HEMATOLOGY

NK GENE DONOR SELECTION IN AML

Acute myelogenous leukemia (AML) is diagnosed in 12,000 patients annually in the USA. Patients who receive transplants from donors with a group B killer immunoglobulin-like receptor (KIR) haplotype have an improved relapse-free survival compared with those with group A/A haplotype donors, although the reasons for this difference are unclear. Now, a study has shed light on how to better select donors with the group B KIR haplotype to improve outcome.

Only a small number of HLA-matched transplants are also matched for KIR. Since two-thirds of donors have at least one KIR B haplotype, which is associated with a favorable outcome, other means to subdivide this group are needed. Cooley *et al.* analyzed the KIR locus to identify which B-specific genes improved transplantation outcome. The investigators hypothesized that centromeric and telomeric segments of the KIR haplotype may have a differential effect on function.

Donors with centromeric KIR B haplotype genes had a better transplantation outcome and decreased relapse compared to those with telomeric KIR B genes. The number of centromeric or telomeric KIR B domains (0–4) also affected outcome, which was better with donors with two or more KIR B domains. Moreover, those homozygous for the centromeric KIR B domain had significantly better protection against relapse and improved overall survival. “The most important finding is that donors with a homozygous centromeric pattern resulted in the best disease-free survival, and this was almost completely accounted for by protection against AML relapse,” explains Jeffrey Miller, senior investigator of the study. This study shows the success of transplantation can be improved by selecting donors on the basis their KIR type, which could reduce relapse risk by 50%.

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Original article Cooley, S. *et al.* Donor selection for natural killer cell receptor genes leads to superior survival after unrelated transplantation for acute myelogenous leukemia. *Blood* **116**, 2411–2419 (2010)