Is the Valacyclovir Prophylaxis Effective for Prevention of Cytomegalovirus Infection in Kidney Transplant Recipients?

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INTRODUCTION

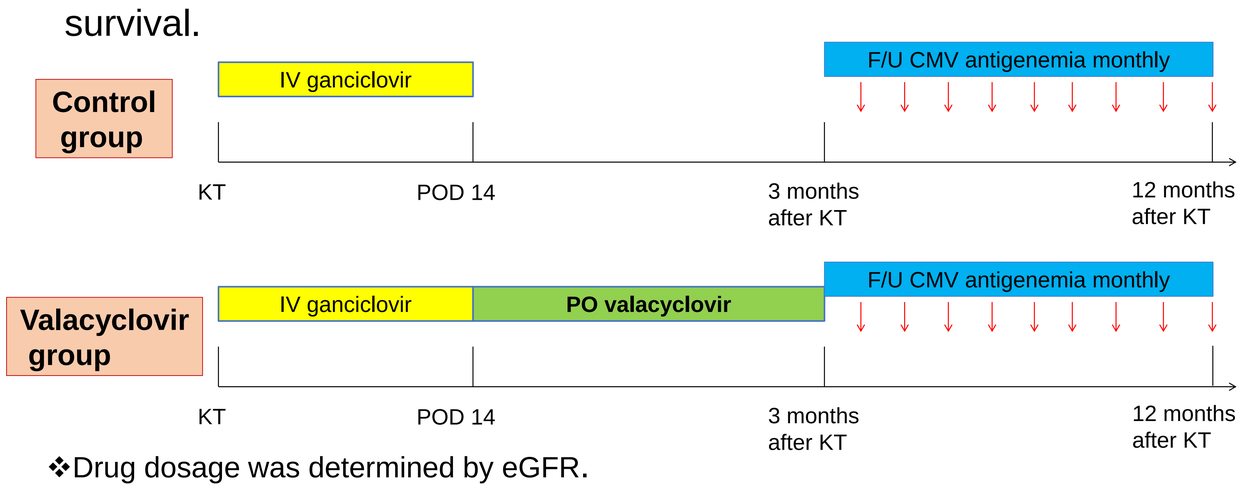
Cytomegalovirus (CMV) infection is one of the most common opportunistic infections in kidney transplant recipients (KTRs) despite the development of diagnosis and treatment for CMV infection. There are still many controversies about the strategies for the prevention of CMV infection.

OBJECTIVES

We investigated the efficacy of valacyclovir prophylaxis for 3 months compared with intravenous ganciclovir for 2 weeks for prevention of CMV infection in KTRs.

METHODS

We retrospectively analyzed 153 KTRs between September 2013 and January 2016. We investigated the incidence of CMV infection between the two groups, risk factors of CMV infection and CMV free survival.



❖Drug dosage was determined by eGFR.

RESULTS

Table 1. Comparison of clinical and laboratory parameters between control group and valacyclovir group

Valuables	Control (n=107)	Valacyclovir (n=46)	*P*-value
Recipient age at KT, years	48.4 ± 11.0	50.2 ± 11.5	0.350
Donor age at KT, years	43.9 ± 13.5	44.4 ± 13.4	0.832
Recipient male gender, n (%)	65 (60.7)	22 (47.8)	0.157
Donor male gender, n (%)	68 (63.6)	29 (63.0)	1.000
Donor type			0.591
Living: Deceased	46: 61	17: 29	
ABO-incompatible KT, n (%)	8 (7.5)	5 (10.9)	0.533
KT number			0.713
First: Second	93: 13	42 : 4	
Dialysis type before KT, n (%)			0.443
Hemodialysis	78 (72.9)	37 (80.4)	
Peritoneal dialysis	15 (14.0)	3 (6.5)	
Cause of end-stage renal disease, n (%)			0.311
Glomerulonephritis	71 (66.4)	33 (71.7)	
Diabetes mellitus	13 (15.1)	9 (22.0)	
Hypertension	9 (8.4)	3 (6.5)	
Others	10 (9.3)	0	
HLA mismatch number	3.3 ± 1.7	2.9 ± 1.8	0.139
Induction immunosuppressant, n (%)			0.854
Basiliximab	70 (65.4)	31 (67.4)	
Antithymocyte globulin	37 (34.6)	15 (32.6)	
Biopsy-proven acute rejection, n (%)	10 (9.3)	2 (4.3)	0.512
Delayed recovery of graft function, n (%)	14 (13.1)	8 (17.4)	0.465
CMV serostatus, n (%)			1.000
Donor+Recipient-	0	1 (2.2)	
Recipient+	107(100)	45 (97.8)	
BK virus nephropathy, n (%)	10 (9.3)	1 (2.2)	0.175
Panel reactive antibody, n (%)	25 (24.8)	12 (26.1)	1.000
Donor specific antibody, n (%)	15 (15.2)	8 (17.4)	0.808
Serum creatinine at diagnosis (mg/dL)	1.12 ± 0.30	1.59 ± 1.09	0.168
MDRD eGFR at diagnosis (mL/min//1.73m^2)	65.69 ± 20.05	51.96 ± 21.20	0.047
Time from KT to CMV infection, months	4.5 ± 4.4	6.2 ± 2.6	0.198

