



Prediction of CMV reactivation after allogeneic hematopoietic stem cell transplantation by pre-transplant anti-CMV IgG titers in donors and recipients



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Background

D-/R+ CMV serostatus is known to be a risk factor for CMV reactivation after allogeneic hematopoietic stem cell transplantation (allo-HSCT).

Aims

- Explore the association of pre-transplant anti-CMV IgG titers in both donors and recipients with CMV reactivation after allo-HSCT
- Determine titer thresholds for predicting CMV reactivation.

Methods

- **When?** 5-year **case-control** study (2018-2022)
- **Where?** Pediatric Immuno-Hematology Department in the National Bone Marrow Transplant Center in Tunisia
- **Who?** • All cases of CMV reactivation in allo-HSCT recipients aged between 6 months and 16 years • 2 controls for 1 case randomly selected • Patients transplanted for severe immuno-deficiency were excluded (their pre-transplant serologies were inconclusive)
- **How?** • **Before allo-HSCT** : Anti-CMV IgG titer systematically determined in both donors and recipients / Ratio IgG R/D calculated • **After allo-HSCT** : Preemptive strategy → weekly monitoring by quantitative CMV PCR up to 100 days post-transplant
- **Definition: CMV reactivation:** plasmatic viral load >150 IU/ml indicating preemptive therapy

Results

❖ **Study group** = 24 patients with CMV reactivation **Control group** = 48 patients

Table I. Univariate analysis of potential risk factors for CMV reactivation in HSCT recipients

Variable	Cases (n=24)	Controls (n=48)	p value
Recipient age (years)	4.36 ± 4.0	5.79 ± 3.8	
Pretransplant CMV serostatus			
• D-/R+	35%	10%	0.013
• Others	65%	90%	
Recipient anti-CMV IgG titer	203.3 ± 139.1	115.9 ± 131.2	0.012
Donor anti-CMV IgG titer	162.4 ± 175.3	255.5 ± 186.8	0.046
Anti-CMV IgG titer R/D ratio	238.6 ± 479.5	6.7 ± 18.4	0.049

❖ Thresholds for predicting CMV reactivation:

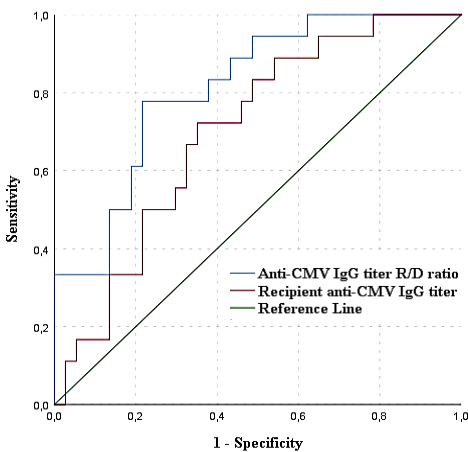


Fig.1 : ROC curves for recipient anti-CMV IgG titer and anti-CMV IgG titer R/D ratio

Table II: Area under the ROC curves and thresholds values of recipient anti-CMV IgG titer and anti-CMV IgG R/D ratio

	Recipient anti-CMV IgG titer	Anti-CMV IgG titer R/D ratio
Threshold value	113.75	1
Sensitivity	72.2%	77.8%
Specificity	64.9%	78.4%
Area under the ROC curve	0.701	0.814
p value	0.016	0.0001

Conclusion

Our data demonstrate that a high titer of anti-CMV IgG in recipient is predictive of CMV reactivation after allo-HSCT and that the anti-CMV IgG titer in the donor would be protective when it is higher than that in the recipient.