

Complications after Renal Transplantation

Sung Gyu Beak, MD, Won Hyun Cho, MD, Hyoung Tae Kim, MD, Sung Ok Lee, MD, Chaol Hee Park, MD,¹ Chun Il Kim, MD,¹ Sung Bae Park, MD,² and Hyun Chul Kim, MD.²

Purpose: The medical records of 524 renal recipients who have been transplanted until December 2000 in our hospital were reviewed in order to compare the incidence of the surgical and medical complications according to their different treatment protocols.

Methods: To compare the surgical complications, the recipients were divided according to their ureter reconstruction method and donor type. Group 1; living donor and modified Politano method are done. Group 2; living donor but an extravesical ureteroneocystostomy. Group 3; cadaver donor and an extravesical anastomosis. Regarding the medical complications, recipients who received Sandimmun based immunosuppression (with steroid and/or azathioprine) were grouped as 1, those recipients with Neoral based immunosuppression (with steroid and/or celcept) were grouped as 2, and recipients immunosuppressed by prograf based immunosuppression (with steroid and/or celcept) were grouped as 3. The incidence of complications and adverse effects in each group and per recipient were described as the percentage of the total incidence.

Results: Most of the surgical complications including an allograft rupture, ureteral fistula, lymphocele and reoperation due to bleeding were developed during the first month after transplantation but decreasing in group 2 and 3. An ureter stricture and renal artery stenosis developed after 6 months. Infectious complications were developed in 60.7% of recipients and among them, a viral infection occurred in 41.9% which was followed by bacterial and fungal infection. However, the incidence of infection also decreased in group 3. Herpes infections were the most common in viral infection

and their incidence showed a dual peak (within 6 months and after 1 year). The recurrence of the original disease, mostly a focal sclerosing glomerulosclerosis, and de novo cancer showed lower incidence in group 3 but the follow up duration should be considered. Tremor and hirsutism are two of the most common adverse effects but showed a different incidence in group 3. Some side effects such as diarrhea, post-transplant diabetes were more common in group 3 than in group 1 and 2.

Conclusion: The decreasing incidence of complications and the drug side effects in recent days might be due to a better understand of the surgical procedures and the development of new immunosuppressants. However, new side effects or toxicity by new immunosuppressant must be considered seriously. (J Korean Surg Soc 2002;63:267-275)

Key Words: Complication, Side effect, Renal transplantation

Departments of Surgery, ¹Urology and ²Internal Medicine, Keimyung University School of Medicine, Daegu, Korea

