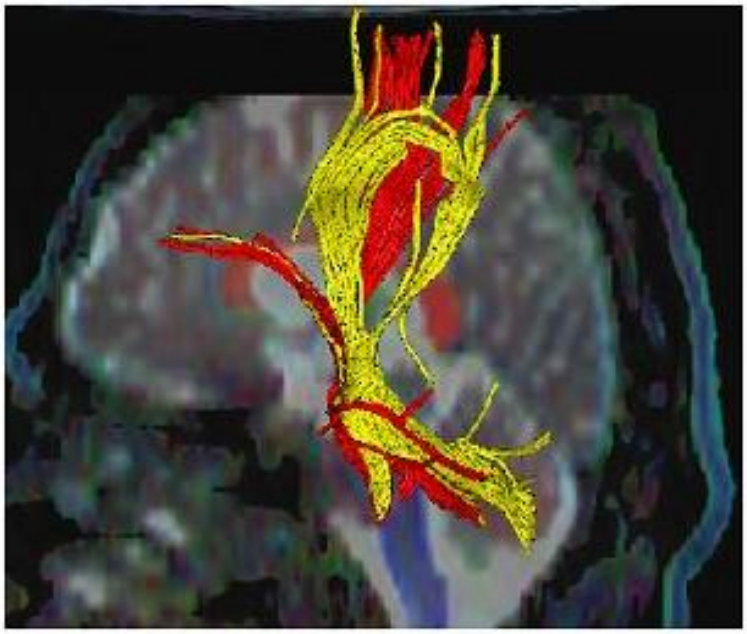

fig. 1 Corticospinal tract(Lt.) Decreased fiber volume to cortex compared with Rt. side.

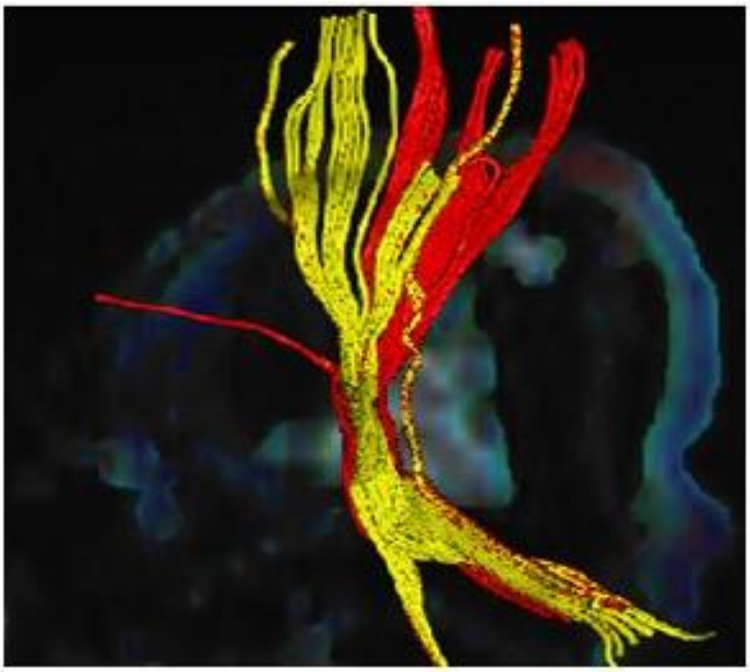

fig. 2 Corticospinal tract(Lt.) Increased fiber volume to cortex compared with fig. 1