represented in the no-GVHD group. As ST2 concentrations differed between conditioning intensities, we used 3 models for prediction using the median ST2 concentrations for UM FIC, UM RIC, and DFCI FIC as cutpoints.

In multivariate analysis including the age, disease status, donor source, and HLA match, high ST2 predicted the development of GVHD in UM FIC, and trended toward significance in the DFCI set (Table 1 Top). Patients with high ST2 at D14 were at increased risk of D180 NRM for all conditioning intensities, independent of the clinical characteristics (Table 1 Bottom). High ST2 was not associated with increased risk of relapse mortality 1 year after HSCT.

In conclusion, high ST2 early in HSCT identifies patients at high risk for acute GVHD and NRM following HSCT. This has therapeutic consequences including increased monitoring and potential preemptive interventions.

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**Interim Analysis of a Phase II Trial of Montelukast for the Treatment of Bronchiolitis Obliterans Syndrome After HSCT Reveals Immunobiology of Disease**

Kirsten M. Williams 1, Steven Z. Pavletic 2, Stephanie J. Lee 1, Candice Cottle-Delisle 3, Fran Hakim 4, Bryn Manning-Geiss 6, Sandra Mitchell 7, Leora Comis 8, Candice Cottle-Delisle 4, Fran Hakim 5, Beryl Manning-Geiss 6, Daniele Avila 12, Ronald Gress 13, 1 BMT, Children’s National Medical Center, Washington, DC; 2 NCI Experimental Transplantation and Immunology Branch, National Institute of Health NIH, Bethesda, MD; 3 Clinical Transplant Research, Fred Hutchinson Cancer Research Center, Seattle, WA; 4 ETIB/NCI/NIH; 5 Experimental Transplantation and Immunology Branch, National Cancer Institute, NIH, Bethesda, MD; 6 NCI/NIH; 7 Research and Practice Development Service, National Institutes of Health, Rockville, MD; 8 NIH; 9 Pediatric Oncology, National Cancer Institute, National Institute of Health NIH, Bethesda, MD; 10 CMDI NIH; 11 NCI - Experimental Transplantation and Immunology Branch, National Institute of Health, Bethesda, MD; 12 Experimental Transplantation and Immunology Branch, National Institute of Health, Bethesda, MD; 13 Experimental Transplantation and Immunology Branch, National Cancer Institute, Bethesda, MD

Bronchiolitis obliterans syndrome (BOS) after allogeneic HSCT is associated with high mortality and unknown pathogenesis. We present interim results from a prospective phase II trial evaluating of montelukast for the treatment of BOS after HSCT and studying BOS biology. Montelukast interrupts cysteinyl leukotriene activity and may diminish BOS after HSCT and studying BOS biology. Montelukast phase II trial evaluating of montelukast for the treatment of HSCT is associated with high mortality and unknown pathogenesis.

In conclusion, high ST2 early in HSCT identifies patients at high risk for acute GVHD and NRM following HSCT. This has therapeutic consequences including increased monitoring and potential preemptive interventions.

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**Lower Uric Acid Level At the Time of Allogeneic Hematopoietic Cell Transplantation (HCT) is Protective Against Acute Graft-Vs-Host-Disease**

Albert C. Yeh 1, Andrew M. Brunner 2, Thomas R. Spitzer 3, Yi-Bin Chen 4, Erin Coughlin 5, Steven L. McAfee 6, Karen Ballen 6, Eyal C. Attar 4, Martin L. Caron 7, Frederick Prefet 8, Beow Yeap ScD 9, Bimalangshu R. Dey 2, 1 Harvard Medical School, Cambridge, MA; 2 Massachusetts General Hospital, Boston, MA; 3 Bone Marrow Transplantation Unit, Massachusetts General Hospital, Boston, MA; 4 Bone Marrow Transplant Unit, Massachusetts General Hospital, Boston, MA; 5 BMT Program, Dept of Medicine, Massachusetts General Hospital, Boston, MA; 6 Hematology/Oncology, Massachusetts General Hospital, Boston, MA; 7 Cancer Center, Massachusetts General Hospital, MA; 8 Pathology, Massachusetts General Hospital, MA; 9 Biostatistics Center, Massachusetts General Hospital, Boston, MA

