Cytomegalovirus serology and replication remain associated with solid organ graft rejection and graft loss in the era of prophylactic treatment

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BACKGROUND
Cytomegalovirus (CMV) replication has been associated with more risk for solid organ graft rejection. We wondered whether this association still holds when patients at risk receive prophylactic treatment for CMV.

METHODS
We correlated CMV infection, biopsy-proven graft rejection, and graft loss in 1,414 patients receiving heart (n=97), kidney (n=917), liver (n=237), or lung (n=163) allografts reported to the Swiss Transplant Cohort Study.

RESULTS
Recipients of all organs were at an increased risk for biopsy-proven graft rejection within 4 weeks after detection of CMV replication (hazard ratio [HR] after heart transplantation, 2.60; 95% confidence interval [CI], 1.34-4.94, P<0.001; HR after kidney transplantation, 1.58; 95% CI, 1.16-2.16, P=0.02; HR after liver transplantation, 2.21; 95% CI, 1.53-3.17, P<0.001; HR after lung transplantation, 5.83; 95% CI, 3.12-10.9, P<0.001. Relative hazards were comparable in patients with asymptomatic or symptomatic CMV infection. The CMV donor or recipient serological constellation also predicted the incidence of graft rejection after liver and lung transplantation, with significantly higher rates of rejection in transplants in which donor or recipient were CMV seropositive (non-D-/R-) compared with D- transplant or R- transplant (HR, 3.05; P=0.002 for liver and HR, 2.42; P=0.01 for lung transplants). Finally, graft loss occurred more frequently in non-D- or non-R- compared with D- transplant or R- transplant in all organs analyzed. Valganciclovir prophylactic treatment seemed to delay, but not prevent, graft loss in non-D- or non-R-transplants.

CONCLUSION
Cytomegalovirus replication and donor or recipient seroconstellation remains associated with graft rejection and graft loss in the era of prophylactic CMV treatment.