III-IV after sUCBT (19%) compared to dUCBT (10%, p=0.06) but increased incidence of grade II aGVHD after dUCBT (28%) compared to 17% after sUCBT (p=0.05). CI of chronic GvHD at 2 years was 21% after dUCBT and 12% after sUCBT (p=0.15). At 2 years, CI of non relapse mortality (NRM) was 28% after dUCBT and 30% after sUCBT (p=0.87). CI of 2y RI was 21% after dUCBT whereas it was 38% after sUCBT (p=0.03). In a multivariate analysis adjusting for the differences between the 2 groups, dUCBT was associated with lower RI compared to sUCBT (HR=0.74, p=0.01). Therefore, there was an improved 2-y LFS after dUCBT (51%) compared to sUCBT (32%; p=0.03). This was confirmed in a multivariate analysis (HR=0.64, p=0.04).

Concerning pts transplanted in CR2 (n=148), there were no differences of outcomes after dUCBT (n=93) or sUCBT (n=55). At 2y, LFS was 40% after dUCBT and 48% after sUCBT (p=0.32). In a subgroup analysis of dUCBT (n=118) and sUCBT (n=51) recipients using the same conditioning regimen (CY+FLU+TBI2Gy), 2 y LFS were 54% and 33% respectively (p=0.05).

In this retrospective comparative based registry analysis, in AL pts transplanted in CR1, neutrophil recovery, GVHD and NRM were not statistically different after RIC-dUCBT or RICsUCBT, however, dUCBT recipients had decreased RI and improved LFS. For AL pts transplanted in CR2, there was no benefit of using dUCBT when compared to sUCBT.

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## Incidence and Kinetics of CMV Infection After T-Cell Depleted and Unmodified Allogeneic Hematopoietic Stem Cell Transplantation: A 10-Year Experience at Memorial Sloan-Kettering Cancer Center

Kun Xiao<sup>1</sup>, Ubonvan Jongwutiwes<sup>1</sup>, Dick Chung<sup>1</sup>, Ann A. Jakubowski<sup>2</sup>, Genovefa Papanicolaou<sup>1, 1</sup> Department of Medicine, Infectious Disease Service, Memorial Sloan-Kettering Cancer Center, New York, NY; <sup>2</sup> Department of Medicine, Adult Bone Marrow Transplant Service, Memorial Sloan-Kettering Cancer Center, New York, NY

Cytomegalovirus (CMV) is a major cause of mortality and morbidity in hematopoietic stem cell transplantation (HSCT). Transfer of CMV-specific T-cells from the donor is important for the control of CMV replication after HSCT. In this study, we compared incidence and kinetics of CMV infection and CMV disease between T-cell depleted (TCD) and unmodified (CONV) HSCT.

Methods: The cohort consisted of 714 adult HSCT recipients of bone marrow or peripheral blood stem cell allografts from September 1999 to March 2010 at Memorial Sloan-Kettering Cancer Center. Patients were followed until July 2012. TCD recipients did not receive any additional prophylactic medicinal immunosuppression for graft-vs-host disease (GvHD). CMV infection was monitored by PP65 antigenemia assay (CMV Ag) if recipient or donor were CMV seropositive and the information was prospectively stored in a computerized database. Prior to 2007, recipients of mismatched or unrelated allografts were eligible for CMV prophylaxis if recipient or donor were CMV seropositive. Anti-CMV agents were given to patients who had >= 2 cells per slide (cps) on 1 occasion or 1 cps on >= 2 consecutive occasions. Relapse, second transplant, death, and study termination (April, 2012) were considered as competing risk for CMV reactivation.

**Results:** Four hundred and three (56.5%) patients received TCD grafts and 311 (43.6%) received unmodified grafts (CONV). Recipient CMV seropositivity was 48.3% in TCD and 50.8% in CONV (p=0.5219). There are 221 (54.8%) TCD and

140 (45.0%) CONV patients received allograft from mismatched or unrelated donors (p=0.0092). Sixty-four (15.9%) TCD and 45 (14.5%) CONV patients received CMV prophylaxis (p=0.6031). CMV infections occurred in 135 (33.5%) TCD and 86 (27.7%) CONV patients. Two hundred and five (92.8%) of the 221 infections developed by day +100 post-transplant. CMV infections requiring antiviral treatment occurred in 111 (27.5%) TCD and 64 (20.6%) CONV patients (p=0.0319). Days from HSCT to first CMV infection were median 31 in TCD and 41.5 in CONV (p<0.0001). Maximum cps were median 5 (range 1 to 100) cps in TCD and 3 (1 to 100) cps in CONV (p=0.0159). Duration of reactivation was median 11 days in TCD and 8 days in CONV patients (p=0.0042). CMV disease was diagnosed in 4% in TCD patients and 2.3% in CONV patients (p=0.197).