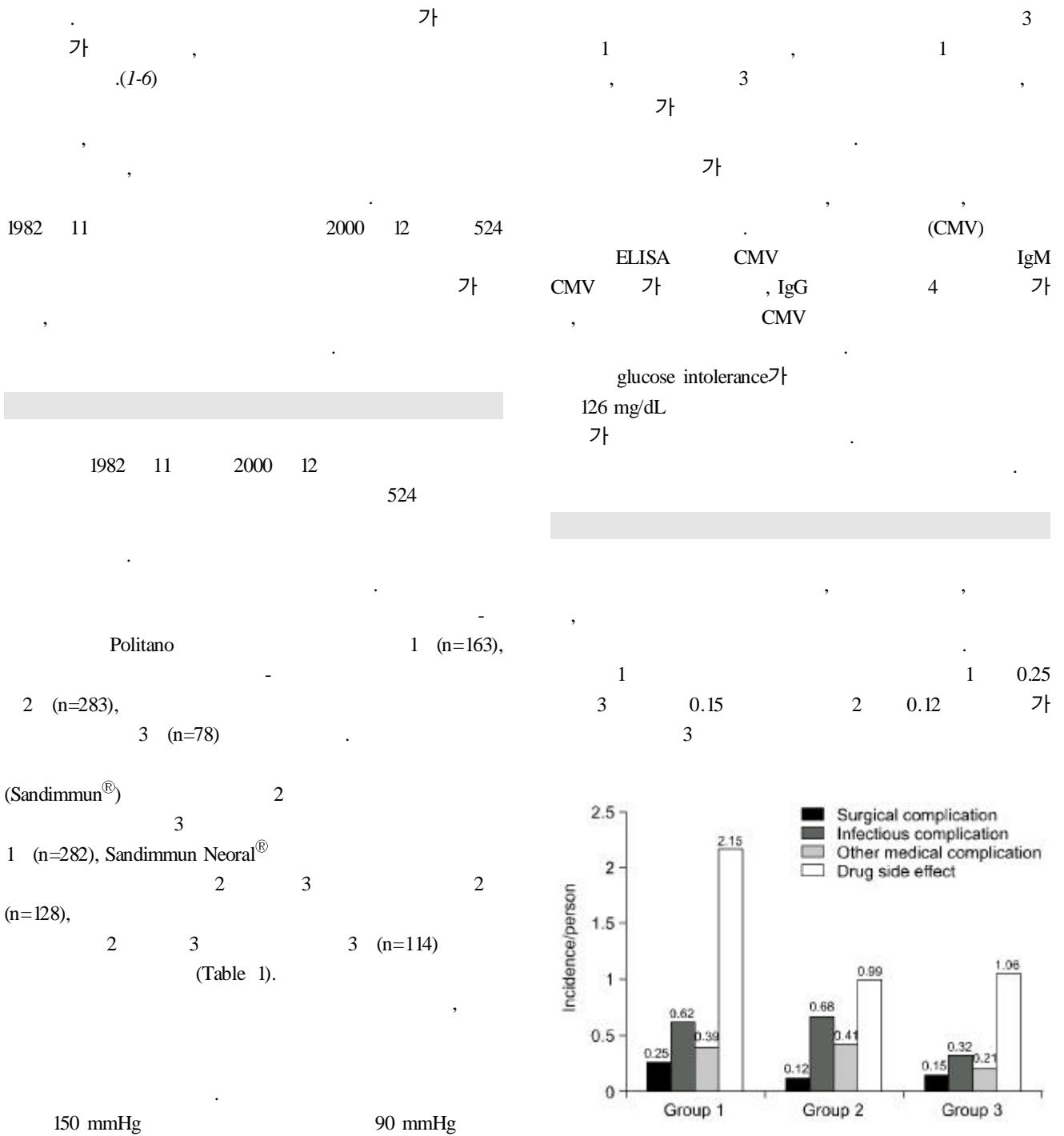


Fig. 1. Incidence of complication per each recipient.

Table 1. Analysis group of surgical and medical complication

	Surgical complication	Medical complication
Group 1	Living donor with Politano type ureteroneocystostomy (n=163)	Sandimmun based immunosuppression (n=282)
Group 2	Living donor with extravesical ureteroneocystostomy (n=283)	Neoral based immunosuppression (n=128)
Group 3	Cadaveric donor with extravesical ureteroneocystostomy (n=78)	Prograf based immunosuppression (n=114)

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3 0.32
1 2 3 1
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(Fig. 1).

1)

524

86

81.8%가 1

(Fig. 2).

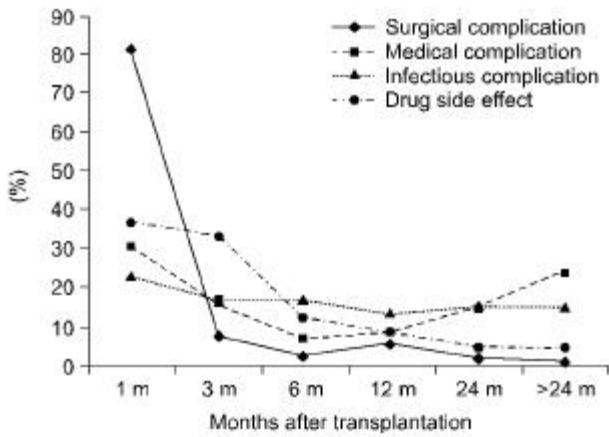


Fig. 2. Onset of complication after renal transplantation.

