

cyclosporine 1980

1

1 가 , T , /

(Table 1).

가

5

4 40% 가 1), Hel-

sinki group 4 30%

, 6% 가 가 .

5- 30%,

가 2- 10% 2).

1.

3- 6

, , 3 (triad)

(obliterative vasculopathy)

.

, ,

. Cyclosporine

Table 1. Causes of renal Allograft Loss after 1 Year

Cause	Percentage of patients(%)
Chronic rejection	24- 67
Patient death	22- 48
Noncompliance	4- 28
Recurrent disease	2- 9
Other	2- 13

from Bia et al. Kidney Int 46:1470, 1995

2.

가 , , 가

3-5).

가 가

(Fig. 1).

, , , , ,

6-7)(Table. 2).

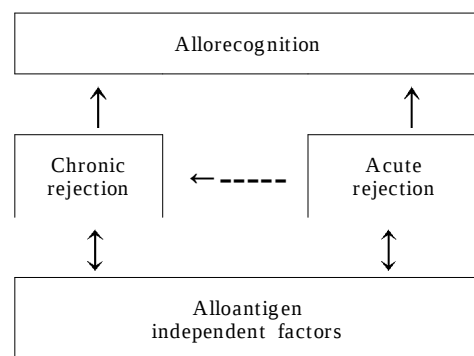


Fig. 1. Hypothetical relationship between acute rejection and chronic rejection.

2) gamma lactone
 ,
 가 HLA , 가
 (fit) , 3 13). Mycophenolate mofetil
 61
 가 가
 .
 .
 3) 14)
 (Table 3).
(1) Angiopeptin
 Somatostatin , ,
 glucagon
 가 . Cyclosporine .
 가 .
 가 가 angiopeptin
 가 10). 2 가 .
(2) Carvedilol
 β - α -
 4)
 . PDGF
 .
 carvedilol 90%
 HMG- CoA reductase pravastatin 1 . 5/6 carvedilol
 가 가 1)
 ,
 가 . Pravastatin
 farnesyl
 natural killer cell
 . prava-
 (64%
 statin
 vs 25%) OKT3
 가 12).
 5)
 가
 6)

Table. 3

· Rapamycin, mycophenolate mofetil, leflunomide
· r- HuSOD(Superoxide dismutase)
· Somatostatin analogue(Angiopeptin)
· Prostacyclin analogue(Iloprost)
· Thromboxane antagonist
· Polyunsaturated fatty acids
· Fish oil
· Heparin derivative
· Carvedilol(antihypertensive drug): antioxidant and inhibitor of vascular smooth muscle cell proliferation.
· Anti- endothelin antibody, endothelin receptor antagonist(bosentan [®])
· ANF, endopeptidase inhibitor(candoxatril [®] , Pfizer)

- 1) Almond PS, Mtas A, Gillingham KJ, et al.: *Risk factors for chronic rejection in renal allograft recipients. Transplantation* 55:752-757, 1993.
- 2) Paul LC: *Chronic rejection of organ allografts: Magnitude of the problem. Transplant Proc* 25: 2024, 1993.
- 3) Massy ZA, Guijarro C, Wiederkehr MR, Ma JZ: *Chronic renal allograft rejection: Immunological and nonimmunologic risk factors. Kidney Int* 49: 518-524, 1996
- 4) Basadonna GP, Matas AJ, Gillingham KJ et al.: *Early versus late acute renal allograft rejection: Impact on chronic rejection Transplantation* 55: 993-995, 1993
- 5)

- 11 :49- 53, 1997
- 6) Leendert CP :Chronic renal transplant loss. *Kidney Int* **47**:1491- 1499, 1995
- 7) Bellstrom B :Immune injury-is it all there is to chronic graft rejection? *Nephrol Dial Transplant* **140**, 1995
- 8) Xiao F, Chong A, Shen J :Pharmacologically induced regression of chronic transplant rejection. *Transplantation* **60**:1065- 1072, 1995.
- 9) Raisanen-Sokolowski A, Myllarniemi M, Hayry P :Effect of mycophenolate mofetil on allograft arteriosclerosis(chronic rejection). *Transplant Proc* **26**:3225, 1994.
- 10) Mourad G, Ribstein J, Miram A :Converting-enzyme inhibitor versus calcium antagonist in cyclosporine-treated renal transplants. *Kidney Int* **43**:419- 425, 1993
- 11) Kobashigawa JA, Katznelson S, Lakas H. et al. : Impact of pravastatin on cholesterol lowering, rejection, survival and the development of transplant coronary vasculopathy. *N Engl J Med* **333**:621- 627, 1995
- 12) Katznelson S and Kobashigawa JA. Dual roles of HMG-CoA reductase inhibitors in solid organ transplantation :Lipid lowering and immunosuppression. *Kidney Int* **48**(Suppl. 52) S112-S115, 1995
- 13) Azuma H, Nadeau KC, Ishibashi M, Tilney NL : Prevention of functional, structural, and molecular changes of chronic rejection of rat renal allografts by a specific macrophage inhibitor. *Transplantation* **60**:1577, 1995
- 14) Foegh ML and Ramwell PW :Angiopeptin : Experimental and clinical studies of inhibition of myointimal proliferation. *Kidney Int* **48**(Suppl. 52) S18- S22, 1995
- 15) Fellstrom BC, Larsson E :Pathogenesis and treatment perspectives of chronic graft rejection (CVR). *Immunol Rev* **134**:83- 94, 1993