**Conclusion:** 1) Rates of CMV infection were similar in TCD and CONV allogeneic HSCT; 2) In contrast, the kinetics of CMV replication were different between the 2 groups: In TCD, CMV infection occurred earlier, with higher peak level, and longer duration of viremia 3) Rates of CMV disease were low and similar between TCD and CONV (4% and 2.3% respectively) Our data suggests that preemptive treatment based on antigenemia is similarly effective for prevention of CMV disease in TCD and CONV allografts.

CMV Serology R+/D+         109 (27%)         104 (33.4%)         0.1665           R+/D-         86 (21.3%)         54 (17.4%)         0.5219*           R-/D+         46 (11.4%)         41 (13.2%)           R-/D-         162 (40.2%)         112 (36%)           HLA         MRD         182 (45.2%)         171 (55%)         0.0092           Mismatched         221 (54.8%)         140 (45.0%)         or Unrelated           Stem Cell Source         Bone Marrow         76 (18.9%)         52 (16.7%)         0.4602           PBSC         327 (81.1%)         259 (83.3%)         CMV Prophylaxis         Yes         64 (15.9%)         45 (14.5%)         0.6031           No         339 (84.1%)         266 (85.5%)         CMV         135 (33.5%)         86 (27.7%)         0.0939           reactivation,         number of         patients (%)         0.0319         significant         reactivation,         0.0319           significant         reactivation,         111 (27.5%)         64 (20.6%)         0.0319           significant         reactivation,         0.0319         significant         cells (384)           reactivation,         110 to 585)         41.5 (10         <0.0001         co.0001           to first		TCD N=403	CONV N=311	p-value
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R-/D+       46 (11.4%)       41 (13.2%)         R-/D-       162 (40.2%)       112 (36%)         HLA       MRD       182 (45.2%)       171 (55%)       0.0092         Mismatched       221 (54.8%)       140 (45.0%)       or Unrelated         Stem Cell Source       Bone Marrow       76 (18.9%)       52 (16.7%)       0.4602         PBSC       327 (81.1%)       259 (83.3%)       CMV Prophylaxis         Yes       64 (15.9%)       45 (14.5%)       0.6031         No       339 (84.1%)       266 (85.5%)       CMV         CMV       135 (33.5%)       86 (27.7%)       0.0939         reactivation,       number of       patients (%)       0.0319         Clinically       111 (27.5%)       64 (20.6%)       0.0319         significant       reactivation,       number       of patients (%)         Median days       31 (10 to 585)       41.5 (10       <0.0001	R+/D	86 (21.3%)	54(17.4%)	0.1005
R / D-       160 (11.4%)       111 (35.%)         HLA       112 (36%)         MRD       182 (45.2%)       171 (55%)       0.0092         Mismatched       221 (54.8%)       140 (45.0%)       or         or Unrelated       Stem Cell Source       Bone Marrow       76 (18.9%)       52 (16.7%)       0.4602         PBSC       327 (81.1%)       259 (83.3%)       CMV Prophylaxis       Ves       64 (15.9%)       45 (14.5%)       0.6031         No       339 (84.1%)       266 (85.5%)       CMV       135 (33.5%)       86 (27.7%)       0.0939         reactivation, number of patients (%)       Clinically       111 (27.5%)       64 (20.6%)       0.0319         significant reactivation, number of patients (%)       Median days       31 (10 to 585)       41.5 (10       <0.0001	R-/D+	46 (11.4%)	41 (13.2%)	0.5215
HIA       HIA         MRD       182 (45.2%)       171 (55%)       0.0092         Mismatched       221 (54.8%)       140 (45.0%)       or Unrelated         Stem Cell Source       Bone Marrow       76 (18.9%)       52 (16.7%)       0.4602         PBSC       327 (81.1%)       259 (83.3%)       CMV Prophylaxis         Yes       64 (15.9%)       45 (14.5%)       0.6031         No       339 (84.1%)       266 (85.5%)       CMV         CMV       135 (33.5%)       86 (27.7%)       0.0939         reactivation, number of patients (%)       0.0319       significant         clinically       111 (27.5%)       64 (20.6%)       0.0319         significant       reactivation, number       0.0011       ofirst         of patients (%)       Median days       31 (10 to 585)       41.5 (10       <0.0001	R-/D-	162 (40.2%)	112 (36%)	
