Blood 142 (2023) 1034–1036

The 65th ASH Annual Meeting Abstracts

ORAL ABSTRACTS

711.CELL COLLECTION AND PROCESSING

Cryopreserved Versus Non-Cryopreserved Peripheral Blood Haematopoietic Stem Cells for Autologous Stem Cell Transplantation in Multiple Myeloma: A Comparative Analysis from the Chronic Malignancies Working Party of EBMT and WBMT

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Introduction: Globally, most transplant centres cryopreserve peripheral blood haematopoietic stem cells (PBSC) for use in a subsequent autologous haematopoietic cell transplant (AHCT), utilizing Dimethyl sulfoxide (DMSO) as a cryoprotectant. In contrast, non-vryopreserved PBSC are used in autologous transplants for multiple myeloma (MM) in some countries with more limited resources. We therefor compared standard MM AHCT outcomes between a large transplant centre in Algeria and EBMT registry data.

Patients and Methods: This was a retrospective, international, multi-centre, matched-pair analysis between a tertiary transplant center in Algeria and EBMT-affiliated centres in 23 countries. A total of 437 consecutive adult patients undergoing a first MM AHCT in Oran, Algeria, between 2009 and 2020 using non-cryopreserved PBSC. All patients had given informed consent for approved research. PBSC mobilization was performed using G-CSF alone (10μg/kg) for 5 days. Stem cell collection was performed on either the Cobe Spectra or Optia using standard protocols. PBSCs were stored in a 4°C refrigerator immediatly post-collection. PBSC viability was calculated by standard Trypan Blue and flow cytometric techniques. The conditioning regimen was either Melphalan 140 mg/m ^{2} or 200 mg/m ^{2}. PBSCs were infused 24 hours following Melphalan administration. Patients from Oran were matched to a maximum of 4 patients from an overall cohort of 64,030 patients from 420 EBMT-affiliated centres receiving cryopreserved stem cells over the same time-period. Pair matching was based on the following criteria: (1) patient gender (M,F), (2) MM sub-classification (IgG, IgA, light-chain only), (3) disease status at AHCT (CR, VGPR, PR, relapse/progression), (4) Melphalan conditioning dosage (140 or 200), (5) interval from diagnosis to AHCT, (6) date of AHCT, and (7) age at AHCT. Exact matching was used for the first four variables; propensity score matching was used for the remaining three. Primary endpoints were neutrophil and platelet engraftment as defined by standard EBMT criteria. Secondary endpoints included non-relapse mortality (NRM). The cumulative incidence of neutrophil and platelet engraftment was estimated using the crude cumulative incidence estimator with death was as competing event. The same method was used to estimate NRM as a competing event. Groups were compared using Gray's test.

Results: In Oran, 437 MM patients were autografted between 2009 and 2020. Induction regimens (available in 436/437) were heterogeneous (VAD (11.2%), VD (13.3%), CTD (1.4%), VTD (43.1%), VRD (1.4%), VCD (28.0%), TD (0.5%), PAD (0.5%) or others (0.7%)) reflective of local practice. Most patients had one line of induction therapy (n=333 (76.4%); 98 patients (22.5%) had a second line of therapy prior to mobilization. The mean number of collection procedures was two (range (r), 1-3). The average PBSC viability was 95% (r, 93.8-98.5%). Complete matching variable data was available in 405 Oran patients (93%) and 19/405 (4.7%) could not be matched to EBMT patients. These were mostly younger patients (16/19<50 years at AHCT) who received low dose melphalan (17/19 received 140 mg/m ^{2} melphalan). Of the 386 patients, 357 patients had the required matches of 4 patients from the EBMT database and were used in this analysis. For the patients from Oran, the median dose of PBSCs collected was 3.2x10 ^{6} CD34+ cells/kg (interquartile range (IQR, 2.4-4.5); for EBMT patients (available in 12%), it was 3.7x10 ^{6}CD34+ cells/kg (IQR, 2.8-4.9) (p=0.22). Regarding engraftment kinetics, the median times to neutrophil engraftment for the non-cryopreserved and EBMT cryopreserved cohorts were 12 (IQR, 11 to 14) days, and 12 (IQR, 11 to 13) days, respectively (p=0.11). Moreover, no significant difference was evident in the median time to platelet engraftment>20x10 ^{9}/L: non-cryopreserved 12 (r, 11 to 14) days and EBMT cryopreserved 12 (r, 11 to 14) (p=0.39) (Figure 1). Non-relapse mortality at day 100 (NRM) rate was 1%(0-2%) in Oran and 1% (1-1%) in EBMT (p=0.4).

