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ABSTRACTS

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ABSTRACTS

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(ORAL / POSTER-XXX) in the contents and abstract indicates the posting number, and the "ORAL / POSTER Submission" on the first line of each abstract indicates the presentation style in which the author had wanted to present. Therefore, some of them may be different from the category that the authors actually presented.

ORAL PRESENTATION

ORAL Submission**CONDITIONING REGIMENS (ORAL-518)****CONDITIONING REGIMEN WITH DECITABINE OF ALLO-HSCT FOR MDS & MDS/MPN : A MULTICENTER PROSPECTIVE STUDY**Yigeng Cao^{*1,2}, Sudong Zhang^{1,2}, Erjie Jiang^{1,2}¹Hematopoietic Stem Cell Transplantation Center, ²State Key Laboratory of Experimental Hematology, National Clinical Research Center for Blood Disease, Institute of Hematology and Blood Diseases Hospital, Tianjin, China

Aims & Objectives: Allogeneic stem-cell transplantation (allo-HSCT) is the only curative treatment in myelodysplastic syndromes (MDS) and MDS/myeloproliferative neoplasm (MPN). Post-HSCT relapse remains a major cause of treatment failure. In our retrospective group, the addition of a 5-day schedule of decitabine conditioning regimen was proven to be feasible and effective.

Patients / Materials & Methods: We conducted a multicenter study to prospectively evaluate the feasibility of allo-HSCT with conditioning regimen of 5-day decitabine in 61 patients with a MDS, 6 with chronic myelomonocytic leukemia (CMML), and 9 with secondary acute myeloid leukemia (sAML) after MDS or CMML. Patients received Dec 20 mg/m²/day on days -9 to -5, combined with a Bu/Cy/ Flu/ Ara-c modified preparative regimen.

Results: At a median follow-up of 563 (range: 8-1265) days, the overall survival (OS) was 82.9 ± 4.5%, relapse incidence was 7.9 ± 3.4%, and non-relapse mortality was 13.1 ± 4.1%. Transplant related mortality (TRM) was assessed at 13% on the whole cohort. 6.5% has no engraftment for a total of 5 patients. A neutrophil count of >0.5 × 10⁹/L was achieved at a median of 12 days (range, 6–21 days) and a platelet count of >20 × 10⁹/L within 16 days (10–103 days) post-transplant. The incidence of severe acute (grade III/IV) graft-versus-host disease (GVHD) was 25.0% and that of chronic GVHD was 26.4%. At 2 years, OS was 78.8%, 91.7% and 87.5%, respectively, for MDS patients with high risk, very high risk and sAML. Survival was promising in patients with poor-risk mutations, such as TP53 and ASXL1 (76.0%), and in those with ≥3 gene mutations (87.1%).

Discussion & Conclusion: This new regimen was associated with a low relapse rate, low incidence and severity of GVHD, and satisfactory survival for allo-HSCT patients with MDS and MDS/MPN.

Supporting Document: 63699e61-1865-42fb-8a2c-66b9956e75da

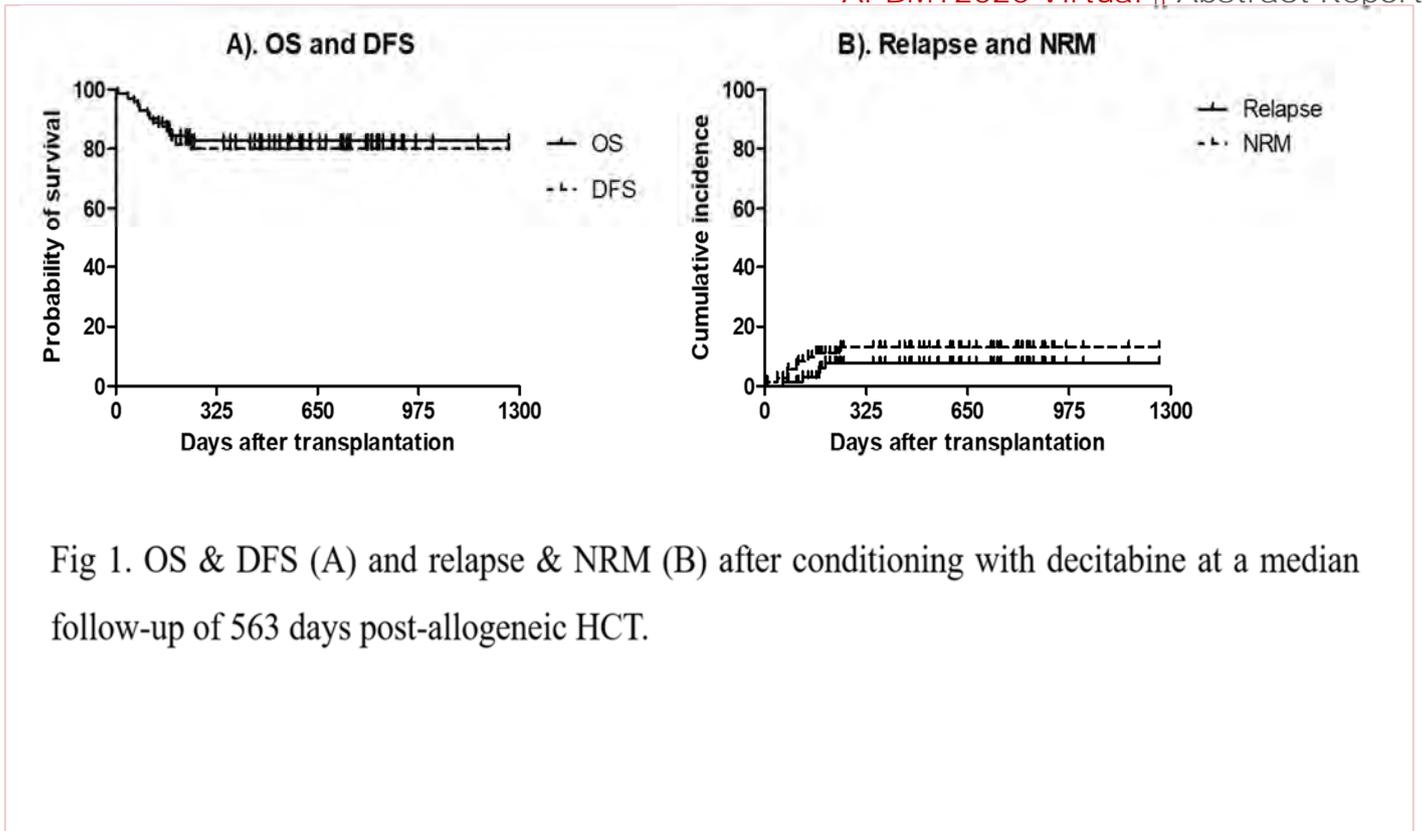


Fig 1. OS & DFS (A) and relapse & NRM (B) after conditioning with decitabine at a median follow-up of 563 days post-allogeneic HCT.

Disclosure of Interest: None Declared

Keywords: Allo-HSCT, Conditioning regimen, Decitabine, Myelodysplastic syndrome and Myeloproliferative neoplasms

ORAL Submission**GVHD (ORAL-526)****MECHANISM OF SUPPRESSION EFFECT OF MYELOID-DERIVED SUPPRESSOR CELLS ON HYPERACUTE GVHD**

Yigeng Cao^{*1,2}, Yuanfu Xu², Erjie Jiang^{2,3}

¹Hematopoietic Stem Cell Transplantation Center, ²State Key Laboratory of Experimental Hematology, National Clinical Research Center for Blood Disease, ³Center of Hematopoietic Stem Cell Transplantation, Institute of Hematology and Blood Diseases Hospital, Tianjin, China

Aims & Objectives: Myeloid-derived suppressor cells (MDSCs) have a beneficial role in treatment of graft-versus-host disease (GVHD), on account of suppressing ability on alloreactive T-cell-response in vitro and in vivo. Reactive oxygen species (ROS) implicate in MDSCs-mediated T cell suppression and MDSCs from ROS production deficiency mice, chronic granulomatous disease (CGD) mice, fail to suppress T cell reaction. However, the investigation of whether and how MDSCs and ROS play in CGD mice receiving allogeneic hematopoietic stem cell transplantation (allo-HSCT) is lacking.

Patients / Materials & Methods: BALB/c (H-2Kd) or C57BL/6 (H-2Kb) mice (8-12 weeks age) were used as donor mice and age- and gender-matched C57BL/6 (H-2Kb) or gp91phox^{-/-} (B6.129S6-Cybbtn1Din, H-2b) chronic granulomatous disease (CGD) mice were used as recipient mice to establish a completely mismatched or completely matched major histocompatibility antigen (MHC) murine model.

Results: Comparing to the wide type mice, CGD mice rapidly died after allo-HSCT, which developed before engraftment and only depended on allogeneic cells infusion. According to the definition of hyperacute GVHD of human, which is a special type of GVHD that occurs within the first 14 days after allo-HSCT associated with significant morbidity and mortality, we defined hyperacute GVHD of mice as: occurring within 5 days after allogeneic transplantation before engraftment; performed as continuous weight loss from irradiation, poor grooming and impairs movement with or without hunching or skin integrated; animals died within 2 days after onset of symptoms. Further study showed that the donor spleen derived T cells was indispensable for hyperacute GVHD and alloreactive T cells massively activated, proliferated and got stronger killing ability during hyperacute GVHD. We further demonstrated that NADPH oxidase- dependent ROS production by MDSCs was essential for inhibition alloreactive T cells from overacting. In addition, using this hyperacute mouse model, we revealed that application of ROS agonist, rescued the CGD mice receiving allo-HSCT from hyperacute GVHD.

Discussion & Conclusion: In General, this study pioneering established a stable murine model of hyperacute GVHD and proved that allo-reactive T cells significantly activated and proliferated since ROS production defective MDSCs lost the ability of inhibiting T cell immune reaction and caused hyperacute GVHD. These data provided new insights into the pathogenesis of GVHD and may improve the clinical management of this common complication.

Disclosure of Interest: None Declared

Keywords: Hyperacute GVHD, Myeloid Derived Suppressor Cells, Reactive oxygen species

ORAL Submission**CONDITIONING REGIMENS (ORAL-543)****IMMUNOLOGIC GENE VARIANTS ON THE OUTCOMES OF ALLO-HSCT IN PATIENTS WITH HEMATOLOGIC MALIGNANCIES**

Zhihui Li¹, Qinlong Zheng², Caiyan Zhang², Chunrong Tong², Tong Wu¹

¹Department of Bone Marrow Transplantation, ²Department of Hematological Pathology, Beijing Boren Hospital, Beijing, China

Aims & Objectives: To investigate associations between genetic susceptibilities to hematologic or immunologic disorders and the outcomes and complications of allogeneic hematopoietic stem cell transplantation (allo-HSCT).

Patients / Materials & Methods: We enrolled 109 patients with hematological malignancies who underwent allo-HSCT from January 2018 to December 2019. The median age was 19 years old (2-66 years). Diagnosis included AML (n=55), ALL (n=38), and NHL (n=21). Disease status was CR in 21, CR2 in 58, PR in 10, and NR in 20. Donors were haploidentical family members (n=80) or identical siblings (n=9) or unrelated volunteers (n=20). The conditioning was myeloablative. Myeloablative conditioning regimens that were used included BU/FLU regimen (77 patients) and TBI/FLU regimen (32 patients). GVHD prophylaxis was with cyclosporine, short-term MTX and MMF. ATG was used in haploidentical and unrelated transplants. Prevention of Fungal, PCP and herpes virus infections was routinely applied. Next generation sequencing of the genes associated with hematologic and immunologic disorders were performed on the DNA samples extracted from the peripheral blood of these patients and relatives. The diagnosis of acute GvHD (aGvHD) was made according to the Mount Sinai Acute GvHD International Consortium criteria⁵

Results: Of the 700 genes tested in this study, genetic variations were identified in haemophagocytic lymphohistiocytosis-related genes in 7 patients (6.4%), Frequent gene variants were in CD27, PRF1, STX11, and UNC13D. Fanconi anemia in 6(5.5%) patients, More frequent FA gene variants were in BRCA1, BRIP1, FANCA, FANCC, FANCF, and FANCG. and immunodeficiency in 28(25.7%) patients. The incidence of carrying hematologic and immunologic system-related genes was significantly higher (p=0.019) in patients with complications (GvHD II-IV and/or infection) than those without complications.

Discussion & Conclusion: Our preliminary results have shown that patients carrying hematologic and immunologic disease susceptible gene variants may significantly increased incidence of the major complications of allo-HSCT, such as GvHD and infection. A larger cohort and longer follow-up are needed to confirm the observations of this cohort.

Disclosure of Interest: None Declared

Keywords: allogeneic hematopoietic stem cell transplantation, complications, hematological malignancies, hereditary predisposition

ORAL Submission**BONE MARROW FAILURE SYNDROMES INCLUDING MDS. (ORAL-553)****OUTCOMES OF HAPLOIDENTICAL STEM CELL TRANSPLANTATION IN ADULT PATIENTS WITH SEVERE APLASTIC ANEMIA**

Sung-Eun Lee*¹, Sung-Soo Park¹, Seung Hwan Shin², Jong Wook Lee¹

¹Hematology, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea, ²Hematology, Eunpyeong St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, Korea, South

Aims & Objectives: The main motivation for determining an optimal conditioning regimen in adult patients with severe aplastic anemia (SAA) who receive haplo-identical stem cell transplantation (Haplo-SCT) is to achieve successful engraftment with minimal toxicity. To address this issue, we previously reported the results from a prospective de-escalation study of fractionated total body irradiation (fTBI) and antithymocyte globulin (ATG) dose and we reached 600 cGy fTBI/fludarabine (Flu)/intermediate-dose ATG (5 mg/kg) since October 2014 (Am J Hematol 93:1368, 2018). Herein, to verify the feasibility of this protocol for Haplo-SCT in adult patients with SAA, we performed the extended follow-up analyses with large number of patients.

