Leukemia Supplements (2012) **1**, S1

www.nature.com/leusup

INTRODUCTION

Controversies in Stem Cell Transplantation and Cellular Therapies (COSTEM): introduction by the co-chairpersons of the COSTEM Congress

Leukemia Supplements (2012) **1,** S1; doi:10.1038/leusup.2012.1

Since the introduction of stem cell transplantation into treatment of hematological diseases about 50 years ago, the number of stem cell transplantations has increased dramatically over the past years and is now being considered as the most powerful treatment approach to cure patients with hematological diseases.

Despite the ongoing enormous expansion in clinical trials and basic research, as well as in cutting-edge technology in stem cell transplantation and cellular therapies, major questions regarding indication, timing and patients' selection remain. Alternative non transplant treatment options have to be compared with transplant options, especially regarding the inherent risk of treatment-related complications of stem cell transplantation such as graft-versus-host disease and infectious complications. Moreover, type of conditioning pre-transplantation regiments and specifically traditional myeloablative versus non-myeloablative, reduced intensity and lately reduced toxicity, type of pre-transplantation protocols aiming in keeping the anti-tumoral effect of the transplant while reducing transplant-related organ toxicities is still debatable. It is conceivable that in the future the type of conditioning will be age- and disease-specific. New cytotoxic and immunosuppressive compound formulations may change the picture. Similarly, the optimal graft source, cell subset composition and cell dose are yet to be determined. Valid alternatives include human leukocyte antigen-matched unrelated bone marrow versus mobilized peripheral blood, granulocyte-colony-stimulating factor versus CXCR4 blockade-based mobilization autologous stem cells and human umbilical cord blood versus haploidentical donor-mobilized stem cells. The role of mesenchymal and T regulatory cells for tolerance induction on one hand and cytotoxic T cells and natural killer cells for anti-tumor effect on the other, in the future engineered grafts, is an attractive topic, as well. Finally, transplantation should be considered as only one step in the anti-malignant therapy aiming in conquering the disease, and as such should be combined with pre- and post-transplant targeted therapy aiming to achieve minimal tumor burden pre-transplantation and to prevent tumor progression and relapse post transplantation. Monoclonal antibodies, hypomethylation compounds and novel agents are only some of the armaments available.

The First International Congress on Controversies in Stem Cell Transplantation and Cellular Therapies functioned as an exclusive forum for international experts to share and compare experiences in order to outline the appropriate treatment for patients. This innovative form of congress was unique in that they tried to resolve controversies in the clinical care of patients by giving short controversial statements by either *pro* or *contra* followed by an extensive discussion. In addition, highly actual questions such as autologous stem cell collection for workers in nuclear power plants were discussed by international experts. Participants had the advantage of discussing and debating these unresolved issues with the leading experts in all controversial fields of stem cell transplantation and cellular therapy. Allowing ample time for speaker–audience discussion, the congress aims at reaching up-to-date and agreed-upon answers to ongoing debates even when proof is lacking, through evidence-based medicine and expert opinion.

The lively debates after each controversial topic highlighted the unmet need for further collaborative clinical trials within the transplant community. In the current Leukemia Supplement, we tried to summarize some of the debates and topics that were discussed during the 3-day meeting by the most important experts in the field, but moreover convey to the reader the atmosphere and spirit of the meeting. As the meeting was a great success and helped clarifying open issues in the field of transplantation and cellular therapies, we believe that controversial topics and meetings should continue in order to advance stem cell transplantation.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

N Kröger[1] and A Nagler[2]
[1]*Department of Stem Cell Transplantation, University Hospital Hamburg, Hamburg, Germany and*
[2]*Division of Hematology and Cord Blood Bank, Chaim Sheba Medical Center, Tel Hashomer, Israel*
E-mail: n.kroeger@uke.de or a.nagler@sheba.health.gov.il