Table 2
IFI (EORTC/MSG Criteria)

UPN	Symptoms	Imaging	BAL	IFI
27	Yes	Ground glass opacity/ consolidation	Galactomannan +ve	Probable
46	Yes	New focal opacity in previous consolidation	-ve	Possible
85	Yes	Small b/l pleural effusion with ground glass opacity and septal thickening	-ve	Possible

2 (2%) patients developed other fungal related problems. One patient developed oral candidiasis treated with micafungin. One patient had splenic leisons (presumed fungal) treated with treatment dose posaconazole and improved.

None of these patients had aGVHD at time of IFI diagnosis. None of these patients died of fungal related causes. 4 out of 5 patients were alive at last follow up. One died of relapse.
Conclusion: Micafungin followed by posaconazole is effective as primary IFI prophylaxis in unrelated donor HCT.

340

Nocardiosis in Allogeneic Hematopoietic Stem Cell Transplant Recipients: A Matched Case-Control Study of Risk Factors, Clinical Features and Outcomes

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Nocardial infection is emerging as an important cause of morbidity and mortality among hematopoietic stem cell transplant (HSCT) recipients. Risk factors and outcomes in this population remain undefined.

We performed a matched case-control study (1:2 ratio). Cases were defined as recipients of allogeneic HSCT with a microbiological diagnosis of nocardial infection. Control subjects were matched for age, timing and transplant type. Between January 2007 and December 2011, among 440 allogeneic HSCT recipients, 11 (0.03%) were diagnosed with nocardiosis.

Infection occurred at a median of 510 days (range 139-1042) after HSCT and was disseminated in 45% of cases. Diagnoses clustered in the fall (68%). Pulmonary involvement with nodular infiltrates occurred in 91% of cases. Final culture results were available 55.7 days after diagnostic testing (range 14-120 days). *Nocardia nova* was the strain most commonly isolated (27%). Co-infection with *S.aureus, Pseudomonas,* CMV and *Mycobacterium sp*. occurred in 73% of all cases. Trimetroprim-Sulfametoxazole was not protective in 4 out of 11 patients (36%) receiving it for *Pneumocystis jirovecii* pneumonia prophylaxis.

In univariate analysis, chronic GVHD (P= .011) was associated with nocardial infection. Other associated conditions included bronchiolitis obliterans syndrome (BOS) (P= .033), steroid-induced diabetes mellitus (p=< .001), and opportunistic infection within the preceding 6 months (p= < .001). Positive CMV serologic status or recent CMV infection were not significant variables. High-dose corticosteroid treatment within the preceding 6 months (P= .005), tacrolimus therapy (P= .002), antifungal prophylaxis (p = <.001), prior autologous transplant (P= .008), and rituximab treatment within 12 months (p = < .001) were specifically associated with nocardiosis. Patients with *Nocardia* infection had significantly higher mean tacrolimus levels (p = .043), LDH levels (p = .040), and neutrophil counts (p= .002) than controls.

Nocardial infection is an infrequent delayed complication of allogeneic HSCT primarily affecting recipients with chronic GVHD. This has biologic correlation, since these patients often require prolonged immunosuppressive therapies, targeting both B and T cells, and may have underlying anatomic factors interfering with microbial clearance, such as bronchiectasis in BOS. High-dose corticosteroid treatment and its consequences, notably steroid-induced DMII, may increase susceptibility to this infection. Nocardiosis should be promptly considered and carefully investigated in susceptible cGVHD patients, given its adverse impact on prognosis, as demonstrated by the significant reduction in the overall survival of the *infected* cohort (72.7% vs 100%, P= .013).

341

Significance of Rh Mismatch in Allogeneic Hematopoietic Progenitor Cell Transplants

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The Rh D antigen is one of the most immunogenic red blood cell antigens know. Despite this, it is not considered in matching schemes for hematopoietic progenitor cell (HPC) transplants. The frequency of anti-D after Rh mismatched allogeneic HPC transplants is reportedly low. The objective of this study was to retrospectively study Rh mismatched HPC transplants and examine both allogeneic anti-D formation as well as transplant outcome measures. From January 1999 to April 2011, 104 consecutive adult Rh mismatched HPC transplants were performed at our institution and were available for review. We compared transplants with Rh+ recipients with Rh- donors (R+/D-, n=60) to those with Rh- recipients and Rh+ donors (R-/D+, n+44). There was no difference in underlying diagnoses, graft source, dose of HPC, degree of HLA matching, conditioning, or type of graft versus host disease (GVHD) prophylaxis. The median follow-up was 655.5 days (range 14 – 4264 days). Only 2 patients formed anti-D during the follow-up period, and both were in the R+/D- group of transplants. One was never exposed to Rh-positive blood products. The second patient was exposed to multiple Rh-positive apheresis platelet products prior to antibody formation. Ten patients formed other red cell alloantibodies with no statistical difference between groups. The most common antibody formed was anti-E. The overall use of rbc's and platelets post transplant was similar in both groups, although the use of Rh-positive rbc's was more common in the R+/D- group pre-transplant, and the R-/D+ group post-transplant. A low incidence of chronic GVHD was seen in both groups (82% of R+/D- transplants had no chronic GVHD, 64% of R-/D+ transplants had no chronic GVHD, P = .045). No difference in platelet and neutrophil engraftment was demonstrated.

342

The Cost of Pediatric Unrelated HSCT

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Allogeneic unrelated hematopoietic stem cell transplants (HSCT) are complex procedures that need adequate hospital infrastructure, a competent team, high-cost procedures and medications. Most transplants that are performed in Brazil are paid by the government. The national health system reimburses the hospital U$ 35,801.00 as a flat rate. The government has recently increased this amount by 60% but there are not national studies to use to evaluate the appropriateness of this amount. The objective of this study was to retrospectively evaluate the cost of ten consecutive unrelated donor HSCT performed in our institution.