Values are expressed as means ± SDs, n (%). KT = kidney transplantation, ADPKD = autosomal dominant polycystic kidney disease, HLA = human leukocyte antigen, CMV = cytomegalovirus, MDRD eGFR = modification of diet in the renal disease estimated glomerular filtration rate

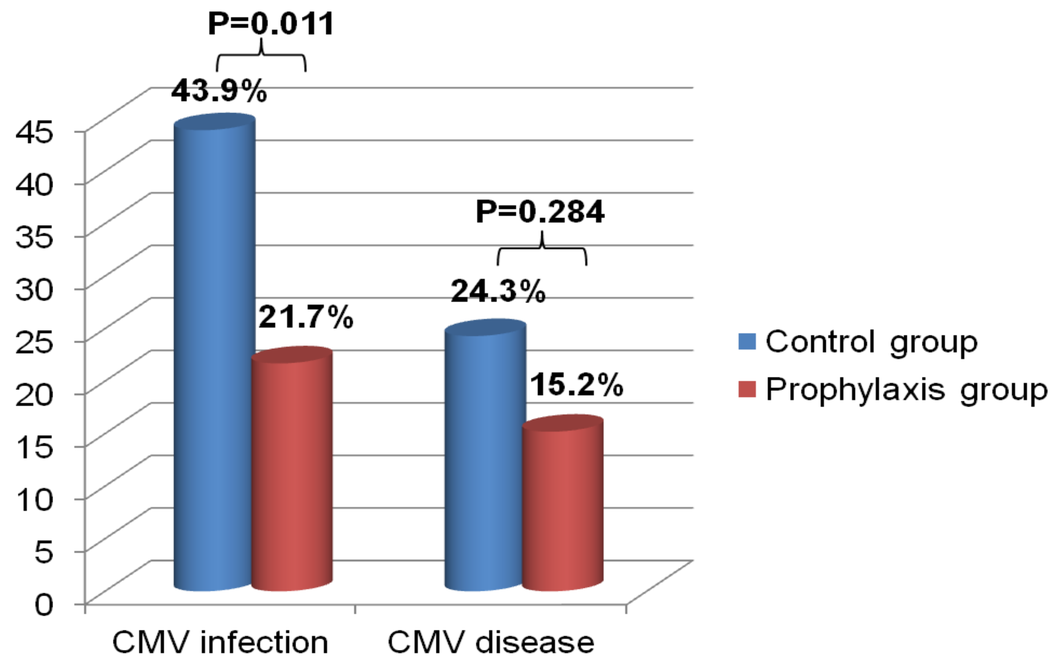


Figure 1. Incidence of CMV infection and disease between control group and valacyclovir group

