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복막 중피세포의 중간엽 세포로의 전환에 있어 Heme Oxygenase-1의 역할

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Heme Oxygenase-1 Attenuates Epithelial-to-mesenchymaltransition of Human Peritoneal Mesothelial Cells

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Background: Epithelial-to-mesenchymal transition (EMT) of peritoneal mesothelial cells has been regarded as an early mechanism of peritoneal fibrosis. A substantial and rapidly growing literature indicates that HO-1 provides the provenance for pathways that can interrupt virtually all major mechanisms of tissue injury. The effects of HO-1 expression on EMT, which plays a critical role in the development of peritoneal membrane (PM) fibrosis, are unknown and its roles in peritoneal fibrosis has not been studied, yet.

Method: A piece of human omentum obtained from consenting patients undergoing elective abdominal surgery was used for study. We treated the human peritoneal mesothelial cells (HPMCs) with high glucose solution and HO-1 inducer (hemin, 10 lmol/L). To further investigate the pure effect of HO-1 on EMT of mesothelium, gene transfer of recombinant Adenovirus-harboring human HO-1 (Adv-HO-1 gene) to HPMCs was done.

Result: Exposure of HPMCs to HG solution resulted in an increase of the expression of mesenchymal markers such as a-smooth muscle actin (a-SMA) and was associated with a decrease in the expression of epithelial markers, E-cadherin. HO-1 protein expression was decreased in the same situation. Treatment of HPMCs with HO-1 inducer, hemin showed a dosage-dependent amelioration of HG induced changes in markers of EMT with increase of expression of HO-1. Human HO-1 gene transfection resulted in a significant increase in HO-1 expression and ameliorated HG-induced changes in expression of E-cadherin and a-SMA.

Conclusion: Taken together, our results suggest that HO-1 has a critical role in the modulation of peritoneal fibrosis, and, more important, the suppression of EMT. This study is the first to show the beneficial effect of HO-1 on reversing EMT in MC.

Key Words: 복막세포
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