Patients / Materials & Methods: We analyzed 47 consecutive patients who underwent Haplo-SCT between October 2014 and October 2019. All patients received a conditioning regimen of 600 cGy fTBI (200 cGy, 3 times) and Flu (30 mg/m²/day) for 5 days. GVHD prophylaxis consisted of ATG/tacrolimus/methotrexate (MTX). ATG (Thymoglobulin®, 2.5 mg/kg/day) was administered on days -2 and -3. All patients received T-cell repleted PBSCs.

Results: The median age was 36.0 years (17-61) and 25 (53%) patients had very SAA (VSAA) at transplantation. All patients achieved primary engraftment. The cumulative incidence of acute GVHD (grade ≥2) and chronic GVHD (≥ moderate) was 27.7% at 100 days and 13.5% at 3 years, respectively. With a median follow-up of 32.3 months, the 3-year probability of overall survival and failure-free survival was 91.0% and 88.6%, respectively. The 3-year GVHD- and failure-free survival (GFFS) was 71.6%. Offspring donor and lower comorbidity index were independent factors correlated with higher GFFS in multivariate analysis.

Discussion & Conclusion: The outcomes of Haplo-SCT with fTBI 600 cGy/Flu/ATG-5 indicate that Haplo-SCT can be an effective alternative option when fully matched donor is not available, or for patients with VSAA who need an urgent transplant.

Disclosure of Interest: None Declared

Keywords: antithymocyte globulin, conditioning regimen, haplo-identical stem cell transplantation, severe aplastic anemia, total body irradiation

ORAL Submission

ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (ORAL-577)

2016 APBMT ACTIVITY SURVEY REPORT: TRENDS IN HAPLO AND CORD BLOOD HSCT IN THE ASIA-PACIFIC REGION

Minako Iida¹, Anthony Dodds², Aloysius Ho³, Shinichiro Okamoto⁴, Yoshiko Atsuta⁵, Mafruha Akter⁶, Alok Srivastava⁷, Joon Ho Moon⁸, Phu Chi Dung⁹, Marjorie Rose Bravo¹⁰, Aya Aya Gyi¹¹, Devinda Jayathilake¹², Kaiyan Liu¹³, Bor-Sheng Ko¹⁴, Amir Hamidieh¹⁵, Ho Kim Wah¹⁶, Artit Ungkanont¹⁷, Tasneem Farzana¹⁸, Joycelyn Sim¹⁹, Bishesh Poudyal²⁰, Batsukh Khishigjargal²¹

¹Department of Promotion for Blood and Marrow Transplantation, Aichi Medical University School of Medicine, Nagakute, Japan, ² St. Vincent's Pathology, St. Vincent's Health Network, Australasian Bone Marrow Transplant Recipient Registry (ABMTRR), Sydney, Australia, ³Department of Haematology, Singapore General Hospital, Singapore, Singapore, ⁴Division of Hematology, Department of Medicine, Keio University School of Medicine, Tokyo, ⁵Japanese Data Center for Hematopoietic Cell Transplantation, (JDCHCT), Nagoya, Japan, ⁶Hematology and BMT, Department of Hematology and BMT, Dhaka Medical College and Hospital, Dhaka, Bangladesh, Dhaka, Bangladesh, ⁷Haematology, Department of Haematology, Christian Medical College Hospital, Vellore, India, Vellore, India, ⁸Internal Medicine, Division of Hematology-Oncology, Department of Internal Medicine, Kyungpook National University Hospital, Daegu, Republic of Korea, Korea, South, ⁹Stem Cell Transplantation, Stem Cell Transplantation Department, Blood Transfusion and Hematology Hospital, Ho Chi Minh, Vietnam, Ho Chi Minh, Vietnam, ¹⁰Hematology and Blood and Marrow Transplant, St Luke's Medical Center Quezon City, IM Hematology/Blood and Marrow Transplant, Quezon, Philippines, Quezon, Philippines, ¹¹Clinical Haematology, Department of Clinical Haematology, North Okkalapa General Hospital, Yangon, Myanmar, Yangon, Burma, ¹²Oncology, Department of Oncology, National Cancer Institute, Maharagama, Sri Lanka, Maharagama, Sri Lanka, ¹³Hematology, Department of Hematology, Peking University Institute of Hematology, Beijing, China, Beijing, China, ¹⁴Internal Medicine, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan, Taipei, Taiwan, China, ¹⁵ Pediatric Cell, Pediatric Cell Therapy Research Center, Tehran University of Medical Sciences, Tehran, Iran, Tehran, Iran, ¹⁶ Hematology, Department of Hematology, Hospital Ampang, Ampang Selangor, Malaysia, Selangor, Malaysia, ¹⁷Mahidol University, Chakri Naruebodindra Medical Institute, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Samut Prakan, Thailand, Samut Prakan, Thailand, ¹⁸Clinical Haematology, Department of Clinical Haematology, National Institute of Blood Disease and Bone Marrow Transplantation, Karachi, Pakistan, Karachi, Pakistan, ¹⁹Medicine, Department of Medicine, Queen Mary Hospital, Hong Kong, Hong Kong, Hong Kong, China, ²⁰Clinical Hematology and Bone Marrow Transplant, Civil Service Hospital, Clinical Hematology and Bone Marrow Transplant Unit, Kathmandu, Nepal, Kathmandu, Nepal, ²¹Bone and Marrow transplantation team, Bone and Marrow transplantation team, Hematology Department, National First Central Hospital of Mongolia, Ulaanbaatar, Mongolia, Ulaanbaatar, Mongolia

Aims & Objectives: Aim: APBMT has conducted the Activity Survey every year from 2007 to overview the HSCT in the Asia-Pacific region. This report describes the results of the Activity Survey (HSCT performed in 2016), focusing on the trends of haploidentical and cord blood (CB) transplants in the Asia-Pacific region.

Patients / Materials & Methods: Method: APBMT Data Center collected 2016 data from 20 out of 22 participating APBMT countries/regions using simple Excel sheets divided by disease indication, stem cell source, and donor type.

Results: Results: Mongolia and Nepal submitted their first activity data in this survey. The annual number of transplants was 20,170 and 87.9% of all HSCTs were performed in China (5,904), Japan (5,488), Korea (2,531), India (1,968), and Australia (1,846). The total number of transplants per year increased by 2,599 (14.8%) over the previous year and the percent increase in total transplants was highest in China (45.8%), followed by India (20.3%). The total number of transplant centers was 686, which is 62 more than that in 2015. The number of newly opened centers in 2016 increased significantly in India (26) and China (24). The number of haploidentical transplants has increased rapidly since 2011 and CB transplants have also continued to increase constantly in this region (Figure). In 2016, 66.0% of haploidentical transplants and 81.8% of CB transplants were performed in China and in Japan, respectively.

Discussion & Conclusion: Conclusion: Data collection and analysis revealed the transition and diversity of transplants in this region. This report also shows a dramatic increase in haploidentical transplants as seen in other parts of the world, while revealing uniquely that the activity of cord blood transplant remains high in this region. The Activity Survey will help each country/region clarify the position of HSCT medicine in the Asia-Pacific region as well as in the world.

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Number of HSCTs

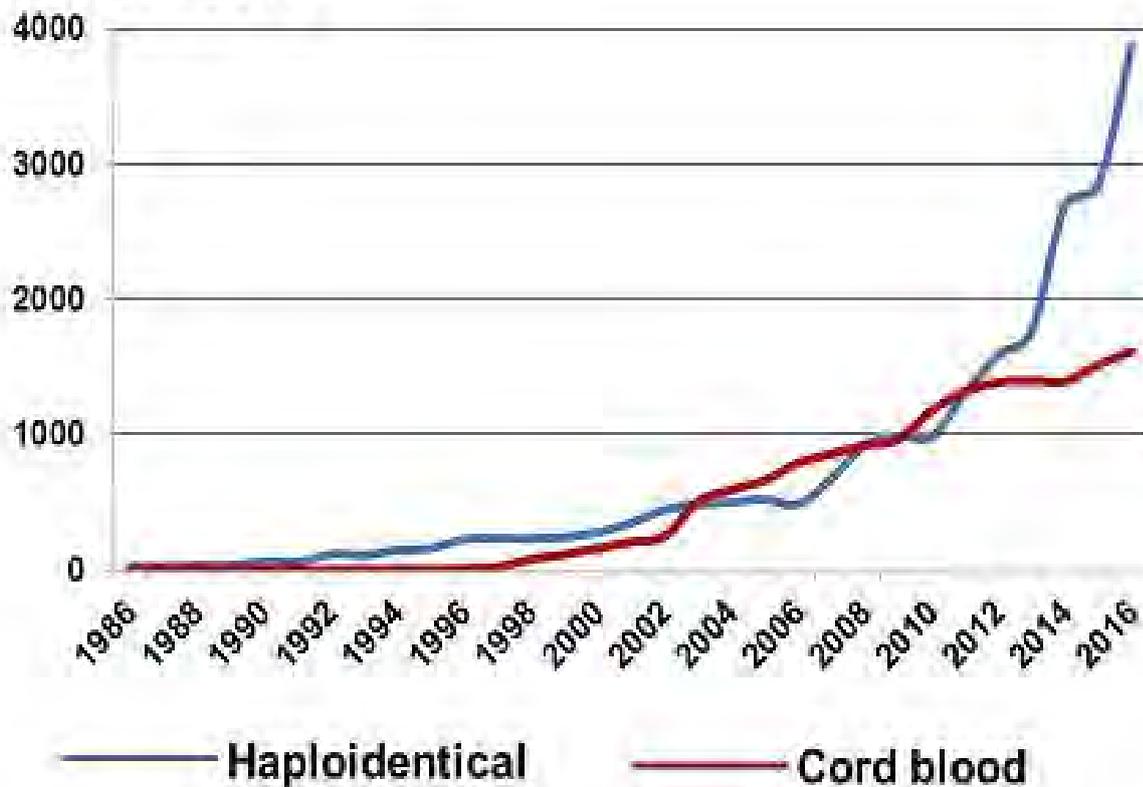


Figure: Trend in the total numbers of haploidentical and cord blood HSCTs in Asia-Pacific regions from 1986 to 2016

Disclosure of Interest: M. Iida: But No Conflict with: JCR Pharmaceuticals Co., Ltd., Clinigen K.K., Air WATER INC., A. Dodds: None Declared, A. Ho: None Declared, S. Okamoto: None Declared, Y. Atsuta: None Declared, M. Akter: None Declared, A. Srivastava: None Declared, J. H. Moon: None Declared, P. C. Dung: None Declared, M. R. Bravo: None Declared, A. A. Gyi: None Declared, D. Jayathilake: None Declared, K. Liu: None Declared, B.-S. Ko: None Declared, A. Hamidieh: None Declared, H. K. Wah: None Declared, A. Ungkanont: None Declared, T. Farzana: None Declared, J. Sim: None Declared, B. Poudyal: None Declared, B. Khishigjargal: None Declared

Keywords: APBMT Activity Survey, cord blood transplants, haploidentical transplants

ORAL Submission**LEUKEMIAS (ORAL-586)****PRE-TRANSPLANT USE OF TYROSINE KINASE INHIBITORS INCREASES RISK OF THROMBOTIC MICROANGIOPATHY**

Sachin Punatar¹, Siddhesh Kalantri¹, Akanksha Chichra¹, Amit Kumar Agarwal¹, Lingaraj Nayak¹, Avinash Bonda¹, Anant Gokarn¹, Bhausahab Bagal¹, Libin Mathew¹, Sadhana Kannan¹, Navin Khattri¹

¹Tata Memorial Centre, Navi Mumbai, India

Aims & Objectives: Transplant associated thrombotic microangiopathy (TA-TMA) is a life-threatening complication post allogeneic hematopoietic stem cell transplant (ASCT). Risk factors and prognosis of TA-TMA are not well defined. We retrospectively analysed our data to find the incidence, risk factors and outcomes of TA-TMA.

Patients / Materials & Methods: Consecutive patients who underwent ASCT for AML, ALL and CML from January 2008 to March 2019 were included. Standard conditioning regimens and GVHD prophylaxis were used. Definitive TA-TMA was defined using Blood and Marrow Transplant Clinical Trials Network (BMT-CTN) criteria and probable TMA by Cho criteria. Risk factors explored for TA-TMA were age, gender, diagnosis, type of transplant, acute and chronic GVHD, use of tyrosine kinase inhibitors (TKI) pre transplant and conditioning regimen. Standard statistical methods were used.

Results: Total 241 patients, 179 (74.2 %) males, median age of 28.5 years were studied. Donors were MSD (6/6 matched -174, and 9/10 matched-1), MUD (16) or haplo (50) donors. Diagnoses were 104 AML, 85 ALL (of which Ph+23) and 52 CML. Conditioning regimens given were myeloablative in 64 and reduced intensity in 177. Twenty-six (10.7%) developed TA-TMA; 22 (85%) males. Median day of diagnosis was D+102. Use of pre-HSCT TKI (RR 2.7, p=0.028), haplo HSCT (RR 3.16, p=0.018) and presence of acute GVHD (RR 4.17, p=0.003) were significant risk factors on univariate and multivariate analysis. Median follow up for whole cohort was 59.5 months. Median OS for whole cohort was 59.9 months. Median OS for those with and without TA-TMA was 17.6 and 96.8 months respectively (p=0.021).

Discussion & Conclusion: Overall incidence of TA-TMA was 10% in allogeneic HSCT for leukemias in our cohort. Pre-transplant TKI use was a novel risk factor identified in our study. This association needs to be studied further in prospective studies.

