

Evaluating the balance between surface expression of inhibitory and activating NK cell receptors and soluble forms of their ligands in CMV infection after allogeneic HSCT

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Natural Killer (NK) cells are the first lymphocytes reconstituting after allogeneic hematopoietic stem cell transplantation (HSCT). By interacting with their ligands, the activating and inhibitory receptors regulate NK cells, critical for recognition of viral infected cells. For immunocompromised HSCT recipients the post-transplant cytomegalovirus (CMV) infection remains one of the most common, life-threatening complications.

This study investigates the relationships between surface expression of ILT-2, ILT-4 (inhibitory) and NKp46 (activating) receptors and serum concentration of their soluble ligands with the development of post-transplant CMV infection.

Expression of NK cell receptors was determined using flow cytometry at four time points after transplantation in 47 patients. The concentration of soluble ligands was evaluated by ELISA in serum collected 30 (n=120) and 90 (n=70) days post-HSCT.

The number of NK cells expressing ILT-4, as well as concentration of the soluble form of its ligand HLA-F, was lower at day +90 compared to day +30 ($p=0.0454$ and $p<0.0001$) after transplantation. No differences in expression of ILT-2 were observed, however recipients with post-transplant CMV infection had a decreased serum concentration of its ligand HLA-G at day +30 (7.13 vs 9.69 ng/mL, $p=0.0406$). Frequency of NKp46-expressing NK cells was lower among CMV-infected HSCT recipients on day +60 ($p=0.0041$) and +90 ($p=0.0302$).

In conclusion, decreased frequency of ILT-4-expressing cells may help in leaning the balance towards the activating receptors after HSCT. However, the frequency of the activating receptor NKp46 seems to decrease after CMV infection.

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