Purpose

To develop an advanced non-linear curve fitting (NLCF) algorithm for dynamic susceptibility contrast (DSC) study of the brain

Methods and Materials

Twenty healthy volunteers participated for the acquisition of T1-weighted and T2*- weighted dynamic contrast enhanced (DCE) MR imaging. Sequential images were continuously recorded during the first passage of contrast agent with the signal intensity for ROI. The generalized kinetic model with NLF was modified with the consideration of coefficient factor.

Results

The blood perfusion and volume estimation were accurately evaluated in the T2*-weighted dynamic contrast enhanced (DCE)-MR images. From each of the recalculated parameters, a perfusion weighted image was outlined by using the modified non-linear curve fitting algorithm. The present study demonstrated an improvement of an estimation of the kinetic parameters from the dynamic contrast-enhanced (DCE) T2*-weighted magnetic resonance imaging data with using contrast agents.

Conclusion

In conclusion, we developed non-linear curve fitting algorithm for DSC study. And the data point from the gamma-variation curve fitting with Levenberg-Marquardt could be useful to achieve the physiological information in the clinical cases.

Acknowledgement

References

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