multivariate analysis. TBI regimens have less impact on blood counts immediate post-transplant period. Despite higher rates in acute and chronic GVHD with FluTBI, overall outcomes after HCT are comparable to non-TBI containing NMA regimens for lymphoma.

### 355

**Pretransplant Immunosuppression Followed By Reduced Toxicity Conditioning and Stem Cell Transplantation in High Risk Thalassemia**

Suradet Hongeng¹, Samart Pakakasama².
Usanarat Anurathapan¹, Borje S. Andersson⁴.
¹Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand; ²Pediatrics, Ramathibodi hospital, Bangkok, Thailand; ³Paediatric Hematology/Oncology, CancerCare Manitoba, Winnipeg, MB, Canada; ⁴Stem Cell Transplantation and Cellular Therapy, M. D. Anderson Cancer Center, Houston, TX

Patients with class 3 thalassemia with high-risk features for adverse events after high-dose chemotherapy with hematopoietic stem cell transplantation (HSCT) are difficult to treat, tending to either suffer serious toxicity or fail to establish stable graft function. We performed HSCT in 21 such patients age >7 years and hepatomegaly using a novel approach with pretransplant immunosuppression followed by a myeloablative reduced-toxicity conditioning regimen (fludarabine and i.v. busulfan [Flu-IV Bu]) and then HSCT. The median patient age was 15 years (range, 10 to 20 years). Before the Flu-IV Bu + antithymocyte globulin conditioning regimen, all patients received 1 to 2 cycles of pretransplant immunosuppression with fludarabine and dexamethasone. Fifteen patients received a related donor graft, and 6 received an unrelated donor graft. An initial prompt engraftment of donor cells with full donor chimerism was observed in all 18 patients, but 2 patients developed secondary mixed chimerism that necessitated withdrawal of immunosuppression to achieve full donor chimerism. Three patients (14%) had acute grade III-IV graft-versus-host disease, and 5 patients had limited chronic graft-versus-host disease. The only treatment-related mortality was from infection, and with a median follow-up of 50 months (range, 4 to 83), the 5-year overall survival and thalassemia-free survival were 93%. We conclude that this novel sequential immunomodulatory pretransplantation conditioning program is safe and effective for patients with high-risk class 3 thalassemia exhibiting additional comorbidities.

### 356

**Outcome Of Hematopoietic Stem Cell Transplantation For Wiskott-Aldrich Syndrome**

Sakara Hutspardol¹, Adam Gassas², John Doyle³, Muhammad Ali⁴, R. Maarten Egerle¹, Eyal Grunebaum⁴.
¹Tal Schechter-Finkelstein¹, ²Haematology/Oncology, Hospital for Sick Children, Toronto, ON, Canada; ³Haematology/Oncology, The Hospital for Sick Children, Toronto, ON, Canada; ⁴Haematology/Onco, Hospital for Sick Children, Toronto, ON, Canada; ⁵Paediatric Hematology/Oncology, CancerCare Manitoba, Winnipeg, MB, Canada; ⁶Immunology and Allergy/BMT Program, Hospital for Sick Children, Toronto, ON, Canada

Wiskott-Aldrich syndrome (WAS) is an X-linked immunodeficiency presented with eczema, microthrombocytopenia, autoimmune disorders, recurrent infections, and subsequent malignancies. Little is known on late complications following hematopoietic stem cell transplant (HSCT) in this population. In a single-institutional retrospective study of 17 WAS patients who underwent HSCT between January 1992 and December 2012, we evaluated autoimmune manifestations, serious infections, and graft-versus-host disease (GVHD). Median age at HSCT was 2.17 years (range 0.28–12.38). Nine (52.9%) and eight patients (47.1%) received bone marrow and umbilical cord blood, respectively. Fourteen patients (82.3%) underwent HSCT from alternative donors including unrelated cord, mismatch family, and match unrelated donors. Only 2 match sibling (11.7%) and one match related (5.9%) were used as donors. Median follow-up time was 7.05 years (range 1.82–19.99).

Two patients (11.7%) died 1 month and 2.1 years post HSCT due to CMV interstitial pneumonitis and severe Streptococcus pneumoniae sepsis, respectively. Overall survival (OS) at 2-year was 87.4%. HLA mismatch and stem cell source were not significant factors for OS (p = 0.325 and 0.886, respectively). In multivariate analysis, age at HSCT, HLA mismatch, and stem cell sources were also not significant.

Five patients (29.4%) developed acute GVHD grade II-IV. The incidence of acute GVHD (grade II-IV) was higher when using bone marrow as a stem cell source (p = 0.029). Eight (47.1%) and three patients (17.6%) developed limited and extensive GVHD. The incidence of chronic GVHD did not differ by age at HSCT, HLA mismatch, and stem cell source.

Mixed donor chimerism was temporarily observed in 4 patients (23.5%). Immunosuppressant was adjusted without donor lymphocyte infusion. Donor chimerism was subsequently improved.

We observed chronic GVHD-independent autoimmune thrombocytopenia in 4 patients (23.5%). One of those four also developed warm and cold agglutinin positive autoimmune hemolytic anemia. All episodes of autoimmune thrombocytopenia occurred in patients who received cord blood transplantation. Mixed donor chimerism was observed in 3 of those 4 patients who had persistent thrombocytopenia. Only one patient who developed autoimmune thrombocytopenia and hemolytic anemia received treatment of plasmapheresis and rituximab. This patient eventually required regular intravenous immunoglobulin infusion due to persistent hypogammaglobulinemia. Thrombocytopenia was gradually subsided with the improvement of donor chimerism in all patients. No malignancy occurred post-HSCT in this retrospective cohort.

We report an excellent result using a majority of unmanipulated unrelated and mismatched family donors in this study. Cytopenias were observed in conjunction with utilization of cord blood stem cells and mixed donor chimerism.

### 357

**A Novel Reduced Intensity Conditioning Regimen for Patients with High Risk Hematologic Malignancies Undergoing Conventional Allogeneic Stem Cell Transplantation**

Gabriela Hobbs¹, Navjeet Kaur², Doris M. Ponce³, Patrick Hilden⁴, Hugo Castro-Malaspin¹, Sergio A. Giralt⁴, Jenna D. Goldberg⁵, Esperanza Papadopoulos⁶, Ann A. Jakubowski⁷, Craig Steven Sauter⁸, Miguel-Angel Perales³.
¹Department of Medicine, Adult Bone Marrow Transplant Service, Memorial Sloan-Kettering Cancer Center, New York, NY; ²Department of Biostatistics and Epidemiology, Memorial Sloan-Kettering Cancer Center, New York, NY; ³Pediatrascell Transplantation; ⁴Sloan-Kettering Cancer Center, New York, NY; ⁵Memorial Sloan Kettering Cancer Center, New York, NY

**Introduction**: Reduced intensity conditioning (RIC) allows older patients and those with comorbidities to undergo...