

ONCOLOGY AND BIOMARKERS SUMMIT

November 27-28, 2017 | Atlanta, USA

Metabolic biomarker for hepatic ischemia in a rat model using ^{13}C hyperpolarized ^{13}C MR spectroscopy

Gwang-Woo Jeong

Chonnam National University Medical School, Korea

This study investigated the metabolic alterations in a rat model of hepatic ischemia reperfusion injury (IRI) using the combined *in vivo* hyperpolarized ^{13}C MRS and intravoxel incoherent motion (IVIM)-diffusion weighted imaging (DWI). Hyperpolarized ^{13}C MRS with IVIM-DWI was performed on the liver of nine sham-operated control rats and nine rats before and after hepatic IRI. The hepatic IRI-induced rats showed significantly higher ratios of [1- ^{13}C] alanine/pyruvate, [1- ^{13}C] alanine/total carbon, [1- ^{13}C] lactate/pyruvate and [1- ^{13}C] lactate/total carbon compared with both sham-operated controls and rats before IRI, whereas [1- ^{13}C] pyruvate/total carbon ratio was decreased in

IRI-induced rats. In IVIM-DWI study, apparent diffusion coefficient (ADC), perfusion fraction (f) and D values in rats after hepatic IRI were significantly lower than those of rats before IRI and sham-operated controls. The levels of [1- ^{13}C] alanine and [1- ^{13}C] lactate was negatively correlated with ADC, f and D values, whereas the level of [1- ^{13}C] pyruvate was positively correlated with these values. The levels of [1- ^{13}C] alanine, [1- ^{13}C] lactate and [1- ^{13}C] pyruvate in conjunction with IVIM-DWI and serum enzyme levels will be helpful to evaluate the hepatic IRI.

e: gwjeong@jnu.ac.kr