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or Unrelated       Fit (18.03)       Fit (18.03)         Stem Cell Source       Bone Marrow       76 (18.9%)       52 (16.7%)       0.4602         PBSC       327 (81.1%)       259 (83.3%)       CMV Prophylaxis       Ves       64 (15.9%)       45 (14.5%)       0.6031         No       339 (84.1%)       266 (85.5%)       CMV       135 (33.5%)       86 (27.7%)       0.0939         reactivation,       number of       patients (%)       0.0319       significant       reactivation,         Clinically       111 (27.5%)       64 (20.6%)       0.0319       significant         reactivation,       number       of patients (%)       0.0001       to first       to 384)         Median days       31 (10 to 585)       41.5 (10       <0.0001	Mismatched	221 (54.8%)	140 (45 0%)	0.0032
Stem Cell Source         Bone Marrow       76 (18.9%)       52 (16.7%)       0.4602         PBSC       327 (81.1%)       259 (83.3%)       259 (83.3%)         CMV Prophylaxis       Yes       64 (15.9%)       45 (14.5%)       0.6031         No       339 (84.1%)       266 (85.5%)       CMV         CMV       135 (33.5%)       86 (27.7%)       0.0939         reactivation,       number of       patients (%)         Clinically       111 (27.5%)       64 (20.6%)       0.0319         significant       reactivation,       number         of patients (%)       Median days       31 (10 to 585)       41.5 (10       <0.0001	or Unrelated	221 (3 1.0/0)	1 10 ( 15.6%)	
Bone Marrow         76 (18.9%)         52 (16.7%)         0.4602           PBSC         327 (81.1%)         259 (83.3%)         259 (83.3%)           CMV Prophylaxis         Yes         64 (15.9%)         45 (14.5%)         0.6031           No         339 (84.1%)         266 (85.5%)         0.0939           CMV         135 (33.5%)         86 (27.7%)         0.0939           reactivation, number of patients (%)         0.0319         0.0319           Clinically         111 (27.5%)         64 (20.6%)         0.0319           significant         reactivation, number         0         0.0319           significant         reactivation, number         0         0.0319           significant         reactivation, number         0.0011         0.0319           significant         reactivation, number         0.0011         0.0011           of patients (%)         Median days         31 (10 to 585)         41.5 (10         <0.0001	Stem Cell Source			
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CMV Prophylaxis         Yes         64 (15.9%)         45 (14.5%)         0.6031           No         339 (84.1%)         266 (85.5%)         0.0939           CMV         135 (33.5%)         86 (27.7%)         0.0939           reactivation, number of patients (%)         0.0011         0.0019           Clinically         111 (27.5%)         64 (20.6%)         0.0319           significant reactivation, number         0.001         0.0019         0.0001           of patients (%)         Median days         31 (10 to 585)         41.5 (10         <0.0001	PBSC	327 (81.1%)	259 (83.3%)	
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to first to 384) antigenemia (range) Peak number of 5 (1 to 100) 3 (1 to 100) 0.0159 CMV-positive cells, median (range)	Median days	31 (10 to 585)	41.5 (10	< 0.0001
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(range) Peak number of 5 (1 to 100) 3 (1 to 100) 0.0159 CMV-positive cells, median (range)	antigenemia			
Peak number of 5 (1 to 100) 3 (1 to 100) 0.0159 CMV-positive cells, median (range)	(range)			
CMV-positive cells, median (range)	Peak number of	5 (1 to 100)	3 (1 to 100)	0.0159
cells, median (range)	CMV-positive			
(range)	cells, median			
	(range)			
Median 11 (1 to 258) 8 (1 to 107) 0.0042	Median	11 (1 to 258)	8 (1 to 107)	0.0042
duration,	duration,			
days (range)	days (range)	10 ( 40/)	7 (2,2%)	0.107
CNIV DISEASE, $16(4\%)$ / (2.3%) 0.19/	CIVIV DIsease,	16 (4%)	7 (2.3%)	0.197
number of	number of			

TCD indicates, T-cell depleted transplant; CONV, unmodified transplant; CMV, cytomegalovirus; R+, recipient seropositive; R-, recipient seronegative; D+, donor seropositive; D-, donor seronegative; HLA, human leukocyte antigen; MRD, matched related donor; PBSC, peripheral blood stem cells;

\* Comparing recipient seropositivity between TCD and unmodified graft