OS-10. Effects of hydrogen saline pretreatment on mouse fatty liver ischemia-reperfusion injury

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.***Background & Aim:*** Fatty liver has lower tolerance against ischemia-reperfusion (I/R). We aimed to ameliorate liver injury following I/R in fatty liver. Diatomic hydrogen (H_2) was proposed beneficial effects in diverse models of acute and chronic disease, and exert anti-apoptotic, anti-inflammatory effects. In this study, we aimed to elucidate the protective effect of H_2 saline on I/R liver injury in fatty liver model.

Methods: We developed non-alcoholic steatohepatitis model by giving methionine and choline deficient high fat (MCDHF) diet for 3 weeks and divided into 3 groups; sham operation on MCDHF diet mice group (MCDHF). MCDHF diet and saline treatment group (MCDHF I/R), treated with saline in the whole process of I/R. MCDHF diet and H_2 saline treatment group (MCDHF+ H_2+ I/R), The concentration of 7ppm H_2 saline was administrated in the whole process of I/R. All I/R liver injury was induced ischemia for 15min, followed by 3hr reperfusion. Then, the livers were obtained and analyzed.

Results: MCDHF I/R group showed higher serum ALT and AST levels, compared to sham operated mice. In H_2 saline treated group, serum ALT and AST levels were significantly decreased. TUNEL positive apoptotic cells and F4/80 positive cells were increased in MCDHF I/R group, but H_2 saline significantly reduced TUNEL-positive cells and F4/80 positive cells numbers. Real-time quantitative PCR showed elevated mRNA levels of inflammatory cytokines in MCDHF I/R group, but decreased levels in MCDHF+ H_2 saline + I/R group. Furthermore, Real-time quantitative PCR elevated mRNA levels of three groups, inflammatory cytokines including TNF-, iNOS, IL-6 and

members of the signaling pathway like TLR4, NF-κB were examined in the fatty liver. The expression were increased in MCDHF I/R group, but were obviously downward in the MCDHF+ H_2 saline + I/R group. Moreover, the expression of HO-1 was significantly increased by treatment with H2 saline.

Conclusion: These results demonstrated that H_2 saline treatment ameliorated I/R liver injury in fatty liver model. We confirm the protective effects of H_2 saline by reducing hepatocyte apoptosis, inhibiting of macrophage activation and inflammatory cytokines, and inducing HO-1 expression. Thus, treatment of H_2 saline has a protective effect and safe therapeutic activity at the situation of I/R such as liver transplantation of fatty liver.

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