ASSESSMENT OF ALLOIMMUNE REACTIVITY IN DONOR SELECTION FOR HEMATOPOIETIC STEM CELL TRANSPLANTATION – CORRELATION BETWEEN DONOR-SPECIFIC ALLOANTIBODIES, PHYSICAL AND VIRTUAL CROSSMATCH

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Donor-specific anti-HLA antibodies (DSAs) are well described as a risk factor for unfavorable outcome in HLA-mismatched hematopoietic stem cell transplantation (HSCT). Testing patients for alloimmune reactivity before allo-HSCT has now become standard practice to optimize donor selection.

The objective of this study was to evaluate the correlation between DSAs, physical flow cytometric crossmatch (FCXM, PXM) and virtual XM (VXM) for assessing allosensibilization before HSCT.

The analysis included 129 patients with malignant hematological diseases and 165 related donors. Forward, reverse and auto-FCXM were performed. HLA antibodies were specified using Luminex SAB assays. VXM was determined based on the donor HLA and recipient DSAs.

Out of 340 PXM, 73 were positive. A concordance was observed between positive PXM and virtual ones in 28 samples (38.4%). In 45 (71.6%) of the samples, PXM was positive, without detected DSAs. In the negative PXMs (n=267) the concordance with VXM was 90.6%. In 25 (9.4%) samples the negative PXM did not correspond to the positive VXM, and DSAs were mainly against HLA class II (n=17), with MFI <5000.

The correlation between VXM and physical FCXM depends on the MFI values and locus specificity of DSAs. VXM could be taken into consideration in the process of donor search. Additional techniques (ex:Luminex C1q assay) may be used to more accurately characterize DSAs, which will serve to assess the transplant risk and the need of desensitization. The decision to transplant for a specific recipient/donor pair should be based on alloantibody profile and a PXM.

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