

The purpose of the study was to investigate the metabolic differences of the right parietal cortex with experimental brain contusions of ICR mouse induced by fluid percussion injury compared to normal controls and to test the possibility that ^1H MRS findings could provide neuropathologic criteria in the diagnosis and monitoring of traumatic brain contusions. A homogeneous group of 20 ICR male mice was used for MRI and MRS. Using image-guided, water-suppressed in vivo ^1H MRS with a 4.7 T MRI/MRS system, we evaluated the relative proton metabolite ratios between experimental brain contusion of ICR mouse and healthy control subjects. The ratio of NAA/Cr in traumatic brain contusions was 0.90 ± 0.11 , while that in normal control subjects was 1.13 ± 0.12 ($p=0.001$). The Cho/Cr ratio had a tendency to rise in experimental brain contusions ($P=0.02$). The Cho/Cr ratio was 0.91 ± 0.17 , while that of the normal control subjects was 0.76 ± 0.15 . The present ^1H MRS study shows significant proton metabolic changes of parietal cortex with experimental brain contusions of ICR mouse induced by FPI compared to normal controls. In vivo ^1H MRS may be a useful modality for the clinical evaluation of traumatic contusions and could aid in better understanding the neuropathologic process of traumatic contusions induced by FPI. This study was supported by a grant of the Center for Functional and Metabolic Imaging Technology, Ministry of Health & Welfare, Republic of Korea (02-PJ3-PG6-EV07-0002).