Table 2. Surgical complications in each group

	Group 1 (n=163)	Group 2 (n=283)	Group 3 (n=78)
Kidney complication			
Renal artery spasm	2	3	3
Renal artery thrombosis	3	0	0
Renal artery stenosis	1	1	0
Graft rupture	2	1	1
Ureter complication			
Vesicoureteral reflux	1	0	0
Ureter stenosis	5	5	0
Urinary fistula	2	4	0
Wound complication			
Lymphocele	13	16	4
Reoperation (bleeding)	4	4	3
Infection	8	0	1
Total number of complication	41	33	12
Incidence of complication/person	0.25	0.12	0.15

가
12 1
가

6

1, 2 3 가

3

가

2

1

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2, 3

(Table 2).

2)

가

289 (60.7%)

(Table 3).

3 가

CMV,

가

(Table 3).

BK-JC

가 3

289

121

(41.9%) 가

가

가 66.7%

1

가

6
CMV

Table 3. Infectious complications in relation to transplant group

	Group 1 (n=282)	Group 2 (n=128)	Group 3 (n=114)
Viral infection			
Herpes simplex	10	13	8
Herpes zoster	11	13	3
Varicella	0	1	2
CMV	24	12	1
Hepatitis	10	8	0
BK-JC virus	0	0	2
Bacterial infection	95	19	11
Fungal infection	19	10	6
Tuberculosis	6	10	3
Other infection	1	1	0
Total number of infection	166	97	36
Incidence of infection/person	0.62	0.68	0.32

5.6% 2
 67.9%가
 가 2 가 .35
 가 78.2%가 6 1 72 , 17 가
 가 (Fig. 3, 4).
 (2) : 5
 3) (Table 4) 2
 2
 (1) : 33
 72.8%가 1 7
 (focal sclerosing
 glomerulosclerosis) 8 6
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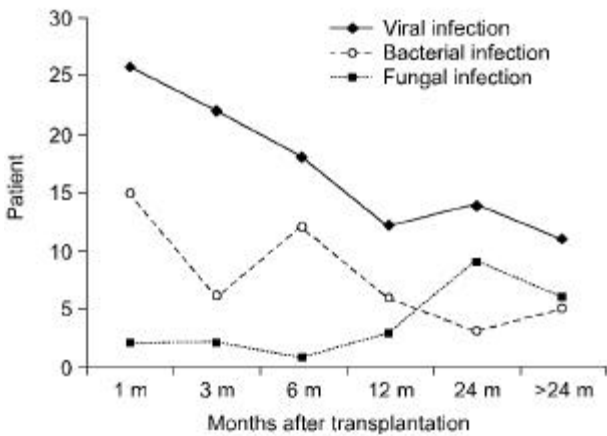


Fig. 3. Incidence of infectious complication after transplantation.

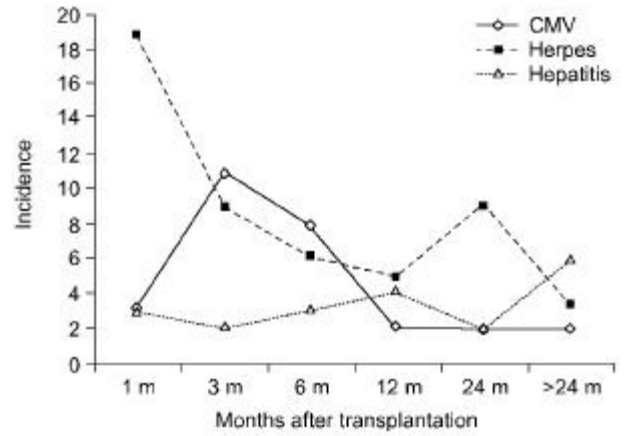


Fig. 4. Incidence of viral infections after transplantation.