Acute graft-versus-host disease (aGVHD) is primarily a T-cell mediated process. Uric acid released from dying cells acts as a danger signal that alerts the immune system to cell death and promotes cytotoxic T cell responses. Elimination of uric acid in mouse models reduces this immune response. We hypothesized that lower serum uric acid levels at the time of transplant may decrease the incidence of aGVHD. Through record review, we recorded serum uric acid levels from day -7 through day +6 from 43 historical control patients who received myeloablative HCT (MRD, n = 32; MUD, n = 11) at the Massachusetts General Hospital between 2007 and 2010, these patients received standard allopurinol. We also obtained uric acid levels from 23 consecutive patients (19-59 years) with hematologic malignancies in complete remission (AML, n = 13; ALL, n = 8; MDS, n = 1; MPD, n = 1) who were treated in a pilot trial using rasburicase as part of a myeloablative conditioning regimen, followed by GCSF-mobilized HLA-matched (MRD, n = 18; MUD, n = 5) peripheral blood HCT. Urate oxidase (Rasburicase) was administered beginning on the first day of conditioning at a dose of 0.20 mg/kg IV daily for 5 days starting from day -7.

GVHD prophylaxis for all patients consisted of cyclosporine or tacrolimus/MTX for MRD transplants and tacrolimus/MTX/+/ATG for MUD transplants. Out of the control group, patients who developed aGVHD (grade 2+) had a similar mean serum uric acid level over all days (2.82 mg/dl) compared to patients who did not have aGVHD (2.86 mg/dl),
2-tailed t-test $P = .74$, Figure 1A). Results depend on the type of transplant received, however, as MUD transplants showed a differential expression in serum uric acid levels between the two groups (2.64mg/dl for aGVHD+ vs. 2.18 for aGVHD-, $P = .047$, Figure 1B), while MRD transplants did not show a difference (2.97mg/dl for aGVHD+ vs. 2.98 for aGVHD-, $P = .95$, Figure 1C). Patients given rasburicase had a lower serum uric acid level compared to the control arm (0.213mg/dl vs. 0.95, Figure 1C). Patients given rasburicase had a lower serum uric acid level at the time of transplantation appears to be protective against the development of aGVHD among patients receiving matched unrelated donor transplants. Rasburicase, when administered during the conditioning, significantly lowers the serum uric acid level and appears to decrease aGVHD.

**HEMATOPOIESIS/MESENCHYMAEAL CELLS ORAL**

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**Treatment of Steroid Resistant Grade II to IV Acute GVHD by Infusion of Mesenchymal Stroma Cells Expanded with Platelet Lysate - a Phase I/II Study**

Liane te Boome, Cristina Mansilla, Caroline Lindemans, Lotte van der Wagen, Marloes Cuipers, Ineke Slaper-Cortenbach, Henk Rozemuller, Efke Petersen, Eric Spierings, Marc Bierings, Jaap-Jan Boelens, Nico Wullfraat, Jurgen Kuball, 1 Biomedical Research Center of Navarra; 2 Dept. of Pediatric BMT, UMC Utrecht, Wilhelmina Children's Hospital, Utrecht, the Netherlands; 3 Biomedical Research Center, Utrecht, the Netherlands; 4 Haematology, UMC Utrecht, Utrecht, Netherlands; 5 Biomedical Research Center of Navarra; 6 Dept. of Pediatric BMT, UMC Utrecht, Wilhelmina Children's Hospital, Utrecht, the Netherlands; 7 Haematology, UMC Utrecht; 8 Gene and Cell Therapy Facility, UMC Utrecht; 9 na, UMC Utrecht; 10 Immunology, UMC Utrecht; 11 Haematology, UMC Utrecht; 12 Gene and Cell Therapy Facility, UMC Utrecht; 13, 14, 15, 16, 17 Pediatrics, Immunology, UMC Utrecht

**Introduction:** Despite improvements in the last decade in the field of HSCT, acute graft versus host disease (aGVHD) remains a life-threatening complication of HSCT. In particular, the outcome of patients with severe steroid-resistant aGVHD is very poor. Therefore, it remains important to search for new therapeutic strategies.

