Supplemental Methods

Methods

Eligibility: Patients were allowed to have MDS with one or more peripheral blood cytopenias, but less than 10% blasts in the bone marrow in the absence of granulocyte colony stimulating factor (G-CSF).

Data Collection: Data were collected on age at transplant, viral infections, non-tuberculous mycobacterial (NTM) infections and other infections, additional clinical features, bone marrow findings, and cytogenetics. The transplant data collected consisted of stem cell source, HLA match, busulfan area under the curve (AUC) based on a test dose of busulfan, total busulfan dose, CD34+ donor cells/kg infused, CD3+ donor cells/kg infused, myeloid, CD3, CD19, NK, and bone marrow chimerism post -transplant, GVHD prophylaxis, incidence of aGVHD, incidence of cGVHD), and current status including the presence or absence of continued immunosuppression. Importantly, the type of post-transplant GVHD prophylaxis for the MRD and URD-- either Tacrolimus/Methotrexate (Tacro/MTX) or PT/Cy- was used to assign patients into different treatment arms. We collected data prior to transplant, and at 100 days (+/- 2 weeks), 6 months (+/- 4 weeks), 1 year (+/-6 weeks) and yearly after that (+/- 3 months) for all patients.

HLA: HLA-matched unrelated donors were defined as having an HLA-9/10 or HLA-10/10 match with the recipient.

Cell Product: Bone marrow was increasingly the requested donor stem-cell source for MRD and URD during the course of the study. Peripheral blood stem cell (PBSC) grafts were accepted based upon donor preferences. During the course of the study, bone marrow became the preferred source for MRD and URD. PBSC were collected using 5 days of granulocyte colony stimulating factor (G-CSF, filgrastim) (10 μg/kg/day) followed by apheresis with the goal of collecting at least 5 x 10^6 CD34+ cells/kg of the recipient's body weight. All but two of the HRD recipients received bone marrow.

Immune Reconstitution: B-cell function with antibody against tetanus and diphtheria was access at 1-year post-transplant after receiving their first immunization 6 months post-transplant according to the ID BMT guidelines.

Supportive Care: Standard guidelines follow international guidelines for preventing infectious complications among HSCT recipients.[9] For patients with NTM infections, treatment was tailored to the NTM species isolated. [10] When patients had had their NTM infection fully treated prior to the transplant, they were kept on prophylactic azithromycin through transplant, and for approximately one year after transplant. When the NTM infection was recent, all efforts were made to delay transplant until the NTM infection was under control, cultures became negative, and lesions were stable or regressing on imaging studies. For patients whose infection episode was recent and who were still on rifampin as part of their treatment, rifampin was changed to moxifloxacin before the start of the conditioning regimen to avoid possible drug interactions. All patients had a macrolide as part of their treatment regimen or secondary prophylaxis; in all cases azithromycin was selected over clarithromycin to reduce possible drug interactions. Patients who were still being treated for active infection at the time of transplant (double or triple therapy) were kept on all the anti-mycobacterial drugs at least 6-12 months after the transplant. Subsequently, these drugs were discontinued, and azithromycin alone was continued for at least 6 months. Anti-fungal azoles were discontinued at least 4 days before busulfan administration. Patients receiving PT/Cy who were on steroids before transplant were transitioned to maintenance hydrocortisone prior to the day of transplant and continued on this dose until day +6. Viral testing for EBV, CMV, human herpesvirus-6, adenovirus, and BK virus quantitation was performed on EDTA whole blood and/or urine.