NATIONAL PUBLIC STEM CELL DONOR BANK – CHARACTERIZATION OF CORD BLOOD POOL STORED FOR ALLOGENEIC TRANSPLANTATION

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Umbilical cord blood is an effective non-invasive source of hematopoietic stem cells (HSC) for transplantation. Allele-level HLA compatibility, along with sufficient cell dose of high-quality cord blood units (CBUs), have been associated with better transplant outcomes.

The **aim** of this study is to analyze the status of CBUs stored for allogeneic HSC transplantation in the Bulgarian National Public Stem Cell Donor Bank (NPSCDB).

Material and methods: The analysis included 329 CBUs from the NPSCDB inventory listed in the WMDA database. CBUs were automatically processed (Sepax system), CD34+ cells and viability were determined according ISHAGE protocol. HLA typing was done by SSOP and/or Sequencing-based methods.

Results: Median pre-freezing content per units was: TNC – 89.73×10^7 (range $90\text{-}124 \times 10^7$), CD34+ cells - 3×10^6 and viability (both for TNCs and CD34+ cells >95%). All units have been typed for HLA-A and -B (28% at allele level), -C (95% at allele level), -DRB1 (98% at allele level) loci. The introduction of a high-resolution typing by NGS allowed extended typing, including HLA-A,-B,-C,-DRB1,-DQB1,-DQA1 and -DPB1 loci. Most of the HLA alleles identified are common in the Bulgarian population, presented at similar frequencies in the Bulgarian Bone Marrow Donor Registry and comparable with those from the South European populations. However, some rare - DQB1*03:74 (0.0008), DPB1*107:01 (0.0083), and very rare - A*02:372 (0.0053), DQB1*03:113 (0.0008) alleles were observed.

Conclusion: This is the first complex analysis of the NPSCDB inventory listed for allogeneic transplantation. In addition to donor selection this information will also be useful for population genetic and disease association studies.