

인체 복막중피세포에서 고장성 자극에 의한 염증반응 유도

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Hypertonicity Induces Inflammation in Human Peritoneal Mesothelial Cells

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Peritoneal inflammation in peritoneal dialysis is known to be related to high glucose and hypertonic dialysate, and one of the main causes to discontinue peritoneal dialysis. Hypertonicity has been known to have immuno-modulating effect and TonEBP binding protein (TonEBP/NFAT5), tonicity induced transcriptional activator, was suggested to be involved in the process. However, the most studies have been focused only in the role of high glucose. Here, we examined the role of hypertonicity and TonEBP in the peritoneal inflammation using cultured human peritoneal mesothelial cells. We observed that both high NaCl and high glucose increased the mRNA expression and nuclear translocation of TonEBP in cultured human peritoneal mesothelial cells. Aldose reductase (AR) mRNA, the target gene of TonEBP increased by high NaCl as well as high glucose. Proinflammatory mediators such as IL-8, MCP-1 and IKBa mRNA increased by high NaCl as well as by high glucose. IL-6 mRNA increased only by high glucose but not by high NaCl. We used TonEBP disrupted MEF cells for the evaluation of the role of TonEBP in the inflammation. AR mRNA, the target gene of TonEBP increased in dose-dependent pattern by high NaCl and high glucose in TonEBP +/+ MEF cells, but did not increase in TonEBP -/- MEF cells. High NaCl caused the increase in MCP-1 mRNA in TonEBP +/+ MEF cells, but not in TonEBP -/- MEF cells. IKBa mRNA was not different between TonEBP +/+ and -/- MEF cells. These findings suggest that hypertonicity contribute the peritoneal inflammation in peritoneal dialysis, and TonEBP might be involved in this process. In addition, high glucose induced inflammation might be caused not only by glucose itself, but also by hypertonicity.

Key Words : 고장성, TonEBP, 복막 중피세포

Hypertonicity, TonEBP, Peritoneal mesothelial cells