Supporting Document: 053f6c66-c7d2-44c8-8b9d-d7171e990858

Table 1 - Clinical and laboratory features of TA-TMA

Clinical features	Prevalence (n=26)
Neurological manifestations	14 (53.8%)
Thrombotic Events	3(11.5%)
Oedema	11(42.3%)
Hypertension	21(80.76%)
Bleeding	7(26%)
Lab Parameters	Median (Range)
LDH	653 IU/L (227-3126)
Platelet count	32 x 10 ⁹ /L (15-182)
Creatinine	0.9 mg/dl(0.26- 1.90)

Table 2 - Univariate analysis of risk factors for TA-TMA

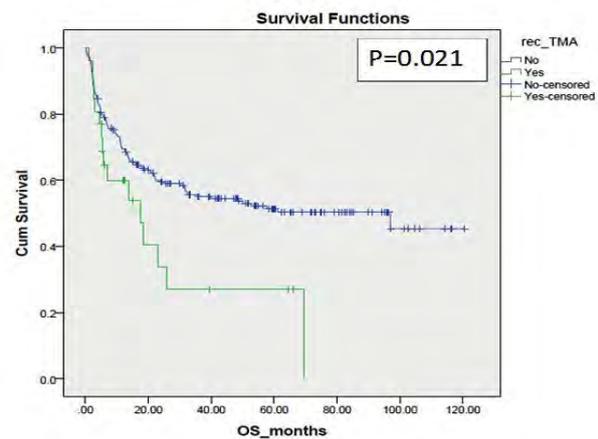
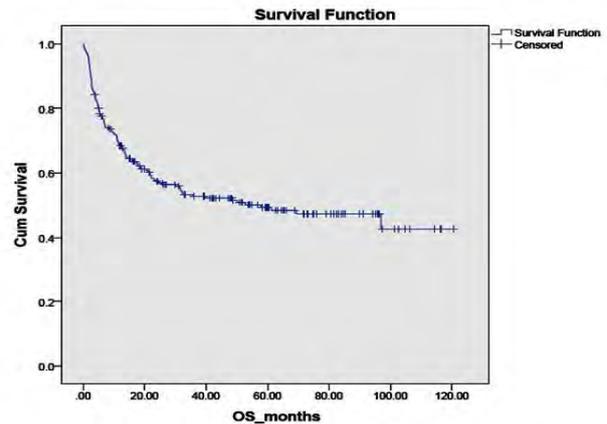
Variable	TMA (n = 26)	No TMA (n= 215)	P value
Risk Factors for TA-TMA – Univariate analysis			
Diagnosis	AML	8 (30.8%)	0.189
	CML	9 (34.6%)	
	ALL	9 (34.6%)	
Age (median)	28 years	28 years	0.969
Gender	Male	22 (84.6%)	0.202
	Female	4 (15.4%)	
Acute GVHD	Present	20 (77%)	<0.001
	Absent	6 (23%)	
Chronic GVHD	Present	11(42%)	0.559
	Absent	15(58%)	
Pretransplant TKI Use	YES	14(54%)	0.007
	NO	12(46%)	
Conditioning	MAC	6(23%)	0.671
	RIC	20(77%)	
Type of transplant*	MSD	12 (46%)	0.015
	MUD	3 (11 %)	
	HAPLO	10 (38%)	
Use of TBI	Yes	13 (50%)	0.224
	No	13 (50%)	

* One patient with a 9/10 matched sibling donor transplant was excluded from this analysis.

Table 3 - Multivariate analysis of risk factors for TA-TMA*

Variable	RR	P Value
Acute GVHD	Absent	1.00
	Present	4.179
Type of transplant	MSD	1.00
	MUD	3.118
	HAPLO	3.164
Pre-transplant TKI Use	No	1.00
	Yes	2.71

* One patient with a 9/10 matched sibling donor transplant was excluded from multivariate analysis.



Disclosure of Interest: None Declared

Keywords: Acute leukemias, Allogeneic hematopoietic stem cell transplantation, Chronic myeloid leukemia, Thrombotic microangiopathy, Tyrosine kinase inhibitors

ORAL Submission**INFECTIONS (ORAL-595)****EFFICACY OF ARTESUNATE IN TREATMENT OF CYTOMEGALOVIRUS REACTIVATIONS POST ALLOGENEIC TRANSPLANTS.**

Anant Gokarn¹, Ramnath Shenoy¹, Anup Toshniwal¹, Siddhesh Kalantri¹, Akanksha Chichra¹, Sachin Punatar¹, Avinash Bonda¹, Lingaraj Nayak¹, Sumeet Mirgh¹, Libin Mathew¹, Vivek Bhat², Sanjay Biswas², Navin Khattry¹

¹Department of Medical Oncology, BMT unit, ²Department of Microbiology, Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Tata Memorial Centre., Navi Mumbai, India

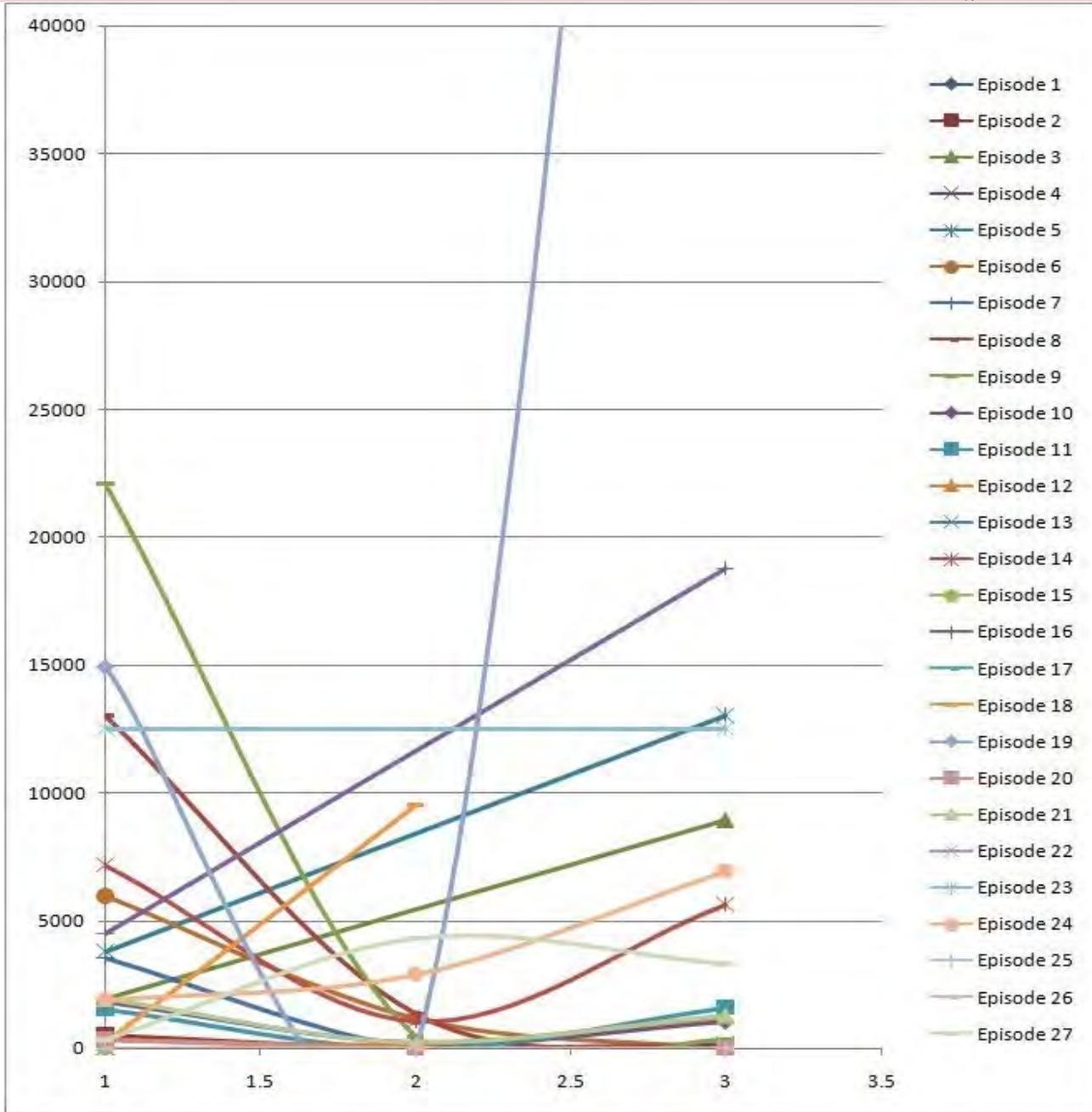
Aims & Objectives: To assess utility of Artesunate in treating Cytomegalovirus (CMV) reactivations.

Patients / Materials & Methods: This is a retrospective single centre analysis from April 2015 to October 2018. CMV was monitored twice a week with quantitative polymerase chain reaction (QPCR). Preemptive therapy was given to those with a QPCR >500 copies/mL at 2 consecutive time points. Ganciclovir was preferred first line agent, however in case of cytopenia, artesunate was used. If cytopenias developed while patient was on ganciclovir, artesunate was started as second line. Artesunate was given till clearance of CMV or intolerance. Artesunate was considered to be effective if there was no log increase in CMV copy numbers at 2 weeks of therapy and absence of progression to end organ involvement.

Results: There were 78 episodes of CMV reactivation in 69 patients during this period. Artesunate was used in 25 patients for 27 (34%) of the total 78 episodes. Artesunate was used as 1st line agent in 6, 2nd line in 13 and 3rd line in 8 episodes. Median CMV viral load was 1.6×10^3 copies per mL at start of artesunate. Median duration of use was 14 days (range 6 to 49). It was used preemptively in 15 episodes and as therapeutic (end organ involvement) in 12. Five (19%) of the 27 episodes cleared with artesunate. However Artesunate was effective in controlling CMV proliferation (absence of log rise in copy numbers) in 20 of the 27 episodes (74%). Artesunate failure rate was 22% (6 of 27 episodes). (See Figure 1).

Discussion & Conclusion: Artesunate has activity against CMV with failure rate of less than 25% and complete clearance in 20%. In resource limited settings, it may be used in patients who are cytopenic or intolerant to ganciclovir as it limits proliferation of CMV in about 3/4th of all episodes.

Supporting Document: 7f76a539-2810-4ae0-be98-c5d6d45a477c



X axis: Time in weeks after start of Artesunate; Y axis: CMV copy numbers per mL

Figure 1: Viral kinetics after start of Artesunate in each episode of CMV reactivation

Disclosure of Interest: None Declared

Keywords: Artesunate, cytomegalovirus, Viral reactivations

ORAL Submission**LYMPHOMA/MYELOMA (ORAL-597)****AUTOLOGOUS AND ALLOGENEIC HAEMATOPOIETIC STEM CELL TRANSPLANTATION IN AGGRESSIVE T-CELL LYMPHOMA**

Lawrence Cheng Kiat Ng¹, Christopher Shwei Wen Tham¹, Francesca Wei Inng Lim¹, Yunxin Chen¹, Shin Yeu Ong¹, Chandramouli Nagarajan¹, Jing Jing Lee¹, Yeow Tee Goh¹, Yeh Ching Linn¹, Yuh Shan Lee^{1,2}, Colin Diong Phipps^{1,2}, Jeffrey Kim Siang Quek¹, Than Hein¹, Jordan Chung Cheng Hwang¹, Sunjian Neo¹, William Ying Khee Hwang¹, Aloysius Yew Leng Ho¹

¹Haematology, Singapore General Hospital, ²Parkway Cancer Centre, Singapore, Singapore

Aims & Objectives: To study the outcome of autologous and allogeneic HSCT in T-cell lymphoma both upfront and relapse refractory settings.

Patients / Materials & Methods: This is a retrospective analysis of consecutive T-cell lymphoma patients who underwent autologous and allogeneic HSCT from January 2000 to June 2020 at Singapore General Hospital. The decision for transplant at upfront or relapse refractory setting is by physician and patient discretion based on ASBMT and EBMT guidelines. We do not perform HSCT in ALK positive anaplastic large cell lymphoma (ALCL) at first remission. Kaplan- Meier estimation of event-free survival (EFS) and overall survival (OS) were performed.

