

**Development of advanced algorithm in non-linear curve fitting
for dynamic susceptibility contrast in human brain**

윤성익¹⁾, 장건호²⁾, 강현수³⁾, 김영주⁴⁾, 최보영¹⁾

가톨릭의대 의공학교실¹⁾, 경희대학교 동서신의학병원 방사선학과²⁾, 서울보건대 방사선과³⁾,
가톨릭의대 방사선과학교실⁴⁾

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

Materials and Methods: The first pass effects give rise to spuriously high estimates of Ktrans for the voxels that represent the large vascular components. An explicit threshold value was used to reject voxels.

Results and Conclusion: 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.

Acknowledgment: This study was supported by a grant of the Seoul R&BD Program, the Korea Health 21 R&D Project, Ministry of Health & Welfare, Republic of Korea. (02-PJ3-PG6-EV07-0002) and a grant of the 2005 Nuclear R&D Plan Program, Ministry of Science & Technology, Korea.