Methods: The project was approved by our IRB (CEP-UNIFESP #1875/11) and granted waiver to request consent. The costs were evaluated from the first appointment until one year after transplant or death divided as 1) pre-HSCT, 2) conditioning therapy, 3) from the day of transplant until first discharge, 4) until D+100, 5) until D+180, and 6) until D+360. The costs included medications, supplies, blood transfusions, laboratory, imaging and the cost of the ward. Housing and out-of pocket costs or loss of income were not evaluated. Patients were scored 1 to 3 according to the Pediatric EBMT score.

Results: Ten consecutive children 2-14 years of age underwent unrelated donor HSCT from June, 2010 to May, 2011. Diagnoses were ALL (4). AML (3), lymphoma (2), and aplastic anemia (1). Three patients had early disease and others were in advanced phases of the disease. Eight were CMV positive. Five had marrow and five cord blood transplants. The median interval to transplant was 3.7 years from diagnosis and 80 days from referral. The patients remained hospitalized for a median of 80 days (21-50). Median time to engraftment was D+22 (12-56) and six had complications and needed Intensive Care support. Of the 10 children, seven were discharged but three eventually relapsed and died, overall survival is 50%. The median total cost during the first year was U$118,908.00 (mean U$ 139,861.00) − 44% of that spent within the first 100 days post HSCT. The first admission had a median total cost of U$ 64,385.00 (14,400 − 166,792). Total costs were approximately 40% higher than the direct cost. The highest costs were blood products and medications. No relationship was found between cost and age, gender, graft source of Pediatric EBMT-score.

Conclusion: Unrelated-donor HSCT is an expensive procedure and the government only partially reimburses its cost. Even with a 60% increase in reimbursement there will be a deficit in more than half of the procedures. We are working to increase the amount paid for specific complications and will have to continue to find alternative resources to pay for the transplants.

343

Allogeneic Hematopoietic Stem Cell Transplant in Patients Older Than 50 Years. Experience of Four Argentinean Centers

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Materials and Methods: We retrospectively reviewed 76 medical records of patients older than 50 years receiving an allogeneic HSCT in our centers. We evaluated the following characteristics: sex, age, diagnosis, stage, comorbidities (according to the HCT-CI score), type of donor, histocompatibility, conditioning and immunosupression. We analyzed the incidence and severity of Graft-vs-Host disease (GVHD) and treatment related mortality (TRM) with Chi Square and Overall Survival (OS) and Disease Free Survival (DFS) with Kaplan Meier. For multivariate analysis (MA) we used Cox regression model for time dependant outcomes and logistic regression for dichotomic variables, considering significant a $P < .05$.

Results: Between March 1998 and June 2012, 76 transplants were performed with a median follow up of 1.9 years. Fourteen patients were older than 60 years, 51 were male, HCT-CI score was 0 (41%), 1 (36%), ≥2 (23%), common diagnosis were AML (35%), MDS (30%) and MPN (20%), 65% were in late stage, 80% received a transplant from a MRD, 37% received FluMel conditioning regimen, 32% FluBu and 12% BuCy, 66% received tacrolimus (Fk) based regimen and 34% cyclosporine. Acute GVHD (aGVHD) incidence was 51%, aGVH grade II-IV 29%. AML patients had a lower incidence of aGVHD (36% vs. 61%, $P < .03$) still significant in MA (HR 0.27; 95% CI 0.07-0.98;$P = .04$) as well as FluMel conditioning (33% vs. 59%,$P = .02$), in contrast to unrelated donor (URD) (aGVHD GII-IV 53% vs. 23%,$P = .02$). Chronic GVHD incidence was 33%, extensive in 10%. Early TRM (day 100) was 17% and global 30%. Female patients had lower early TRM (4% vs. 25%,$P = .02$) opposite to HCT-CI score ≥2 patients that experienced a higher global TRM (58% vs. 26%, $P < .04$) still significant in MA (HR 4.6; 95% CI 1.03-20.9;$P = .04$) as well as MPN patients (64% vs. 25%, $P < .01$) also significant in MA (HR 7.2; 95% CI 1.20-43.7;$P = .03$). OS was 43% (1 year) and 20% (3 years). Patients older than 60 had a higher OS (1/3 years 61/43% vs. 38/14%;$P = .01$), while FluBu was associated to a lower OS (1/3 years 25/10% vs. 49/23%, $P < .05$), not significant in MA. Regarding immunosuppressant, the use of Fk was associated with a higher OS (1/3 years 44/20% vs. 19/6%, $P < .01$) significant in MA (HR 0.45; 95% CI 0.2-0.9;$P = .04$) and DFS (1/3 years 33/18% vs. 11/5%,$P = .01$).

Conclusion: According to the literature, URD is associated with a higher incidence of clinical significant aGVHD ($P = .02$) and FluMel presented lower incidence of aGVHD as well as AML patients. Regarding TRM female patients had a lower early TRM and lower HCT-CI score had lower global TRM. FluBu was associated with a lower OS, while Fk patients had a higher OS and DFS. Interestingly patients older than 60 had higher OS not significant in MA, probably due to a better selection: none had HCT-CI higher than 1, only 1 patient received an URD transplant, most of them received Fk base immunosuppressant and all of them received a NMA transplant.

344

Sequence-Based Discovery of Novel Bacteria, Bradyrhizobium Enterica, in Cord Colitis Syndrome

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