**Objective:** The feasibility of the generation of MSCs expanded with platelet lysate (PL) was tested as well as the feasibility and safety of the application in patients with steroid-refractory aGVHD. Immunological changes after infusion of MSC were characterized, in vitro. However, truly active mechanisms in human are poorly understood as well as whether infusion of MSC selectively impairs GVHD-inducing immune cells or also anti-virus and anti-leukemia reactive T-cells.

Phenotypical and functional changes in immunological cell types and cytokine levels were investigated.

**Method:** In an open-label, non-randomized prospective phase I/II study MSCs from the bone marrow of healthy volunteers, expanded with PL. Patients with steroid-refractory aGVHD grade II-IV were treated with PL-MSC. 50 patients were included and received up to 4 infusions. Response rate, transplantation-related deaths, and other adverse events were assessed for up to 12 months after inclusion. In addition, a comprehensive phenotypical and functional analysis was performed with PBMCs and serum isolated from all patients before, during, and after infusion of MSC.

**Results:** Between 2009-2012, 50 patients were included, 2 dropped out, 5 are so far incompletely documented. Thus 43 were available for analysis, 6 children and 37 adults. Median age was 51.5 yr (13-65.9). Organs involved in aGVHD were skin (56%), gi-tract (86%) and liver (33%). Overall grade was II 26%, III 65%, and IV 7%. Mean number of infusion were 3 (1-4). No severe side effects were observed. Median follow-up was 4 months (0.4-12). Complete overall response was observed in 56% patients after a median of 53 days (3-116). The overall survival was significantly better in responders when compared to non-responders ($P < .001$). Immuno-logical monitoring suggests that anti-viral and anti-leukemia reactive T-cells are well preserved in all patients who responded to MSC treatment. In addition, we identified biomarkers which associate even 2 weeks after MSC infusions with complete resolution of GVHD.

**Conclusion:** Generation and infusion of PL-MSCs in steroid-resistant aGVHD grade II-IV is feasible, safe and is effective, also patients who initially responded to PL-MSCs but develop later a relapse of aGVHD during tapering or cessation of immunosuppressive drugs become again sensitive to the treatment with steroids. Infusion of MSC did not impair anti-virus and anti-leukemia reactive T-cells. Identified biomarkers predict very early a usually late clinical resolution of GVHD, thus might be useful.

**HISTOCOMPATIBILITY/ALTERNATIVE STEM CELL SOURCES ORAL**

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**Results of a Prospective Multi-Center Myeloablative Double-Unit Cord Blood Transplantation Trial in Adult Patients With Acute Leukemia and Myelodysplasia (submitted on behalf of the RCI BMT 05-DCB Protocol Team)**

Juliet N. Barker, Mingwei Fei, Waleksa Perez, Alexia Adams, Dennis Confer, Mary M. Horowitz, Willis H. Navarro, Marcie Tomblin, 1 Department of Medicine, Adult Bone Marrow Transplant Service, Memorial Sloan-Kettering Cancer Center, New York, NY; 2 Biostatistics, Medical College of Wisconsin; 3 Medicine-CIBMTR, Medical College of Wisconsin; 4 Biostatistics, Medical College of Wisconsin, Milwaukee, WI; 5 CIBMTR Minneapolis, National Marrow Donor Program; 6 CIBMTR/National Marrow Donor Program, Minneapolis, MN; 7 Department of Medicine, CIBMTR/ Medical College of Wisconsin, Milwaukee, WI; 8 Hematology/Oncology, University of California, San Francisco, San Francisco, CA; 9 Blood and Marrow Transplantation, H. Lee Moffitt Cancer Center, Tampa, FL

**Background:** Retrospective studies suggest that double-unit cord blood (CB) grafts may improve engraftment and protect against relapse as compared with that observed after single-unit CB transplantation (CBT). However, whether the