

짧은사슬지방산이 급성신손상의 염증과정에 미치는 영향

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Effects of Short Chain Fatty Acids on Inflammatory Process in Acute Kidney Injury

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Short chain fatty acids (SCFAs) are the metabolic end products of normal bacterial fermentation of fibers in the large intestine. Emerging evidence suggest the role of gut-kidney crosstalk in regulating inflammatory processes. Purpose of the present study was to elucidate the role of SCFAs in an acute kidney injury (AKI) in which the inflammatory process has a major role. Bilateral ischemia reperfusion injury (IRI) was induced in C57BL/6 mice. Sodium acetate were given to mice 30 minutes before ischemia and at the moment of reperfusion. Biochemical values, histological kidney damage and tissue inflammation were assessed. In in vitro analysis, immune cells harvested from mice spleen were stimulated with LPS and the effect of sodium acetate on cytokine production was measured. Treatment with SCFAs attenuated IRI and reduced inflammation. Tubular cell apoptosis, determined by TUNEL stain also was decreased by SCFAs. Significantly lower level of pro-inflammatory cytokines was observed in the supernatant of cells from spleen co-treated with LPS and SCFAs, compared with those treated with LPS alone. Especially, IL-12p70, major inflammatory cytokine of dendritic cells was also reduced, suggesting that that SCFAs might modulate the function of dendritic subset. Thus, our findings provide evidence that the SCFAs have renoprotective effect in AKI and also that this might be partially mediated by abrogating innate immune (or inflammatory) responses.

Key Words: 급성신손상, 짧은사슬지방산, 염증

Acute kidney injury, Short chain fatty acid, Inflammation