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**Proton MR Spectroscopy of Hippocampal Formation:
Optimization of Voxel Size in Spin-Echo Sequences**

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Purpose: Multiple measurements of spin-echo proton MR spectroscopy of hippocampal formation were performed to determine optimal size of signal voxel.

Subjects and Methods: Single voxel spin-echo sequence was applied to right hippocampal formation of five healthy volunteers (male: female = 3:2, age: 25-33). All spectroscopic parameters except size of a voxel were fixed and as follows: repetition time / echo time = 1500 /135 msec, number of acquisition = 300, time of acquisition = 7 min 30 sec. The size of a voxel was changed from 1 ml to 5 ml by increment of 1 ml. In each subject, spectroscopic measurements were repeated five times consecutively. Signal to noise (SNR) of N-acetylaspartate (NAA) and metabolite ratio of NAA/Choline containing compounds (Cho) were calculated by system software.

Results: Quantitative data were presented in the table as mean±standard deviation. Shimming of the hippocampal area was difficult and full width at half maximum of water peak was usually 8-10 Hz.

Size of voxel	1 ml	2 ml	3 ml	4 ml	5 ml
SNR of NAA	6.4±1.6	9.3±1.2	12.8±1.2	18.3±2.2	18.9±2.1
NAA / Cho	1.4±1.1	1.1±0.13	1.2±0.1	1.1±0.12	1.1±0.14

Spectra obtained with voxel size of 4 or 5 ml showed good SNR of NAA and reliable value of NAA/Cho.

Conclusion: Using above mentioned parameters and equipments, proton MR spectroscopy of hippocampal formation may require at least 4 ml of voxel size to insure adequate SNR and metabolic data.