Conclusion: This large co-operative study between Oran and EBMT found that neutrophil and platelet engraftment rates were similar in the cryopreserved and non-cryopreserved matched cohorts. Moreover, there was no difference in NRM. The use of non-cryopreserved PBSC for MM AHCT in countries with limited resources is more straighforward and less costly.

Disclosures Carpenter: *Vertex Pharmaceuticals:* Membership on an entity's Board of Directors or advisory committees; *Novartis:* Membership on an entity's Board of Directors or advisory committees; *BlueBird Bio:* Membership on an entity's Board of Directors or advisory committees. **Nicholson:** *Novartis:* Honoraria, Membership on an entity's Board of Directors or advisory committees; *Kite-Gilead:* Honoraria, Membership on an entity's Board of Directors or advisory committees, Research Funding. **Huynh:** *Medac:* Other: Advisory board; *Servier:* Other: Advisory board; *Pfizer:* Other: advisory board; *Astellas:* Other: Advisory board; *Jazz:* Other: travel fees, advisory board; *Novartis:* Other: travel fees, advisory board; *Neovii:* Other: Advisory board. **Gribben:** *AbbVie:* Consultancy, Speakers Bureau; *Janssen Pharmaceuticals, Inc:* Consultancy, Research Funding, Speakers Bureau; *AstraZeneca:* Consultancy, Research Funding; *Bristol Myers Squibb:* Speakers Bureau; *Novartis:* Consultancy; *Kite, A Gilead Company:* Consultancy, Speakers Bureau. **Tucci:** *Janssen:* Other; *Takeda:* Other; *Gentili:* Other; *Sanofi:* Other; *Eli Lilly:* Other; *Kiowa Kiryn:* Other; *Beigene:* Other. **Beksac:** *BMS:* Speakers Bureau; *Takeda:* Speakers Bureau; *Amgen:* Speakers Bureau; *Pfizer:* Other: Advisory Board; *Menarini:* Other: Advisory Board; *Janssen:* Other: Advisory Board, Speakers Bureau. **Schönland:** *Janssen, Prothena, Celgene, Binding Site, Jazz:* Other: Travel grant; *Prothena, Janssen, Sanofi:* Research Funding; *Janssen, Takeda, Pfizer, Prothena:* Honoraria. **McLornan:** *Abbvie:* Honoraria; *Novartis:* Honoraria; *UK ALL RIC TRIAL - DSM board:* Other: participation on a data safety monitoring board or advisory board; *EBMT Scientific Council Member:* Other: Chair of EBMT CMWP; *Jazz Pharma:* Honoraria; *Imago Biosciences:* Research Funding.

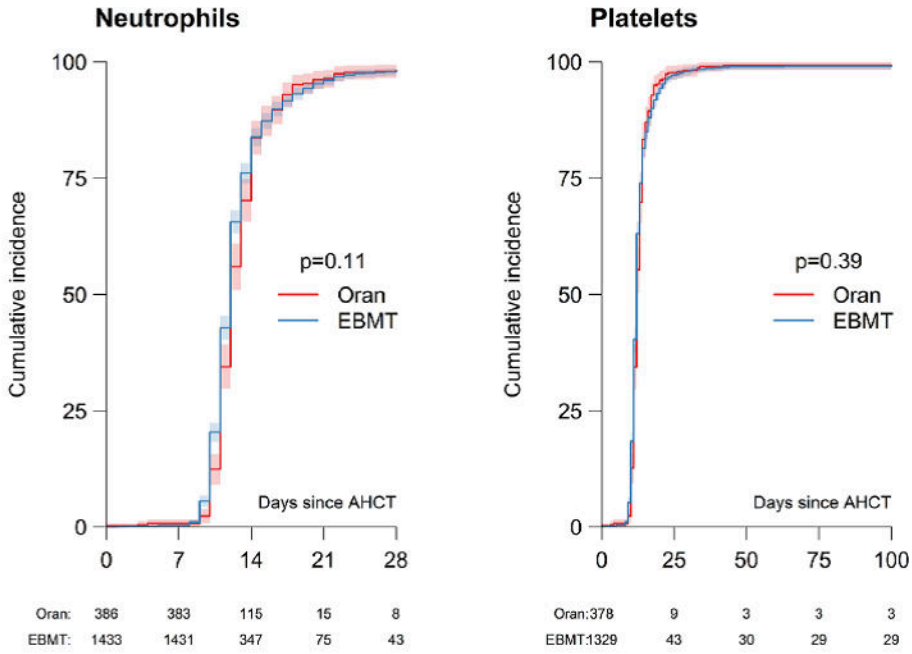

Figure 1: Cumulative incidence curves of Neutrophil and platelet engraftment after AHCT.

Figure 1

https://doi.org/10.1182/blood-2023-182808