S-B30

5/6 신절제 동물 모델에서 골수 중간엽 줄기세포의 신손상 개선 효과에 대한 연구

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Effect of Bone Marrow Derived Mesenchymal Stem Cell in Remnant Kidney Model

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Chronic kidney disease remains a common, treatment impossible clinical problem. Recent advancement in stem cell research highlighted in regenerative medicine, but it was not tried in the field of chronic renal failure, so we invested the effect of bone marrow derived mesenchymal stem cell on remnant kidney model. Mesenchymal stem cell (MSC) was isolated from 5- week Spraque- Dawley rat. It was characterized by the ability to differentiate osteoblast and adiopocyte. CM- dil tagged MSC was infused by tail vein into 5/6 nephrectomized rats (group 3) and compared with saline (group 1) and mesangial cell (group 2) immediately after 5/6 nephrectomy. Blood pressure and urine excretion of protein were checked at 1 and 4 weeks and sacrificed to study renal histology, presence of MSC and various cytokine mRNA expression including VEGF- A, EGF, BMP- 7 and bFGF. MSC treated remnant kidney rats showed improved systolic blood pressure and serum creatinine as compared with those of controls. Remnant kidney showed mesangial expansion and tubular hypertrophy in histology. MSC attenuated those histologic changes. Presence of CM- dil tagged cell in the kidney was only confirmed in rats with MSC administration at 1 week. CM- tagged cell was also found in lung and liver and spleen in MSC administrated rats and mesangial cell administrated rats. However, CM- Dil stained cell was not found in any group at 4 weeks. Cortical expression of VEGF- A/B and EGF were decreased whereas IL- 10 was increased in MSC administrated rats at 1 week as compared with other controls, however those changes were not found at 4 weeks. In conclusion, our experiment showed the intravenous administration of MSC improved renal histology and function in 4- week remnant kidney model. However, the beneficial effect may be primarily mediated via paracrine effect rather than differentiation.

Key Words : 줄기세포, 5/6 신절제 백서
Mesenchymal stem cell, Remnant kidney model