Table 4. Medical complication in each treatment group

Clinical findings	No. of patients (%)	Group 1	Group 2	Group 3
Infectious complication	289 (60.7%)	166	97	36
Hypertension	77 (16.2%)	45	25	7
Recurred disease	33 (6.9%)	22	8	3
ATN and delay function	26 (5.5%)	10	6	10
Peptic ulcer and GI bleeding	14 (2.9%)	9	4	1
Cataract	11 (2.3%)	8	2	1
Heart failure and CVA	9 (1.9%)	5	3	1
De novo cancer	6 (1.3%)	5	3	0
Hemolytic uremic syndrome	4 (0.8%)	3	1	0
Colitis	2 (0.4%)	1	1	0
Nephrotic syndrome	2 (0.4%)	1	1	0
Psychiatric complication	2 (0.4%)	1	0	1
Pancreatitis	1 (0.2%)	1	0	0

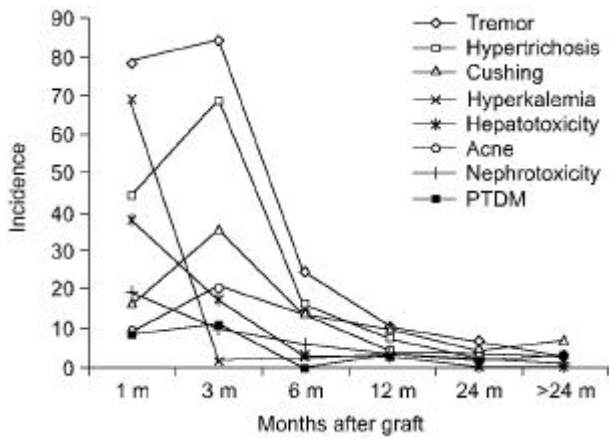


Fig. 5. Incidence of drug side effect.

Table 5. Incidence of drug side effect in each group

Side effect	Group 1 (%)	Group 2 (%)	Group 3 (%)
Tremor	165 (27.2)	24 (18.9)	28 (23.1)
Hirsutism	109 (17.9)	29 (22.8)	2 (1.7)
Hyperkalemia	65 (10.7)	12 (9.4)	11 (9.1)
Cushing appearance	56 (9.2)	18 (14.2)	9 (7.4)
Hepatotoxicity	49 (8.1)	5 (3.9)	7 (5.8)
Acne	38 (6.3)	5 (3.9)	8 (6.6)
Erythrocytosis	31 (5.1)	7 (5.5)	1 (0.8)
Nephrotoxicity	29 (4.8)	8 (6.3)	4 (3.3)
Diarrhea	15 (2.5)	6 (4.7)	17 (14.0)
Gum hypertrophy	13 (2.1)	2 (1.6)	3 (2.5)
Alopecia	12 (1.9)	2 (1.6)	13 (10.7)
Diabetes mellitus	10 (1.7)	5 (3.9)	8 (6.6)
Avascular necrosis	9 (1.5)	2 (1.6)	1 (0.8)
BM depression	5 (0.8)	1 (0.8)	2 (1.7)
Parkinson's disease	0 (0.0)	1 (0.8)	0 (0.0)
Total incidence	606	127	121
Incidence per each recipient	2.15	0.99	1.06

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 (4) :
 16 81.8%가 3
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 4)
 524 854
 . 가 (207 , 25.2%)
 (139 , 16.9%)
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 6 6 (7)
 (gingival
 hypertrophy),
 (Fig. 5). 2
 가 3 가 , 10% 2
 3 가 가 14.0% 1, 2
 2.5%, 4.7% 가

1, 2 3
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 (Table 5).
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 25%
 10% 2
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0.01%

.(9) 가 .
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가 가 2 4 - 6
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13 (4.3%)가
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가 .(20) 2 6

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8 , 4 .(21,22)

2 2 ,

가 , CMV

가 가 가 6

CMV .(14-17)

3

15 20% CMV 가

2% 가 .(2,3)

CMV

가 3 가

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3 CMV , 1

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. 3 가 , 3 BK-JC

가 , 3 CMV 가

가 3 6 3

. 1 . *Aspergillus, Legionella, Nocardia, Pneumocystis carinii*

가 ,

(cold abscess) 가 가 3 (23) Shaffer (24)

가 가 B , AIDS OKT3 가

B .(18,19) 3.6% (5) 5 10

4.7%, 7.8%

, , 가

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