P1338 INFUSION OF DIMETHYL SULFOXIDE (DMSO) - DEPLETED AUTOLOGOUS PERIPHERAL BLOOD PROGENITOR CELLS REDUCES POST-AUTOGRAFTING SEVERE GASTRIC TOXICITIES AND HOSPITALIZATION LENGTH

**Topic:** 22. Stem cell transplantation - Clinical

Valeria Filipponi¹, Marco Antonacci¹, Maria Cristina Scerpa², Ugo Coppetelli², Salvatore Perrone², Natalia Centra², Sergio Mecarocci², Luciano Fiori², Federica Brinchì Giusti², Piera Giovangrossi³, Francesco Equitani³, Elettra Ortu La Barbera², Giuseppe Cimino¹, ²

¹ Department of Translational and Precision Medicine, Hematology, Sapienza University of Rome, Rome, Italy; ² Hematology Unit Santa Maria Goretti Hospital, ASL Latina, Latina, Italy; ³ Immunoematology and Trasfusion Medicine Service Santa Maria Goretti Hospital, ASL Latina, Latina, Italy

**Background:** High-dose chemotherapy (HD CHT) and autologous blood stem cell transplantation (ABSCT) are the cornerstone in the treatment of several hematologic malignancies. Cryopreservation of stem cells needs the use of DMSO as cryoprotectant. Unfortunately, DMSO may induce some severe adverse effects during and after autograft infusion, justifying the attempts to deplete DMSO. Despite several studies have demonstrated that DMSO depletion did not affect engraftment of peripheral blood progenitor cell (PBPC), there is still few and inconclusive data on its impact on post-infusion toxicities.

**Aims:**

Since from March 2021 we started to remove DMSO, we are comparing infusion and post-infusion outcome in 55 patients consecutively autografted with DMSO depleted (25 pts; group1) or undepleted (30 pts; group 2) at the hematology unit of the S.M. Goretti Hospital of Latina (Italy) from January 2019 and December 2021, aiming to evaluate whether post-infusion toxicities and clinical outcome may differ between the two groups.

**Methods:** The DMSO was removed by rinsing the units with the Sepax S-100 (Biosafe S.A. Eysins, Switzerland) cellular centrifugation instrument that automatically processes blood or haematic components in a closed and sterile environment followed by the PBSC washing, using the dedicated CS-600 kit. The clinical characteristics, biological parameters of autografted PBPC and post-infusion outcome of the 55 patients entered this study are reported in table 1. In group 1, 12 patients had a diagnosis of multiple myeloma (MM) and 13 of non Hodgkin’s lymphoma (NHL), whereas in group 2, 17 patients were affected by MM, 6 by Hodgkin’s lymphoma (HL) and 7 by NHL.

**Results:** As reported in table 1, the amount of harvested and infused CD34+ cells were similar in the two groups. To evaluate viability in group 1 we used a different ISHAGE protocol with lower thresholds. This consideration explains the lower viability rates observed in group 1 respect to those of group 2. No differences between the two groups were observed in the average time to neutrophil (N≥0.5 x 10^9/L) and platelet (PLTs ≥20x 10^9/L) recovery (10.4 vs 10 days and 12.5 vs 11.7 days, respectively), as well as in the number of transfused RBCs and PLTs units. No grade 3-4 infusion reactions were observed in any case. By contrast, as concern the post-infusion adverse events, in group 2 we observed a significant higher incidence of grade 3 mucositis (37% in group 2 vs 4% in group 1, p=0.003) and of episodes of nausea associated with vomiting (40% in group 2 vs 8% in group 1, p=0.007). Occurrence of febrile neutropenia, sepsis and other documented infections were similar between the two groups. Overall, the average hospitalization length after the infusion was 17 days (median=16) for group 2 and 14 days (median=13) for group 1 (p=0.059).

**Image:**
Summary/Conclusion:

Present findings for the first time show a significant lower incidence of severe post infusional gastrointestinal adverse effect in patients receiving depleted DMSO autograft that may result in a reduced hospitalization length. As reported in animal model, this finding may suggest a direct gastrotoxicity of DMSO, that can potentiate that of chemotherapy. Whether these data may be confirmed in future larger studies they further suggest the usefulness of DMSO depletion from PBPC autografts.