

A Compensable MRS between SVS and 3D CSI on Human Brain

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목적 :

In vivo MR spectroscopy combines the localization features of imaging with the ability for chemical analysis to provide a non-invasive method for the study of biochemical processes in a patient. The purpose of this study shows a comparison of results of SVS and 3D CSI spectrum for brain study

대상 및 방법 :

A clinically acceptable MRS localization method has reached a phantom in hardware development. Selection of volume of interest (VOI) with distinct boundaries was referenced using anatomical MR images. The spectral peaks were generally obtained from the defined volume scanning. It showed well-resolved, narrow peaks and a relatively clean baseline allowing accurate shaped quantification. Typically, PRESS and STEAM were used for the routine clinical practice. MRS is to measure very small metabolite signals, whose resonant frequencies spread over the chemical shift range characteristic of the measured nucleus. The MR signal originates from the excited volume, which is a column of tissue divided into slices by gradient or rf encoding. For decision of appropriate SNR to VOI relation, scan dependent volume is pre-checked.

결과 :

The most common TE values for 1H MRS are 20 or 30 for a STEAM sequence, and 135 or 270 ms for either STEAM or PRESS. The parameters that acquired data affected by the echo time (TE), the repetition time (TR), the number of acquisitions, Normal brain spectra from an 4.096cm^3 ($1.6 \times 1.6 \times 1.6\text{cm}^3$) voxel acquired with PRESS, and 1cm^3 ($1 \times 1 \times 1\text{cm}^3$) in 3D CSI. In order to get the better resolution and achieve more appropriate contrast in CSI, the examination requires high spatial resolution to discriminate pathology. However, 3D CSI techniques need more clinical consideration.

결론 :

We report typical samples of 1H MRS measurements of SVS and 3D CSI for human study. Resonance intensities of the metabolites were expressed relative to the concentration of theorem. However, in order to use re-analyzed data of the human brain, it is necessary the more reference spectra in human studies.

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