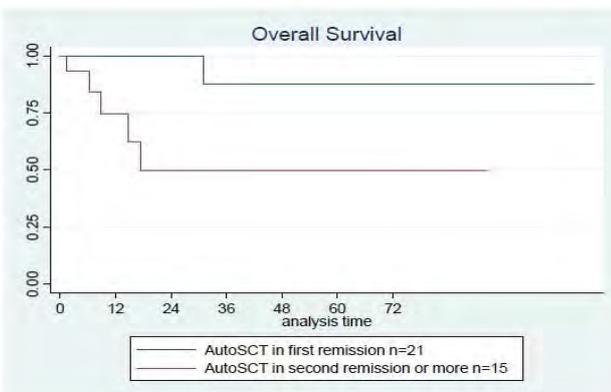
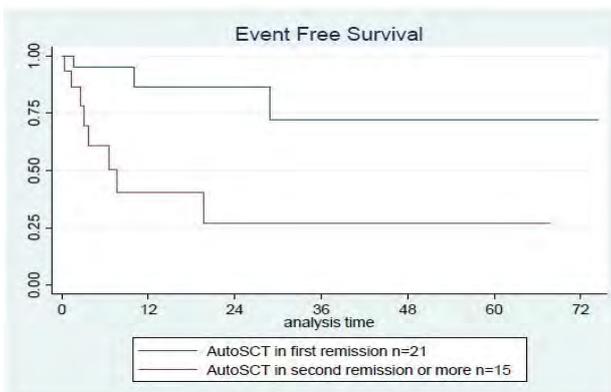
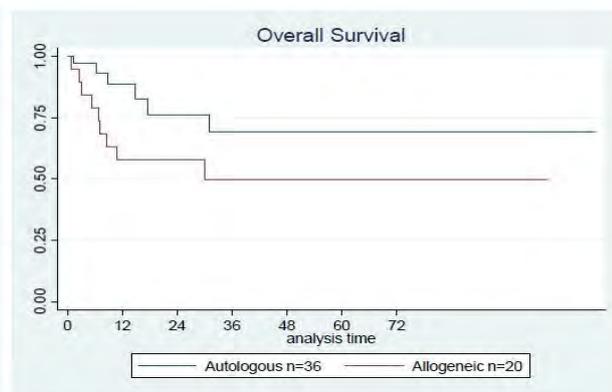
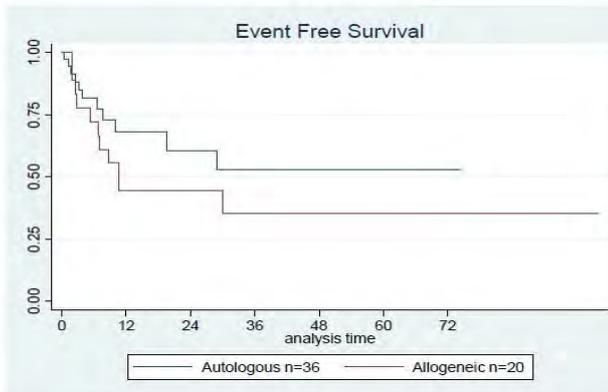
Results: Total 56 patients were studied. 36 underwent autologous and 20 underwent allogeneic HSCT. The baseline characteristic, disease status and transplant details are summarized in table1. Induction and salvage regimes were highly varying based on disease subtype and patient response. 14 patients (25%) received novel agent (defined as one of Brentuximab, Alectinib, Bortezomib, Romidepsin or Panobinostat) prior to transplant. All patients underwent transplant in remission (complete or partial), though patients receiving allogeneic HSCT were less likely to be transplanted in first remission (15% versus 58% with autologous). At median follow-up of 12.3 months, the 2-years EFS and OS for autologous HSCT group are 62% and 78% and the 2-year EFS and OS for allogeneic HSCT group are 47% and 59%. For the autologous HSCT group, 21 patients who had HSCT at first remission showed excellent 2-year EFS and OS at 87% and 100% compared to 15 patients who had HSCT in relapse refractory setting with 2-year EFS and OS at 33% and 53%. Among the various subtype of aggressive T-cell lymphoma, ALCL seems to benefit the most from HSCT consolidation.

Discussion & Conclusion: Our study suggests HSCT is effective consolidation therapy for aggressive T-cell lymphoma. Our 2-year EFS and OS appeared higher compared to historical data. Autologous HSCT at first remission should be considered except in ALK positive ALCL. The limitation for this study includes retrospective nature with potential selection bias. Comparison with non-transplant cohort is currently undergoing.

Supporting Document: 85bc11a9-bd27-496d-b999-7e4564018b76

Table1

	Autologous (n=36)	Allogeneic (n=20)
Median Age	46	38
Male:Female	26:10	12:8
Stage 3 or 4	31 (86%)	18 (90%)
Histology		
PTCL-NOS	14 (39%)	5 (25%)
AITL	14 (39%)	2 (10%)
ALCL (RR ALK positive and ALK negative)	4 (11%)	4 (20%)
EATL	3 (8%)	0
GDT	1 (3%)	2 (10%)
ENKTL	0	5 (25%)
CTCL	0	2 (10%)
Disease status at transplant		
First remission (CR/PR1)	21 (58%)	3 (15%)
Second remission or more (CR/PR >1)	15 (42%)	17 (85%)
Prior lines of treatment		
<=2	19 (53%)	12 (60%)
>2	17 (47%)	8 (40%)
Novel agent used as prior line of treatment (Brentuximab, Alectinib, Bortezomib, Romidepsin, Panobinostat)	5 (14%)	9 (45%)
Conditioning Regime		
BEAM	34 (94%)	
Thiotepa based	2 (6%)	
RIC/non myeloablative		14 (70%)
Myeloablative		6 (30%)
Donor status		
Related		11 (55%)
Unrelated (include MUD, UCD)		9 (45%)



Disclosure of Interest: None Declared

Keywords: Allogeneic hematopoietic stem cell transplantation, Autologous transplantation, T-cell lymphoma

ORAL Submission**CONDITIONING REGIMENS (ORAL-614)****FLUDARABINE MELPHALAN VS FLUDARABINE TREOSULFAN AS REDUCED INTENSITY CONDITIONING REGIMENS IN HSCT**

Akanksha Chichra¹, Lingaraj Nayak², Rushubh Kothari¹, Siddhesh Kalantri³, Avinash Bonda⁴, Anant Gokarn³, Sachin Punatar³, Sumeet Mirgh³, Bhausaheb Bagal³, Sadhana Kannan³, Libin Mathew³, Navin Khattry³

¹Bone Marrow transplant, ACTREC, Tata Memorial Hospital, ²Bone Marrow Transplant, ACTREC, Tata Memorial Centre, ³Bone Marrow Transplant, ACTREC, Tata Memorial Centre, Kharghar, ⁴Bone Marrow Transplant, ACTREC, Tata Memorial Hospital, Navi Mumbai, India

Aims & Objectives: Fludarabine + Melphalan (FM) and Fludarabine + Treosulfan (FT) are 2 reduced intensity conditioning (RIC) regimens. We retrospectively analysed these 2 regimens for toxicities and outcomes.

Patients / Materials & Methods: This is a retrospective single centre analysis of all patients with haematological cancers who received either FM or FT from April 2008 to December 2018. The entire cohort was divided into two groups - Matched Sibling Donor (MSD)/Matched Unrelated Donor (MUD) and Haploidentical (Haplo) transplants for analysis of toxicities and outcomes.

Results: The study included 138 patients, 98 males and 40 females. The diagnoses were AML- 53, ALL- 30, MDS/MPN- 49 and lymphoma -6. MSD/MUD transplants were 105 (FM- 94; FT-11); 33 were Haplo (FM-17; FT-16). In MSD/MUD group, significantly more patients had high/very high DRI in FT arm (45% vs 17%; P=0.056). In MSD/MUD group, 44 (47%) patients in FM arm had grade 3/4 oral mucositis compared to 1 (9%) in FT arm (P=0.02). Corresponding numbers were 7 (41%) and 1 (6%) in Haplo group. Grade 3/4 diarrhoea was higher in the FM vs FT arm of Haplo group (41% vs 6%; P=0.039) but not in the MSD/MUD cohort. More patients received TPN in the FM arms of both MSD/MUD and Haplo groups. The median follow up of entire cohort was 4.8 years. The OS at 5 years was 62% in FM arm of MSD/MUD group vs 53% in FT arm (P=NS). Similarly OS at 5 years was 41% and 28% (P=NS) in FM and FT arms respectively of Haplo group.

Discussion & Conclusion: Severe mucositis and diarrhoea was significantly less with FT than FM in both MSD/MUD and Haplo groups. FT provided comparable outcomes to FM in the MSD / MUD group in spite of having significantly higher proportion of patients with high / very high DRI and HCT CI.

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Table 1: Baseline Characteristics

Baseline Characteristics	Matched Sibling Donor / Matched Unrelated Donor (n=105)			Haploidentical Donor (n=33)		
	Flu/Mel (n=94)	Flu/Treo (n=11)	P value	Flu/Mel (n=17)	Flu/Treo (n=16)	P value
Median Age (years)	30	28	0.86	17	25	0.60
Male	67	8	0.92	12	11	0.9
Female	27	3		5	5	
CMV						
pos/pos	88	10	0.55	15	16	0.48
Pos/neg	4	1		1	0	
Neg/pos	2	0		1	0	
DRI						
Low	18	1		3	3	
Intermediate	57	4	0.056	11	7	0.39
High/Very High	16	5		3	6	
HSCT CI						
<3	80	7	0.08	13	10	0.38
≥3	14	4		4	6	
EBMT Score						
0-2	57	3		3	4	
3-4	32	7	0.10	10	7	0.68
≥5	5	1		4	5	

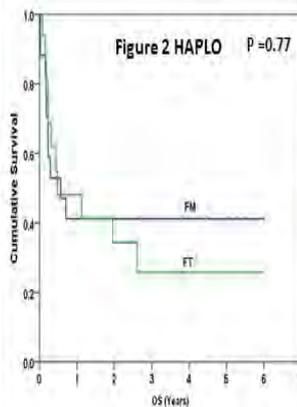
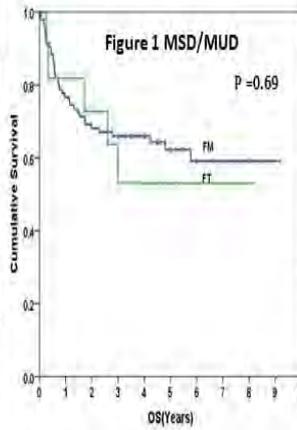


Table 2: Engraftment Kinetics, Toxicities and Outcomes of the 2 Regimens

	Matched Sibling Donor / Matched Unrelated Donor (n=105)			Haploidentical Donor (n=33)		
	Flu/Mel (n=94)	Flu/Treo (n=11)	P value	Flu/Mel (n=17)	Flu/Treo (n=16)	P value
Median duration of ANC <100 (days)	9	12	0.22	9.5	13.5	0.156
Median time to NE (days)	15	16	0.39	15	16	0.722
Median time to PE (days)	13	13	0.54	17.5	1	0.715
G3/4 Oral Mucositis	44(46.8%)	1(9%)	0.02	7(41%)	1(6%)	0.039
G3/4 Diarrhoea	10(10.6%)	1(9%)	1.0	7(41%)	1(6%)	0.039
No. of patients requiring TPN	49(52%)	1(9%)	0.008	10(59%)	3(18%)	0.032
VOD	3(3%)	0	1.0	1(5.8%)	0	1.0
CMV reactivation	44(46%)	3(27%)	0.33	11(64%)	14(87%)	0.22
Incidence of full donor chimerism at d15	83(88%)	9(81%)	0.62	13(76%)	13(81%)	1.0
Incidence of full donor chimerism at d30	87(92%)	10(90%)	1.0	14(82%)	14(87%)	1.0
Incidence of Acute GVHD G3/4	16(17%)	3(27%)	0.04	6(35%)	3(18%)	0.43
Incidence of Chronic GVHD	48(51%)	7(63%)	0.53	2(11%)	4(25%)	0.39
Cumulative Incidence of TRM at 2 yrs	17.32 %	18.2 %	0.41	47.1 %	54.9 %	0.96
Cumulative Incidence of Relapse at 2 yrs	21.5 %	44.4 %	0.12	22.2 %	38.5 %	0.56

Disclosure of Interest: None Declared

Keywords: Conditioning regimen, reduced intensity, toxicity

ORAL Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (ORAL-625)****SERIOUS EVENTS AND ADVERSE REACTIONS RELATED TO BLOOD STEM CELL DONATION REPORTED TO WMDA IN 2019**Monique Jöris¹, Mirjam Fechter², Thilo Mengling³, Lydia Foeken*¹¹World Marrow Donor Association, ²Matchis, Leiden, Netherlands, ³DKMS, Tübingen, Germany

Aims & Objectives: In 2019, the WMDA introduced a new online central global reporting system for WMDA member organisations to report Serious (Product) Events and Adverse Reactions (S(P)EARs) among unrelated blood stem cell donors and recipients. With this system, WMDA can systematically collect and analyse information on S(P)EARs with the aim to gain insight in the occurrence of these, the causes and relation to blood stem cell donation.

Patients / Materials & Methods: WMDA member organisations were required to report their S(P)EARs to WMDA. The data collection has been done through the new WMDA reporting system, followed by a data analysis using Excel. All reported S(P)EARs were evaluated by the WMDA S(P)EAR committee and unclear or incomplete data were checked by a representative of the WMDA office.

Results: In 2019, the S(P)EAR committee received and considered 210 S(P)EAR reports from 27 organisations. The type of (SP)EARs reported were as follows: 155 (74%) harm to donor, 23 (11%) harm to recipient and 32 (15%) risk of harm (Table 1).

The majority of the harm to donor reports were malignancies (N=53, 34%), mainly reported as long term donor harm. Product quality issues (N=5, 22%) were the most common harm to recipient reported and 12 (38%) of the reported risk of harm incidents involved a product quality issue as well.

During 2019, 23,181 unrelated blood stem cell donations have taken place worldwide. These involved 2,851 HPC-Cord donations; 16,406 HPC-Apheresis donations and 3,924 HPC-Marrow donations. This means that for 0,07% (N=2) of the HPC-Cord donations, in 0,49% (N=81) of the HPC-Apheresis donations and in 0,87% (N=34) of the HPC-Marrow donations a S(P)EAR has been reported (Table 1).

Discussion & Conclusion: The report rate of S(P)EARs in unrelated blood stem cell donation is below 1% for all cell types. However, we do believe there is a certain degree of underreporting of S(P)EARs to the WMDA.

Supporting Document: 8b8c200e-2002-4dc9-b4ff-1ae9c27baa79

Table 1. Overview of reported incidents.

