EVALUATION OF "CORE/ NON-CORE" MODEL APPLICABILITY IN A BRAZILIAN COHORT OF BONE MARROW RECIPIENTS

Giselle Groetares de Lima, Newton Freitas Centurião, Jobson Ferraz do Nascimento, Gabriella Camerini Maciel, Elena Outon Alonso, Margareth Afonso Torres.

Hospital Israelita Albert Einstein, São Paulo, SP, Brazil

INTRODUCTION

In unrelated bone marrow transplantation, the importance of evaluating the permissiveness of HLA-DPB1 alleles between recipients and donors by T-cell epitope (TCE) model has well-known impacts in post-transplant outcomes. Optimal balance of T cell alloreactivity sufficient for graft versus leukemia effect, but not severe graft-versus-host disease (GVHD), has been the primary goal of allogeneic hematopoietic stem cell transplantation. With this goal, in a study published by Arrieta-Bolanos and collaborators a model was proposed for stratifying the permissive incompatibilities in HLA-DPB1 TCE3 alleles into groups of lower ("core" group) and higher ("non-core" group) immunogenicity and its use to select unrelated donors (UD) seeking better outcomes. As HLA-DPB1 incompatibility is observed in over 80% of UD and recipient pairs, defining permissive HLA-DPB1 incompatibilities represents a major challenge in matched UD transplant.

OBJECTIVE

To describe the frequency of "core" and "non-core" TCE3 HLA-DPB1 alleles in recipients from the Brazilian registry (REREME) to evaluate the applicability of the "core/non-core" model in our population.

METHODS

High-resolution HLA-DPB1 typing from 972 bone marrow recipients from REREME, typed between 2018 and 2023 at a tertiary hospital, were evaluated by the TCE mismatch stratification model using the online DPB1 TCE webtool from the IPD-IMGT/HLA Database (version 2). Those alleles classified into the TCE3 group were stratified into "core" and "non-core" groups according to the study previously cited. We couldn't classify 15 patients (HLA-DPB1*27:01, -DPB1*60:01, -DPB1*63:01, -DPB1*66:01, -DPB1*133:01 and -DPB1*584:01) in this model, which were excluded from the analysis.

RESULTS

In our cohort of HLA-DPB1 alleles, 8% (159/1914) was TCE1, 12% (232/1914) TCE2 and 80% (1538/1914) TCE3 group. We found that 63% of patients (607/957) had both HLA-DPB1 alleles from the TCE3 group, being considered our population of interest for evaluation. Of those, 54% (328/607) had both TCE3 "core" alleles, and 46% (279/607) had at least one "non-core" allele. We also evaluated the frequency of possible combinations between groups, as shown in figure 1.

CONCLUSION

The majority of HLA-DPB1 from Brazilian recipients was classified into the TCE3 group, indicating the possible impact of using a model able to stratify this group into alleles with different impacts on immunogenicity. We found a considerable proportion of patients (29%) with at least one non-core TCE3 allele allowing the selection of a donor with "core" HLA-DPB1 permissive mismatch to reduce the risk of relapse in malignant diseases. In our cohort, a proportion of patients with two TCE3 "core" alleles exceeds almost one third of those analyzed (328/957), highlighting the importance of considering this model in donor selection aiming to lower risks of rejection and GVHD. New studies must address the real impact of this model on patients' outcomes.

KEYWORDS

HLA-DPB1, TCE3 core, TCE3on-core