Table 2. Risk factors associated with CMV infection in KTRs

Variables	Univariate			Multivariate		
	Exp (β)	95% C.I.	*P*-value	Exp (β)	95% C.I.	*P*-value
Age at KT	1.06	1.02-1.10	0.001	1.06	1.02-1.10	0.007
Male gender	0.68	0.35-1.31	0.250			
KT number	0.82	0.29-2.33	0.714			
Deceased donor	2.46	1.22-4.96	0.012	1.02	0.37-2.81	0.970
HLA mismatch number	1.09	0.90-1.32	0.403			
ATG induction	4.26	2.09-8.67	0.000	3.28	1.47-7.32	0.004
DGF	2.86	1.13-7.20	0.026	3.44	1.17-10.13	0.025
BPAR	3.76	1.08-13.10	0.038	3.47	0.87-13.80	0.077
PRA > 50%	2.03	0.95-4.34	0.068	0.98	0.35-2.74	0.971
DSA	1.22	0.49-3.06	0.665			
Valacyclovir prophylaxis	0.36	0.16-0.79	0.011	0.26	0.10-0.67	0.005

CMV = cytomegalovirus, C.I. = confidence interval, KT = kidney transplantation, HLA = human leukocyte antigen, ATG = antithymocyte globulin, DGF = delayed recovery of graft function, BPAR = biopsy-proven acute rejection, PRA = panel reactive antibody, DSA = donor specific antibody

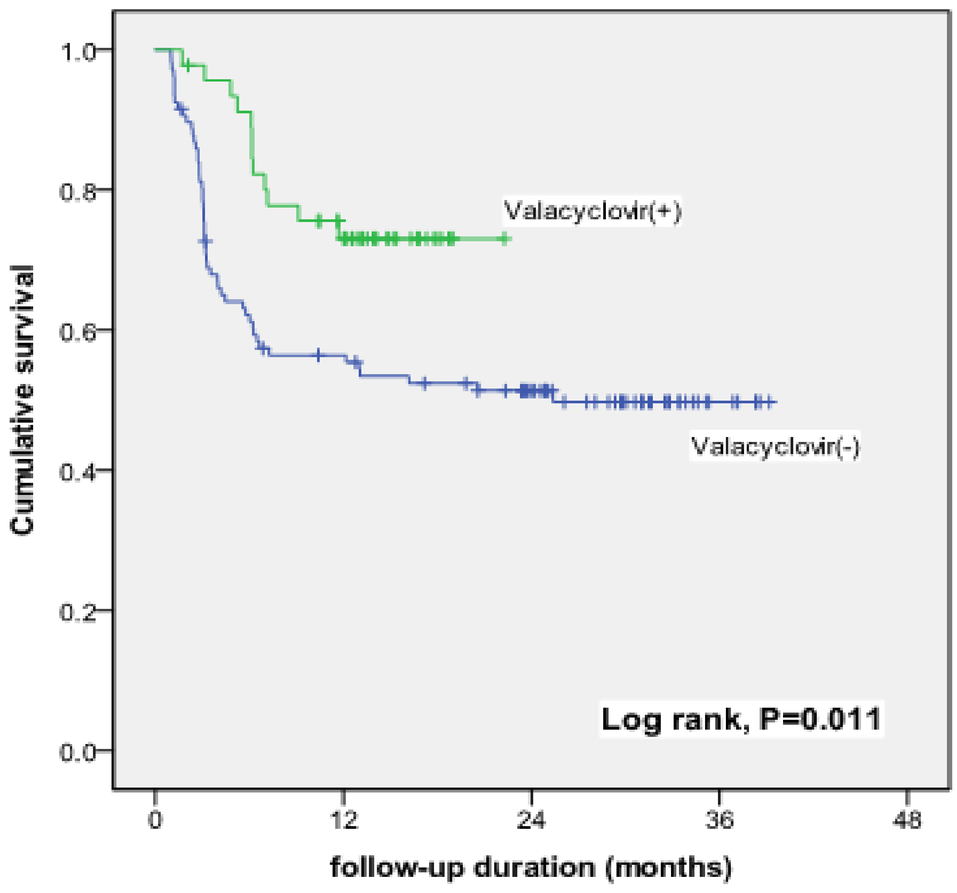


Figure 2. CMV-free survival between control group and valacyclovir group

CONCLUSIONS

Valacyclovir prophylaxis significantly reduced the incidence of CMV infection in KTRs. In particular, valacyclovir prophylaxis should be used aggressively for 3 months in KTRs with risk factors such as older age at KT, antithymocyte globulin induction, and delayed graft function.

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