	Harm to donor	Harm to recipient	Risk of harm	Total
Total reported	155	23	32	210
Timeframe				
Short term (<6 months)	88	11	24	123
Long term (>=6 months)	67	12 (6 UNK [^])	8 (1 UNK [^])	87 (7 UNK [^])
Product type				
HPC-Marrow	33 (28 ST [*])	6 (2 ST [*])	5 (4 ST [*])	44 (34 ST [*])
HPC-Apheresis	120 (58 ST [*])	11 (7 ST [*])	19 (16 ST [*])	150 (81 ST [*])
HPC-Cord	-	3 (1 ST [*])	5 (1 ST [*])	8 (2 ST [*])
DLI	2 (2 ST [*])	1	-	3 (2 ST [*])
Pre-collection samples	-	-	3 (3 ST [*])	3 (3 ST [*])
UNK	-	2 (1 ST [*])	-	2 (2 ST [*])

*ST: Short Term; ^UNK: Unknown

Disclosure of Interest: None Declared

Keywords: adverse events and reactions, annual report, blood stem cell donation, S(P)EAR, statistics

ORAL Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (ORAL-637)****A 6-WEEK INTERNET PROGRAM OF EXERCISE AND MINDFULNESS TRAINING TO IMPROVE OUTCOMES OF HSCT PATIENTS**Kate Fennessy¹, Nikki Molan^{2,3}, David Ma^{3,4}¹Psychology, ²Medicine, St Vincent's Hospital, ³St Vincent's Clinical School, University of New South Wales, ⁴Haematology and SCT, St Vincent's Hospital, Darlinghurst, Australia

Aims & Objectives: Late effects in haematopoietic stem cell transplant (HSCT) survival include psycho-social dysfunction, reduced physical fitness, and disease. Guided exercise and mindfulness based stress management (MBSM) programmes have shown promise in improving patient outcomes. Challenges in equitable and effective healthcare delivery to vulnerable populations may be addressed via telecommunication technology.

Aims: To examine the feasibility and benefits of delivering a 6 week personalised exercise and MBSM program for patients at home via videoconference, and to evaluate its acceptability and utility.

Patients / Materials & Methods: Forty patients 6 to 48 months post-HSCT and aged 18 to 75 were invited to participate. Patients with severe medical issues or high scores on measures of anxiety and depression were excluded. An in-person assessment session included a Modified Bruce Test, strength tests, 6-minute walk test, training for a home-exercise program, introduction of MBSM techniques, and provision of materials including audio recordings for skill practice. Measures included the Goal Attainment Scale, Karnofsky Scoring, FACT-BMT, Pittsburgh Sleep Quality Index, Hospital Anxiety and Depression Scale, and Godin-Shephard Leisure Time Index. Participants received 1 hour of both exercise training and MBSR training per week for 6 weeks and were assessed at 3 and 6 months post training.

Results: 24 of 40 eligible patients responded to the invitation and completed the program (54% male, 37.5% rural/remote). Cardiovascular fitness, strength, and anxiety symptoms showed significant improvement at both 3 and 6 months post-training ($p < .05$). Self-reported quality of life was significantly higher at 3 months ($p < .05$), and self-reported emotional wellbeing, sleep subscales and activity levels were significantly improved at 6 months ($p < .05$).

Discussion & Conclusion: A 6-week internet-based exercise and MBSM programme was an acceptable, safe, and potentially effective intervention for improving physical and psychological outcomes in this vulnerable patient population. A multicentre RCT will be conducted to confirm the findings of this single centre trial.

Disclosure of Interest: K. Fennessy But No Conflict with: Arrow Bone Marrow Transplantation Foundation, N. Molan: None Declared, D. Ma: None Declared

Keywords: Exercise, HSCT, Late effects, Mindfulness Based Stress Management, Telehealth

ORAL Submission**BASIC SCIENCE (ORAL-646)****LONG-TERM IMMUNE RECONSTITUTION AFTER HAEMATOPOIETIC STEM CELL TRANSPLANT IN MULTIPLE SCLEROSIS**

Malini Visweswaran¹, Kevin Hendrawan^{1,2}, Jennifer C. Massey^{1,2,3}, John J. Zaunders⁴, Barbara Withers^{1,2}, David D. F. Ma^{1,2,5}, John J. Moore^{1,2,5}

¹Blood Stem cells and Cancer Laboratory, St. Vincent's Centre for Applied Medical Research, ²St Vincent's Clinical School, Faculty of Medicine, University of New South Wales, ³Department of Neurology, St. Vincent's Hospital, ⁴NSW State Reference Laboratory for HIV, St. Vincent's Centre for Applied Medical Research, ⁵Department of Haematology, St. Vincent's Hospital, Sydney, Australia

Aims & Objectives: Multiple Sclerosis (MS) is an autoinflammatory disease of the central nervous system characterised by demyelination, axonal degeneration, and dysregulation of immunological self-tolerance. Emerging evidence indicates that autologous haematopoietic stem cell transplantation (AH SCT) has the potential to improve clinical outcomes in MS patients, but evidence of how AH SCT induces clinical remission is limited. This group has previously reported early immunological reconstitution (IR) in MS patients up to 1yr post-AH SCT. However, long-term immunological effects of AH SCT have yet to be elucidated. The aim of the present study is to investigate the maintenance of IR in MS patients at 2yrs and 3yrs post-AH SCT.

Patients / Materials & Methods: High-dimensional immunophenotyping of peripheral blood mononuclear cells from MS patients (n=24) at pre-AH SCT, 2yr and 3yr post-AH SCT timepoints were performed using two custom-designed 18- colour flow cytometry panels. Statistical analysis included repeated measures ANOVA with mixed-effects model and Holm-Sidak test ($p < 0.05$), with logarithmic transformations if required to fit the model, using GraphPad Prism 8.

Results: We observed substantial IR-associated changes in MS patient samples at 2yr and 3yr post-AH SCT compared to pre-AH SCT. Significant decreases were observed in frequency of pro-inflammatory immune populations such as Th17 (CD4⁺CD45RA⁺CD161⁺CCR6⁺) at 2yr ($p < 0.01$) and 3yr ($p < 0.0001$), circulating T-follicular helper (CD4⁺CD45RA⁺CXCR5⁺PD1⁺) at 3yr ($p < 0.01$), and mucosal-associated invariant T-cells (CD8⁺CD161^{hi}CCR6⁺) at 2yr and 3yr ($p < 0.0001$) post-AH SCT. Furthermore, we observed a sustained increase in terminally differentiated T-cells (CD8⁺CD57⁺CD28⁻) at 2yr and 3yr ($p < 0.0001$) post-AH SCT.

Discussion & Conclusion: The findings demonstrate that AH SCT induces substantial recalibration of the immune system, with changes in immune subsets that persist out to 3yrs post-transplant. A significant reduction of the patients' pro-inflammatory immune profile is indicative of sustained immune tolerance, accompanied by an increase in terminal differentiation of CD8⁺ T-cells. These findings provide insights into the mechanism of action of AH SCT, which could reflect associations between sustained IR and long-term clinical remission in MS patients post-AH SCT.

Disclosure of Interest: None Declared

Keywords: Autoimmunity, Autologous haematopoietic stem cell transplantation, Immune Reconstitution, Immunophenotyping, Multiple Sclerosis

ORAL Submission**HEMOGLOBINOPATHIES, PRIMARY IMMUNE DEFICIENCY DISEASES AND METABOLIC DISORDERS. (ORAL-652)****ADVANCING TOWARDS AN OPTIMAL CURE – HSCT EXPERIENCE IN INHERITED METABOLIC DISORDERS**

Venkateswaran Vellaichamy Swaminathan^{*1}, Satish Kumar Meena², Harika Varla³, Ramya Uppuluri³, Indira Jayakumar⁴, Revathi Raj⁵

¹PEDIATRIC HEMATOLOGY, ONCOLOGY, BLOOD AND MARROW TRANSPLANTATION, ²DEPARTMENT OF PEDIATRIC HEMATOLOGY, ONCOLOGY AND BLOOD AND MARROW TRANSPLANTATION, ³DEPARTMENT OF PEDIATRIC HEMATOLOGY, ONCOLOGY, BLOOD AND MARROW TRANSPLANTATION, ⁴PEDIATRIC INTENSIVE CARE, APOLLO CANCER INSTITUTES, ⁵DEPARTMENT OF PEDIATRIC HEMATOLOGY, ONCOLOGY AND BLOOD AND MARROW TRANSPLANTATION, APOLLO CANCER INSTITUTES, CHENNAI, India

Aims & Objectives: Inborn errors of metabolism (IEM) comprise a large group of inherited diseases due to disordered lysosomal (mucopolysaccharidosis), peroxisomal (adrenoleukodystrophy), or mitochondrial function. Hematopoietic stem cell transplantation (HSCT) offers a therapeutic option, and we present the data on our case series.

Patients / Materials & Methods: We performed a retrospective study from January 2008 to February 2020 on children diagnosed with inherited metabolic disorders based on enzyme analysis or gene mutation. We documented HSCT details, including conditioning regimen, engraftment, and outcome.

Results: Twenty-two children (MPS - 12, Gauchers - 4, X-ALD 3, MLD - 2, Osteopetrosis-1) underwent HSCT. The donor was a matched family donor in 5, a mismatched family donor in 1, matched unrelated donor in 9, and a haploidentical family donor in 8 children. All children received myeloablative conditioning consisting of fludarabine with treosulfan in 17/22, busulfan in 4/22, and melphalan in 1/22 children. Peripheral blood stem cell was the predominant stem cell source, and three children received a cord unit. Engraftment occurred in 20 /21 children (90%), and one child died of diffuse alveolar hemorrhage before engraftment. Two children had secondary graft failure. We documented viral reactivation in ten children (45%). The incidence of acute graft versus host disease (GVHD) was high at 59% (13/22) with skin involvement in 7 children (32%), gut involvement in 5 children (23%), and liver in one child. Two children have survived with extensive chronic and musculoskeletal GVHD. Two of the three children with X-ALD suffered a progression of their disease and died. One child with Gauchers disease transplanted post-splenectomy died a year after HSCT due to septic shock.

Discussion & Conclusion: The overall survival after HSCT for children with IEM was 69% in our cohort. With increasing awareness and early diagnosis, optimal outcomes are feasible with HSCT in low and middle-income countries with no access to lifelong enzyme replacement therapy or gene therapy

Disclosure of Interest: None Declared

Keywords: HSCT, inherited metabolic disorders, Outcome

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-658)****CALMING THE STORM – HSCT FOR VERY EARLY ONSET INFLAMMATORY BOWEL DISEASE**

Satish K. Meena¹, Harika Varla¹, Venkateswaran V. Swaminathan¹, Ramya Uppuluri¹, Revathi Raj¹

¹Department of Pediatric Hematology, Oncology, Blood and Marrow Transplantation, Apollo Cancer Institute, Chennai, India

Aims & Objectives: Very early-onset Inflammatory bowel disease (VEOIBD) is a rare disorder of immune dysregulation and children present with a severe clinical course, a high rate of resistance to conventional immunosuppressive therapy and multisystem involvement. VEOIBD has an underlying monogenetic defect in most patients, is associated with primary immunodeficiency in about 25% cases, and hematopoietic stem cell transplantation (HSCT) is a curative option.

Patients / Materials & Methods: We performed a retrospective study on children who presented with VEOIBD and underwent HSCT from January 2013 till January 2020

Results: We diagnosed 14 patients with VEOIBD, including 3 with IL10R defect, 3 with Wiskott Aldrich Syndrome, 2 with Hyper IgM syndrome, and one each with Leukocyte Adhesion Defect, Hyper IgE syndrome, IPEX syndrome, XIAP, LRBA, and congenital neutropenia. One patient presented with neonatal IBD (<28days), 11 presented with infantile IBD (<2 years), and two were in the age group of 2 to 6 years. Positive family history was present in 4 patients (29%). Five children presented with blood and mucus in the stools (36%) and one with a perianal abscess, followed by failure to thrive in 7 (50%), recurrent infections (42%), skin lesions (36%), and autoimmunity (21%). The donor source was haploidentical family 6 (42%), matched sibling 3, matched family 2 and unrelated in 3 children. The stem cell source was peripheral blood stem cells in 11, bone marrow in 2, and cord blood in 1 patient. We observed primary graft failure in 3 (21%) patients and graft versus host disease in 3 (21%) patients. Three patients died due to sepsis and 11 patients are alive without any morbidity. The overall survival in our cohort is 78.5%.

Discussion & Conclusion: Early HSCT has proven to be effective in resolving symptoms related to VEOIBD. The procedure cures the inflammatory bowel disease and ameliorates the immunodeficiency and autoimmunity.

