

사이클로스포린 A에 의한 급성신손상에서 C.E.R.A의 신장보호 효과에 대한 연구

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The Protective Effects of Continuous Erythropoietin Receptor Activator (C.E.R.A) on Cyclosporine A-induced Acute Renal Injury

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Background: Use of cyclosporine A (CsA) as immunosuppressive drug following organ transplantation is limited because of its nephrotoxicity. Recently, continuous erythropoietin receptor activator (C.E.R.A) was developed for the treatment of anemia with extended administration intervals in patients with chronic kidney disease. Several studies have been shown that C.E.R.A has tissue-protective and anti-inflammatory effects in various settings of organ injury. Here, we studied the protective effects of C.E.R.A on CsA induced nephrotoxicity.

Methods: Male Sprague-Dawley rats were randomized into the following 4 experimental groups: Group A (control), Group B (C.E.R.A), Group C (CsA) and Group D (CsA+C.E.R.A). Group A (N=6) was injected with normal saline (20 mg/Kg), equivalent volume of CsA, intraperitoneally (IP) for 21 days. Group B (N=10) was injected with C.E.R.A (5 ug/Kg) IP on D1, D5, D9, D15 during 21 days. Group C (N=15) was injected with CsA (20 mg/Kg) IP daily for 21 days. Group D (N=15) was injected with C.E.R.A (5 ug/Kg) on D1, D5, D9, D15 and simultaneously with CsA (20 mg/Kg) daily IP for 21 days. Creatinine clearance and hemoglobin were measured. Histological examination of the kidney was performed with H&E staining.

Results: The creatinine clearance of Group C and Group D were reduced to about half of Group A (control). However, there was no significant difference the creatinine clearance between Group C and Group D. Also, there was no histological difference between Group C and Group D.

Conclusion: This pilot study suggested that new rHuEPO, C.E.R.A, did not have the preventive effects in CsA-induced nephrotoxicity.

Key Words: 사이클로스포린, CERA, 급성신손상
Cyclosporine A, CERA, Acute renal injury

Table 1. Effects of 4 weeks of rHuEPO on the prevention of CsA-induced renal injury

Experimental group	Serum BUN±SD (mg/dL)	Serum creatinine±SD (mg/dL)	Hematocrit±SD (%)	Hemoglobin±SD (g/dL)	Creatinine clearance±SD (mL/min)
Group A	18.82±0.67	0.70±0.04	47.40±0.86	15.38±0.27	1.40±0.09
Group B	20.68±1.20	0.64±0.02	60.18±2.94	19.92±0.92	1.27±0.14
Group C	34.64±2.52	0.65±0.02	35.73±0.88	11.58±0.23	0.78±0.40
Group D	37.64±1.92	0.64±0.03	49.38±1.90	16.43±0.64	0.86±0.70