Disclosure of Interest: None Declared

Keywords: Hematopoietic Stem Cell Transplantation, primary immunodeficiency, very early onset inflammatory bowel disease

ORAL Submission**LEUKEMIAS (ORAL-659)****ALLOGENEIC HSCT OUTCOMES FOR JUVENILE MYELOMONOCYTIC LEUKEMIA – A 10 YEAR SINGLE CENTER EXPERIENCE**

Venkateswaran Vellaichamy Swaminathan¹, Satish Kumar Meena², Harika Varla³, Ramya Uppuluri³, Indira Jayakumar⁴, Revathi Raj⁵

¹PEDIATRIC HEMATOLOGY, ONCOLOGY, BLOOD AND MARROW TRANSPLANTATION, ²DEPARTMENT OF PEDIATRIC HEMATOLOGY, ONCOLOGY AND BLOOD AND MARROW TRANSPLANTATION, ³DEPARTMENT OF PEDIATRIC HEMATOLOGY, ONCOLOGY, BLOOD AND MARROW TRANSPLANTATION, ⁴PEDIATRIC INTENSIVE CARE, APOLLO CANCER INSTITUTES, ⁵DEPARTMENT OF PEDIATRIC HEMATOLOGY, ONCOLOGY AND BLOOD AND MARROW TRANSPLANTATION, APOLLO CANCER INSTITUTES, CHENNAI, India

Aims & Objectives: Juvenile myelomonocytic leukemia (JMML) is a rare hematopoietic malignancy of early childhood, representing 2% to 3% of all pediatric leukemias. Allogeneic hematopoietic stem cell transplantation is the only curative option. In this study, we analyze the outcomes of patients with JMML treated at our center

Patients / Materials & Methods: We have performed a retrospective analysis of all children diagnosed with juvenile myelomonocytic leukemia as per WHO criteria at our center over 10 years from December 2009 to December 2019. We recorded data on demographic, clinical, laboratory, and treatment characteristics from medical records

Results: We studied 16 children with JMML, with a male to female ratio of 1.8:1, and a median age at diagnosis of 8 months (6 months to 4 years). The median total leukocyte count at presentation was 23,000 (15,000 to 70,000) with monosomy 7 in 4 children. All children received 6-mercaptopurine and cis-retinoic acid, and four had azacytidine. Two children underwent splenectomy before transplantation. Molecular diagnosis helped risk stratification after 2016 and two children with CBL gene mutation remain well on oral chemotherapy. Out of the sixteen children, two children had progressive disease and died before HSCT. Twelve children underwent allogeneic HSCT, of which four needed a second transplant for graft rejection. We used a myeloablative conditioning in all children except the one with Fanconi anemia. Busulfan, cyclophosphamide, and melphalan in three children with matched sibling donors and treosulfan, thiotepa, and fludarabine in the three children with alternate donors resulted in a stable graft. The disease-free survival in our HSCT cohort was 58.3%

Discussion & Conclusion: The main factors determining optimal outcomes in HSCT for JMML include adequate disease control before HSCT and a myeloablative conditioning regimen. Graft rejection remains the most significant barrier to cure. Risk stratification based on molecular diagnosis helps avoid HSCT in children with CBL gene mutation

Disclosure of Interest: None Declared

Keywords: GRAFT REJECTION, HSCT, JMML

ORAL Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (ORAL-661)****FEVER IN HAPLOIDENTICAL HSCT WITH PTCY– NURSING ALGORITHM IN A TERTIARY CARE CENTRE IN INDIA**

Jerlin Grace¹, Usha Sambath², Ramadevi Deivasigamani¹, Sharmila Devaraj¹, Prasanna Vedhashalame¹, Dhivya Arulmani¹, Karthika Prakash¹, Karpagavathi Krishnamoorthy³, Ramya Uppuluri⁴, Revathi Raj⁵

¹BLOOD AND MARROW TRANSPLANTATION, ²BLOOD AND MARROWTRANSPLANTATION, ³PEDIATRIC INTENSIVE CARE, ⁴ PEDIATRIC HEMATOLOGY ONCOLOGY AND BLOOD AND MARROW TRANSPLANTATION, ⁵PEDIATRIC HEMATOLOGY,ONCOLOGY, BLOOD AND MARROW TRANSPLANTATION, APOLLO CANCER INSTITUTES, CHENNAI, India

Aims & Objectives: We report our risk-based strategy in the management of cytokine release syndrome (CRS) during the engraftment phase in haploidentical stem cell transplantation with post-transplant cyclophosphamide (haplo-PTCY)

Patients / Materials & Methods: We performed a retrospective analysis of data in children between 5 months and 18 years of age who underwent haplo-PTCY from September 2014 to August 2020. Nursing protocol included grading of CRS as per published guidelines. Paracetamol every 6 hours after blood culture, monitoring for disproportionate tachycardia and avoiding steroids was the protocol for the first 72 hours. For grade 2-4 CRS, we used a protocol of fluid restriction (not more than 10-20 milliliter/kg fluid bolus), high-flow nasal cannula (HFNC) and early low-dose adrenaline infusion at 0.05-0.14 microgram/kg/minute if the child had disproportionate tachycardia or shock, based on clinical and echocardiographic features suggesting myocardial dysfunction. Methylprednisolone (1-2 mg/kg/day) was administered for CRS grade 2, and tocilizumab (4 mg/kg/dose) was administered for grade 3 CRS.

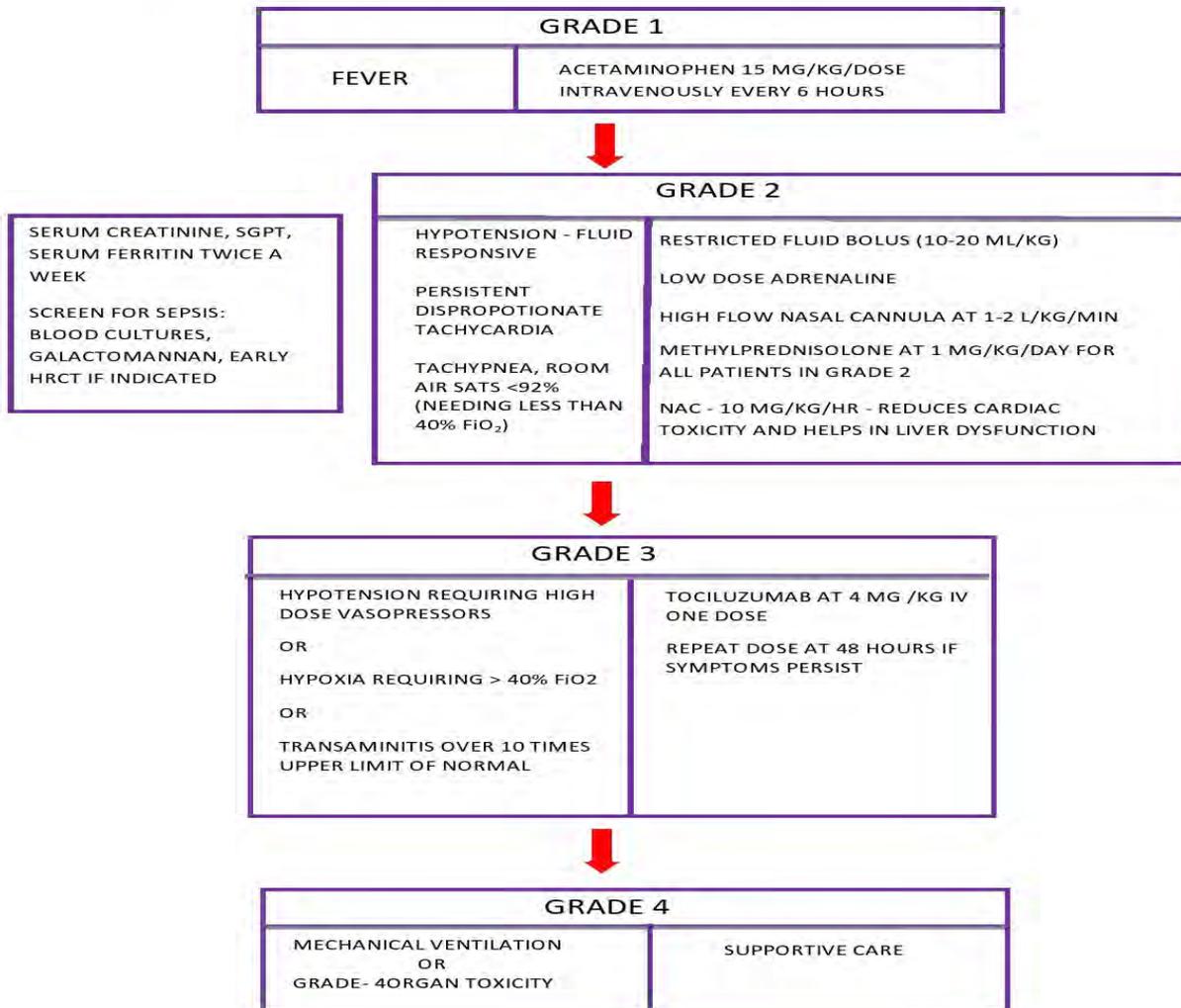
Results: Of the 164 children included fever soon after infusion occurred in 92% children and during engraftment in all children. Fever settled in all children after cyclophosphamide. During the engraftment period, CRS was noted in 97% transplants (grade 1, 2, 3, 4 in 74.1%, 15.6%, 6.7%, 1.4% respectively). There was a higher incidence of grade 2 and above CRS in children with non-malignant disorders (33%), when compared to malignant disorders (13%) and this was statistically significant (p-value 0.009). The algorithm for the management of CRS during engraftment is highlighted in Figure 1. Low-dose adrenaline, HFNC and ventilator support were needed in 13%, 10% and 4% respectively.

Methylprednisolone was administered to 21.4% children. Seven children received tocilizumab and two deaths occurred due to CRS

Discussion & Conclusion: Nursing considerations in haplo-PTCY are unique and a protocol to recognize and treat CRS results in optimal outcomes

Supporting Document: 9c7c77d0-45b0-49ab-bda5-6403453695b0

Figure 1 – CRS grading and intervention based on risk stratification



Disclosure of Interest: None Declared

Keywords: CRS, FEVER, haploidentical HSCT

ORAL Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (ORAL-663)****SKIN TOXICITY IN TREOSULFAN-THIOTEPA-FLUDARABINE- CONDITIONING REGIMEN IN CHILDREN UNDERGOING HSCT**

Deepa Palani¹, Thrishna Rajan¹, Tamilarasi Thannanjayan², Iman Uthiria Dass¹, Swetha Suresh¹, Jamuna Panirselvam¹, Poovarasi Ponnusammy¹, Ramya Uppuluri³, Revathi Raj⁴

¹BLOOD AND MARROW TRANSPLANTATION, APOLLO CANCER INSTITUTES, ²blood and marrow transplantation, APOLLO CANCER INSTITUTE, ³PEDIATRIC HEMATOLOGY, ONCOLOGY, BLOOD AND MARROW TRANSPLANTATION, ⁴PEDIATRIC HEMATOLOGY, ONCOLOGY, BLOOD AND MARROW TRANSPLANTATION, APOLLO CANCER INSTITUTES, CHENNAI, India

Aims & Objectives: Treosulfan and thiotepa based regimens are essential components of reduced toxicity conditioning regimens for children undergoing hematopoietic stem cell transplantation (HSCT). We present our data on the skin and mucosal toxicity and the nursing interventions to reduce morbidity

Patients / Materials & Methods: We performed a retrospective analysis of data in children up to 18 years of age, who underwent HSCT in the pediatric blood and marrow transplantation unit and who had received treosulfan as part of their conditioning regimen from January 2016 to July 2020. Data on patient demographics, transplant characteristics, documented skin and mucosal toxicity and nursing interventions were collected. Skin toxicity included erythematous patches in inguinal area and genitalia, neck and axillae, diffuse hyperpigmentation, erosions in inguinal area and buttock and desquamation. All children had skin sponging three to four times to remove the drug excreted in the sweat glands. Perianal hygiene was strictly followed with twice a day sitz bath, avoiding diapers during chemotherapy, application of barrier cream

Results: A total of 328 children were included (M: F ratio-1.6:1) with 54/328 (16%) were infants. We documented erythematous skin rash over the body in 111 (33%) children, inguinal or perianal rash in 70 (21%) and perianal excoriation in 42 (12%). Conjunctivitis was documented in 24 children (7.3%). Mucositis occurred early between day 0 to day 7 in 186 children (56%). The combination of treosulfan and thiotepa used in myeloablative regimen resulted in excess skin toxicity (27.3% in RIC versus 72.7% in MAC with the p value of 0.004). Infants were more prone to perianal excoriation (33.3% in less than 1 year vs 18.5% in >1 year with the p value of 0.015).

Discussion & Conclusion: Treosulfan can cause unique toxicity in children, particularly in infants who are prone to serious perianal excoriation. Skin and mucous membrane toxicity occur early in the first 7 days. Targeted nursing protocols with early preventive measures helps in reducing morbidity and mortality.

Disclosure of Interest: None Declared

Keywords: HSCT, skin rash, treosulfan

ORAL Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (ORAL-664)****DRUG RESISTANT BACTERIAL SEPSIS IN CHILDREN UNDERGOING HSCT IN INDIA– THE VALUE OF STOOL SCREENING**Deepa Palani¹, Vithya Veeraiyan¹, Alagumariammal Mariachammi¹, Pavithra Velmurugan¹, Anisha Baskaran¹, Abishalini Thangaraj¹, Bhavani Ravi¹, Ramya Uppuluri², Revathi Raj³¹BLOOD AND MARROW TRANSPLANTATION, ²PEDIATRIC HEMATOLOGY, ONCOLOGY AND BLOOD AND MARROW TRANSPLANTATION, ³PEDIATRIC HEMATOLOGY, ONCOLOGY AND BLOOD AND MARROW TRANSPLANTATION, APOLLO CANCER INSTITUTES, CHENNAI, India**Aims & Objectives:** We present data on the spectrum of bacterial organisms isolated, methods for early detection and treatment of bacteremia to reduce sepsis related mortality in children undergoing hematopoietic stem cell transplantation (HSCT).**Patients / Materials & Methods:** We performed a retrospective analysis in children up to 18 years undergoing HSCT from January 2016 to June 2020. Xpert CARBA-R assay in the stool samples for NDM, KPC, OXA, VIM and IMP was performed from rectal swab at the time of admission till December 2019. Blood Xpert CARBA-R replaced stool screening from January 2020. The cost of each CARBA R is 100 USD.**Results:** A total of 488 children underwent HSCT and 95 blood cultures were positive with gram negative bacteria. The most common organism isolated was Klebsiella pneumonia (39%) followed by E.coli (18%) and Pseudomonas species (14%). Over 80% of the Klebsiella and E.coli isolates were carbapenem-resistant. Stool screening prior to HSCT detected carbapenem-resistant organism positive for NDM and OXA only in 31% of these children. Blood CARBA R was performed in 5 children since January 2020 and the antibiotic therapy was escalated to ceftazidime avibactam combination for children with OXA positive species and colistin for NDM positive species. The turn-around time was less than 6 hours**Discussion & Conclusion:** K Pneumonia and E Coli are the most common organisms isolated in HSCT recipients in our cohort and over 80% of these being carbapenem-resistant. Stool CARBA R no longer helps guide antibiotic therapy in neutropenic children and adds to the cost of HSCT. In children with gram negative bacterial sepsis, blood CARBA R is a powerful screening tool for early and rational use of antimicrobial agents and optimal antimicrobial stewardship and is cost effective**Disclosure of Interest:** None Declared**Keywords:** CARBA R, RESISTANT BACTERIAL INFECTION, STOOL SCREENING

ORAL Submission**GVHD (ORAL-679)****SIROLIMUS BASED GVHD PROPHYLAXIS IN PAEDIATRIC PATIENTS UNDERGOING HSCT FOR BENIGN DISEASE**

Gaurav Kharya¹, Archana Rauthan¹, Manju Joseph¹, Himshikha Yadav¹, Bharti Sharma¹, Atish Bakane^{*1}

¹Center for Bone Marrow Transplant & Cellular Therapy, Indraprastha Apollo Hospital, Delhi, Delhi, India, India

Aims & Objectives: Calcineurin-inhibitor based GvHD prophylaxis is associated with high complication rate. Sirolimus based GvHD prophylaxis is associated with lower GvHD and favourable toxicity. Sirolimus has been widely used in adult settings but literature supporting use in paediatric patients is scarce. We share our experience of sirolimus in patient's ≤ 18 yrs of age undergoing alternative donor HSCT.

Patients / Materials & Methods: Patients aged 1year- ≤ 18 years were enrolled in the study. Relevant retrospective data was collected. All patients received fludarabine and thiotepa based RTC (except FA and SAA) with ATG (rabbit/recombinant) as serotherapy. GvHD prophylaxis was PTCy, sirolimus and MMF for T-cell-replete HSCT (TCR) and MUD transplants whereas patient's undergoing TCD (T-cell-receptor alpha/beta/CD19 depletion) HSCT received only sirolimus.

Results: Forty-five patients (received 47 grafts), median age was 7 years (range 1-17). Transplant indications included (SCD:35, PRCA:2; Thalassemia:4; Bruton's agammaglobulinemia:1; NFE2 deficiency:1; FA:1; SAA:1). Thirty-seven patients underwent 39 TCR, 3 received TCD and 5 MUD transplants. Thirty-nine patients engrafted after first HSCT. Four experienced PGF of which 2 successfully underwent 2nd haplo-graft using different donor. Two patients died before engraftment analysis. Median time to neutrophil and platelet engraftment was 14 and 13 days (range 9-20 and 9-30) respectively. Grade III/IV aGvHD was seen in 7/45(15.5%), 6 had limited cGvHD(liver1, skin5). CMV reactivation was seen in 20/47(42.5%) and 4/47(8.5%) had BKV induced haemorrhagic cystitis. PRES was seen in 2/47(4.2%) patients. Other complications such as VOD, TAM etc were not seen in any of the patients. At a median follow up of 301 days (range 20-1266), OS and DFS is 82.2% and 74.5% respectively. Causes of mortality were BSI in 4 (1 had PGF), IFI 1, severe falciparum malaria 1, intracranial haemorrhage 2 and grade III/IV gut GvHD in 2 patients.

Discussion & Conclusion: Sirolimus based GvHD prophylaxis has lower incidence of grade III-IV GvHD and acceptable toxicity in paediatric patients undergoing alternative donor HSCT.

Disclosure of Interest: None Declared

Keywords: Alternative donor, GVHD, Hematopoietic stem cell transplant, mTOR inhibitor, Sirolimus

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-680)****RISK FACTORS FOR NEUTROPENIC SEPSIS RELATED MORTALITY IN CHILDREN UNDERGOING ALLOGENIC HSCT**

Harika Varla^{1,1}, Satish K. Meena¹, Venkateswaran V. Swaminathan¹, Balasubramaniam ramakrishnan², Indira Jayakumar³, Ramya Uppuluri¹, Revathi Raj¹

¹Department of Pediatric Hematology, Oncology, Blood and Marrow Transplantation, ²Department of Biostatistics, ³Pediatric critical care, Apollo cancer institute, Chennai, India

Aims & Objectives: Neutropenic sepsis is known to be a leading cause of mortality in children undergoing hematopoietic stem cell transplantation (HSCT). We aimed to analyze the incidence and spectrum of infections in the neutropenic period of HSCT post-infusion until engraftment and the risk factors associated with mortality

Patients / Materials & Methods: We retrospectively analyzed data on infections, treatment, associated risk factors, morbidity, and mortality in children up to 18 years of age undergoing HSCT from January 2017 to August 2020. Data were analyzed from day+1 post-infusion up until engraftment.

Results: A total of 399 children were included with the M: F ratio of 1.9:1. Type of HSCT was matched related donor (MRD) in 36.6%, matched unrelated donor (MUD) in 18.3%, and haploidentical in 38.1%. Culture positive bacteremia was noted in 22.1% transplants with gram- negative bacteria (GNB) isolated in 71/88 (80%) of these patients. Among the GNB, the predominant organism was Klebsiella pneumonia in 38 (53%), E.coli in 16 (22%), Pseudomonas in 9 (12%). Carbapenem resistance was noted in 24/71 (33%) GNBs. Fungal infections were reported to be “possible” in 63 (15%), “probable” in 28 (7%), “proven” in 6 (1.5%). Mortality up to engraftment due to sepsis in our cohort is 3.3% (n=13). There was a significant association between mortality and a perianal focus (30.8%, p-value 0.029) and presence of carbapenem resistance (38%, p-value 0.002). Mortality within the group who developed proven and probable fungal infections was significantly higher than those who had bacterial infections (p-value 0.004). Among those who died due to bacterial infections (n=8), 75% had received a haplo-graft while 25% had received MUD, with no mortality due to bacteremia in the matched family donor group.

Discussion & Conclusion: In the era of emerging drug resistant organisms, developing defences systems to combat superbugs are essential to achieve optimal outcomes. Hospital infection control, pediatric intensive care and nursing services form the pillars to delivery of care so as to achieve sepsis-related mortality of less than 5%. Fungal infections result in significantly higher mortality in this group of patients. Neutropenic care with the focus on perianal care and nursing interventions can help reducing mortality.

Disclosure of Interest: None Declared

Keywords: Engraftment, haematopoietic stem cell transplantation, Neutropenic sepsis

ORAL Submission**INFECTIONS (ORAL-701)****CASE SERIES OF SARS-COV-2 INFECTION IN STEM CELL TRANSPLANT RECIPIENTS**

Akhil Rajendra¹, Juhi Shah¹, Vasu B. Goli¹, Lakhan Kashyap¹, Anant Gokarn^{1,1}, Sumeet Mirgh¹, Akanksha Chichra¹, Sachin Punatar¹, Prashant Tembhare¹, Nikhil Patkar¹, Navin Khattry¹

¹Tata Memorial centre, ACTREC, Mumbai, India

Aims & Objectives: To assess clinical course and outcomes of Stem Cell Recipients developing SARS-CoV-2 infection. **Patients / Materials & Methods:** This is a retrospective analysis of stem cell transplant (SCT) recipients who developed SARS-CoV-2 infection in Bone marrow transplant unit Tata memorial centre, ACTREC, India, between 1st May 2020 to 31st August 2020.

Results: During the COVID pandemic, four SCT recipients developed SARS-CoV-2 infection at our centre. Primary diagnosis in these patients were : Patient 1- JAK2 negative Primary myelofibrosis (78 months post Allogenic SCT), Patient 2- Multiple Myeloma (36 months post AutologousSCT) , Patient 3-Philadelphia positive ALL(5 months post AllogenicSCT), and Patient 4-Primary Progressive Transformed Lymphoma (9 months post Autologous SCT). Only Patient no. 3 was on immunosuppression (Cyclosporine and Steroid). patient 1 had severe covid infection requiring two doses of IL6 inhibitor (Tocilizumab), combination antivirals (Lopinavir/Ritonavir + Ribavirin) and Interferon β 1b, in addition to high flow oxygen support for 2weeks . Other 3 patients had mild COVID infection(2 of these 3 were treated with antivirals in view of ALC<600). All our patients who received antivirals received prophylactic low-molecular weight heparin. Three of these 4 patients required prolonged time to clear the viral infection (Table 1). Two patients (patient 2,4) who were RT-PCR negative developed neutralising IgG antibodies(IgG) to SARS-CoV2 at 83 days and 22 days, respectively. However, Patient 3 who developed antibodies at day 22 still continues to remain RT-PCR positive for SARS-CoV-2 (Table 1). Importantly, there was no mortality in our patients.

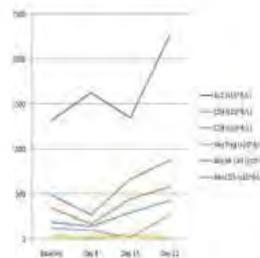
Discussion & Conclusion: The combination of Lopinavir/ritonavir, ribavirin, Interferon β 1b achieves rapid defervescence and clinical improvement. Like immunocompetent patients, Tocilizumab is effective in severe COVID19 even in SCT recipients However, there is delayed viral clearance in SCT recipients, probably due to impaired humoral and cell mediated immunity.

Supporting Document: 430a41d5-cee7-496f-974f-74c3c32de8b1

Name	Patient 1	Patient 2	Patient 3	Patient 4
Genetic diagnosis	JAK2 Neg Primary Myelofibrosis	Multiple myeloma, IgG Multiple Myeloma	Philadelphia Positive ALL (High Risk) in CR 1	Primary Transformed Lymphoma (NHL) transformed to DLBCL
Time from transplant	78 months	36 months	3 months	8 months
Type of Transplant	Allogeneic matched sibling transplant	Autologous Haematopoietic Stem Cell Transplant	Allogeneic matched sibling transplant	Autologous Haematopoietic Stem Cell Transplant
Concomitant GVHD (Yes/No)	Yes	NA	Yes	NA
Presenting symptoms	Fever and sore throat	Fever, Chills, Cough with mucoid expectoration, Breathlessness, Sore throat, Ageusia	Fever, Cough, Sore throat	Fever headache myalgia
Duration of symptoms	3 days	2 days	3 days	1 day
Severity of COVID infection (as per WHO ordinal scale)	Severe	Mild	Mild	Mild
Treatment given	Tocilizumab 8 mg/kg x 2 doses Lopinavir/Ritonavir (400/100 mg) bd Ribavirin 400 mg BD IFN beta2b 8 MU every alternate days x 2 doses	Lopinavir/Ritonavir(400/100 mg) bd X 10 days Ribavirin 400 mg BD x 10 days IFibeta 1b 8 MU every alternate days x 3 doses	Lopinavir/Ritonavir (400/100 mg) bd X 10 days Ribavirin 400 mg BD x 10 days IFibeta 8 MU every alternate days x 3 doses	Only supportive treatment
Adjuvant drug related adverse events			Elevated liver enzymes	
Need for oxygen/ventilator/Intubation	Yes (high flow nasal cannula)	No	No	No
Anticoagulation given	Yes (Prophylactic)	Yes (Prophylactic)	Yes (Prophylactic)	No
Total duration of admission(days)	36	10	10	10
Any triggering or worsening of GVHD	Yes	NA	Yes	NA
Baseline Absolute lymphocyte count (x 10⁹/L)	1.32	0.81	1.11	1.2
Baseline ALC (x10⁹/L)	0.42	0.51	0.43	NA
Baseline IL-6 (pg/ml)	21	8.97	11.58	7
Baseline CD4 (x10⁹/L)	0.351	0.245	0.064	Not done
Baseline CD8 (x10⁹/L)	0.114	0.590	0.315	Not done
Baseline CD4:CD8 ratio	2.88	0.628	0.2	Not done
Baseline T reg (x10⁹/L)	0.036	0.031	0.03	Not done
Baseline NK cells (x 10⁹/L)	0.188	0.064	0.104	Not done
Baseline Covid swab RT PCR	Baseline CT Values not available	E gene - 25 RdRp gene - 27	e - 16.8 RdRp gene - 19.7	E - 9.6 RdRp gene - 11.3
Cycling Threshold (CT) values				
Time to Covid swab negativity	31 days	22 days	Not yet negative (2 months since diagnosis)	Not yet negative (10 days since diagnosis)
Antibody formation (IgG) - YES/NO	Yes	No	Yes	Not assessed
Time to Antibody formation	83 days	Negative (40 days post COVID infection)	23 days	Not assessed
Last Follow-up (days post COVID)	05/08/2020 (83 days)	10/07/2020 (23 days)	18/08/2020 (67 days)	14/09/2020 (28 days)

Table 1: Clinical characteristics of patients with SARS CoV 2 infections post BMT

Patient No. 1



Patient No. 3

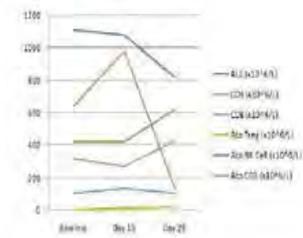


Figure 1: Immune cell profile of allogeneic transplant recipients post COVID infection.

X axis: Days since diagnosis of SARS CoV2 infection.
Y axis: cell count (10⁹/L)

Disclosure of Interest: A. Rajendra: None Declared, J. Shah: None Declared, V. Goli: None Declared, L. Kashyap: None Declared, A. Gokarn: None Declared, S. Mirgh Research Grant from: Tata Memorial Hospital, ACTREC, Mumbai, A. Chichra: None Declared, S. Punatar: None Declared, P. Tembhare: None Declared, N. Patkar: None Declared, N. Khattry: None Declared

Keywords: Allogeneic hematopoietic stem cell transplantation, Autologous haematopoietic stem cell transplantation, post transplant, SARS-Cov-2

ORAL Submission**LEUKEMIAS (ORAL-727)****OUTCOME OF ALLOGENEIC STEM CELL TRANSPLANT IN CML IN PRE AND POST TKI ERA FROM A SINGLE CENTER**

Sujith Karumathil¹, Anup J. Devasia¹, Sharon Lionel¹, Sushil Selvarajan¹, Uday Kulkarni¹, Anu Korula¹, Fouzia Abubacker¹, Alok Srivastava¹, Vikram Mathews¹, Biju George¹, Aby Abraham¹

¹CLINICAL HEMATOLOGY, CMC VELLORE, VELLORE, India

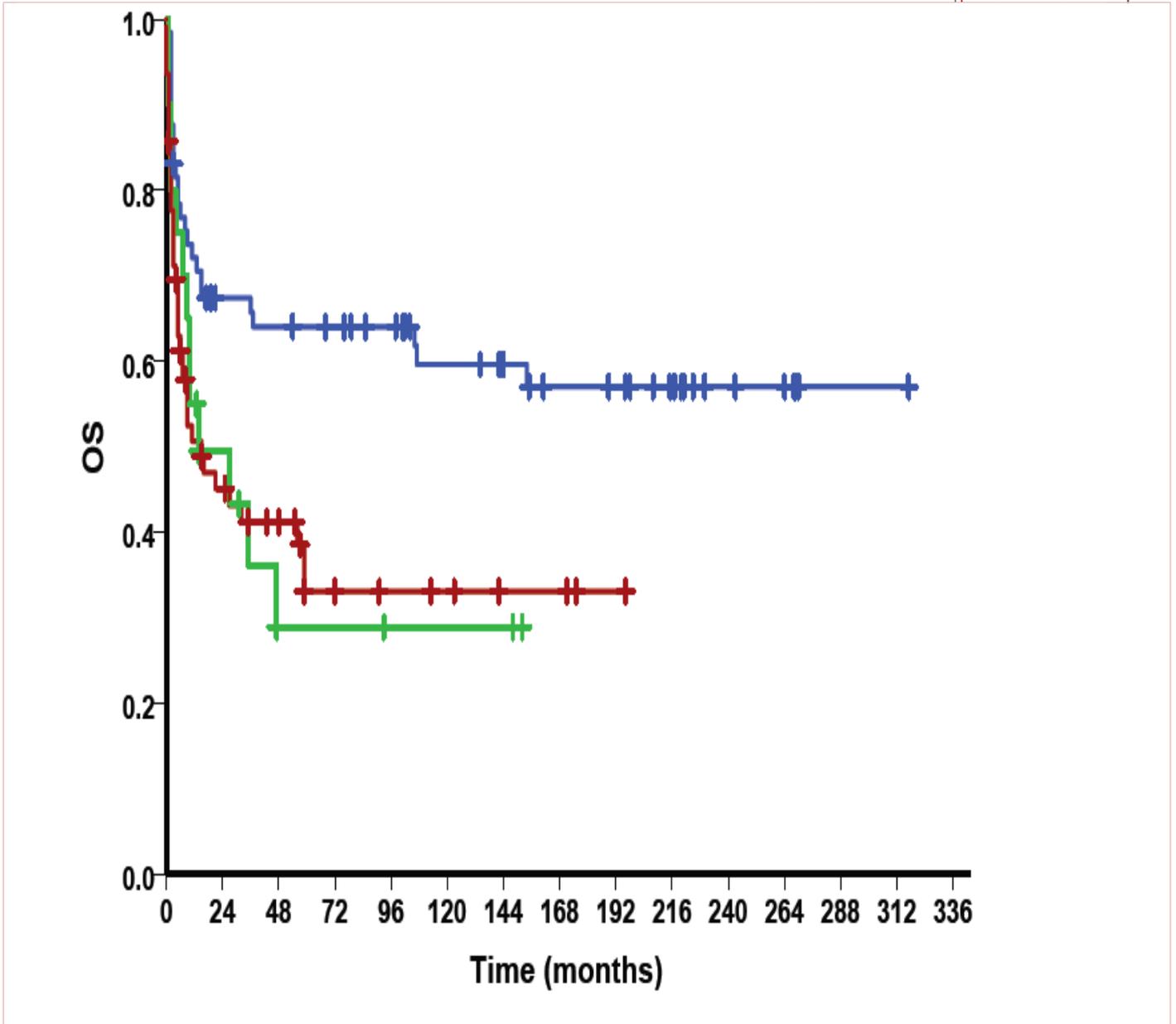
Aims & Objectives: Chronic Myeloid Leukemia (CML) is a hematological malignancy characterised by the reciprocal translocation between chromosome 9 and 22. Allogeneic stem cell transplantation (allo-SCT) was the only curative option in CML before the Tyrosine kinase inhibitor (TKI) era. Even in the TKI era, allogeneic stem cell transplantation has a definite role in certain scenarios. We analyzed our data on patients with CML who underwent allogeneic stem cell transplantation for various indications between January 1992 and December 2019.

Patients / Materials & Methods: This was a retrospective analysis of patients with CML who underwent allo-SCT, at our center between January 1992 -December, 2019. It was retrieved from electronic medical records.

Results: A total of 166 patients underwent allo-SCT. The median age at diagnosis was 31 (Range:10-55 years). Most common indication for SCT was advanced phase (n=83, 50%) followed by chronic phase (CP) (n=65, 39.2%) and TKI failure/Intolerance (n=16, 9.6%). While most had a matched related donor (n=145; 87.3%), 9 (5.4%) had matched unrelated and 12 (7.2%) had haplo-identical related donor. The stem cell source was bone marrow in 74 (44.6%) patients and peripheral blood in 92 (55.4%) patients. While 96 (57.8%) patients had acute GvHD (22.3%-grade 3-4), 73 (43.4%) patients had chronic GvHD (22.4%-extensive). Post transplant relapse occurred in 17 (26.2%) of those in CP, 2(10%) of those in accelerated phase (AP) and 20 (31.7%) of those in blast phase (BP). At a median duration of follow up of 21 months (Range:1-317 months), the overall survival is 57-6.6 months for CP, 28.9-11.3 months for AP and 33-6.7 months for BP. The most common cause for mortality posttransplant were infections (51.8%) and acute GVHD (20.5%).

Discussion & Conclusion: Allo-SCT continues to offer a curative option for patients with CML due to various indications even in TKI era. It is important to consider this carefully even though there are significant long term morbidities.

Supporting Document: b0115262-6782-4b40-899b-340c35c97c1f



Disclosure of Interest: None Declared

Keywords: Allogenic stem cell transplant, CML, TKI

ORAL Submission**CONDITIONING REGIMENS (ORAL-747)****HAPLOIDENTICAL STEM CELL TRANSPLANT WITH POST TRANSPLANT CYCLOPHOSPHAMIDE-SINGLE CENTRE EXPERIENCE**

Nitin Y. Murthy¹, Ashish Dixit¹, Amit Rauthan¹, Mallikarjun Kalashetty¹, Poonam Patil¹, Gaurav Nigade¹, Giri Punja¹
¹Medical oncology, Hematology & Bone Marrow transplant, Manipal Hospital, Old Airport Road, Bangalore, India

Aims & Objectives: Haploidentical stem cell transplants (haplo SCT) from family donors is an acceptable alternative if matched sibling donor is unavailable. Post-transplant Cyclophosphamide (PTCy) has revolutionised the field of haplo- SCT. We report long term experience with haplo-SCT at our centre by evaluating the survival trends and incidence of Acute GVHD at our centre.

Patients / Materials & Methods: A retrospective analysis was carried out of the 46 haplo-SCT with PTCy undertaken between 2014-2020 at our centre. GVHD was graded as per IBMTR. Overall survival was estimated by Kaplan Meir Survival curves

Results: 42 patients underwent 46 haplo-sct between 2014-2020. 33 (78.5%) underwent it for a malignant condition predominantly in the relapsed setting. The median age was 9 years, 29 (69%) belonging to the paediatric age group. The common indications were Relapsed ALL in 12 patients (28.57%) . relapsed AML in 8 (19%), aplastic anaemia in 7 (16.66%). Donor was Mother in 19 cases (41.30%) , Father in 17 (36.95 %). Non myeloablative regimen was used in 25 cases (54.3%). Peripheral blood was used as stem cell source in 22 cases (47.8%). Median day of engraftment was 14 days. Common events within 100 days was infection/sepsis in 8 (17.39%) and any Grade GVHD which occurred in 8 patients (17.39%). Grade 3-4 acute GVHD occurred in 4 patients (8.7%). Primary Graft failure occurred in 4 patients (8.7%) with 3 of them going on-to receive a 2nd haplo-SCT. 100 day mortality was 28.57% predominantly due to deaths due to sepsis amongst adults. There was no significant difference ($p=0.926$) in the events between those who underwent myeloablative conditioning as compared to those who received non myeloablative conditioning. The median OS among paediatric patients($n=29$) was 912 days and was significantly different ($P<0.05$) from median OS in adults who underwent transplant mainly for malignancy ($n=12$). Maximum ongoing survival in remission was seen in 3 paediatric patients for a duration of 8 years, 6 years, 6 years respectively. There was no significant difference ($p=0.304$) in the survival between non myeloablative regime (median OS=584 days) as compared to those who underwent myeloablative regimen (median OS=365 days)

Discussion & Conclusion: Haplo-SCT with PTCy did not result in higher rates of GVHD with less than 10% patients developing Grade 3-4 GVHD in our study. A relative higher 100 day - mortality rate was observed in adults who had underlying advanced refractory/relapsed disease and were post multiple lines of therapy. Considering the promising results at our centre especially in the paediatric population where a prolonged survival trend is being observed on long term follow up, Haplo-SCT with PTCy is an effective feasible option in the absence of a matched sibling donor.

Disclosure of Interest: None Declared

Keywords: haploidentical HSCT, Indian experience, Post Transplant Cyclophosphamide

ORAL Submission**HEMOGLOBINOPATHIES, PRIMARY IMMUNE DEFICIENCY DISEASES AND METABOLIC DISORDERS. (ORAL-749)****AZATHIOPRINE/HYDROXYUREA PRECONDITIONING IMPROVES DONOR CHIMERISM IN NMA MSD HSCT IN SCD PATIENTS**Erfan Nur¹, Aafke Gaartman¹, Sacha Zeerleder², Caroline Rutten¹, Mette Hazenberg¹, Bart Biemond¹¹Clinical Hematology, Amsterdam University Medical Centers, Amsterdam, Netherlands, ²Clinical Hematology, University Hospital Bern, Bern, Switzerland

Aims & Objectives: Sickle cell disease (SCD) is a severe, inherited hemoglobinopathy, resulting in poor quality of life and reduced life expectancy. Allogeneic hematopoietic stem cell transplantation (HSCT) is currently the only established curative treatment option for SCD. In adults, myeloablative conditioning is associated with significant toxicity. Matched sibling donor (MSD) transplantation with non-myeloablative conditioning (alemtuzumab/3Gy total body irradiation (TBI)) has shown promising results in adult SCD patients. However, a large part of these patients reached very low donor T-cell chimerism, resulting in 13% graft failure and necessitating chronic use of immunosuppression to avoid graft failure. Adding azathioprine (suppressing patient T-cells) and hydroxyurea (reducing bone marrow expansion) as preconditioning to the alemtuzumab/TBI regimen might improve donor chimerism and reduce risk of graft failure. In this study we prospectively investigate the effects of azathioprine/hydroxyurea preconditioning on donor chimerism and graft failure in patients receiving non-myeloablative MSD HSCT for SCD.

Patients / Materials & Methods: Adult SCD patients with an MSD were eligible for this treatment. After 3 months of azathioprine 150mg qd and hydroxyurea 25mg/kg qd, erythrocyte exchange transfusion was performed on day -10. Alemtuzumab/TBI conditioning was started on day -7, as described by Hsieh et al (NEJM, 2009). Graft-vs-host-disease (GvHD) prophylaxis consisted of sirolimus (Figure).

Results: Eleven SCD patients (median age 26 (range 19-49) years) were transplanted. All patients engrafted successfully. After a median follow-up of 17 months, median donor myeloid and T-cell chimerisms were 100% (range 88%>100%) and 73.5% (range 52%>88%) respectively. These donor chimerism percentages are higher than previously reported with alemtuzumab/TBI only. All patients had a corrected SCD phenotype with normalized hemoglobin levels. Patients reaching one year post-transplantation were able to stop sirolimus without decreases in chimerism. Only one patient developed acute grade II intestinal GvHD, that responded well to steroids. There were no viral reactivations or signs of macrophage activation syndrome.

Discussion & Conclusion: Azathioprine/hydroxyurea preconditioning prior to alemtuzumab/TBI results in improved donor chimerism, reducing risk of graft failure after non-myeloablative MSD transplantation in SCD patients. Importantly, patients were able to stop sirolimus as scheduled. Adding azathioprine/hydroxyurea preconditioning renders the alemtuzumab/TBI non-myeloablative HSCT, with low risk of transplantation-related toxicity, a viable alternative for adult SCD patients.

Disclosure of Interest: None Declared

Keywords: chimerism, GRAFT REJECTION, Sickle cell disease, Stem cell transplantation

ORAL Submission**LEUKEMIAS (ORAL-754)****OUTCOME OF ALLO-HSCT FOR ACUTE LYMPHOBLASTIC LEUKEMIA/LYMPHOMA IN HONG KONG: A RETROSPECTIVE STUDY**

Tsun Ho Lam^{*} 1, Yuk Man Cheung¹, Joycelyn Sim¹, Yok Lam Kwong¹

¹Department of Medicine, Queen Mary Hospital, Hong Kong, Hong Kong, China

Aims & Objectives: The optimal treatment for ALL is evolving, particularly for B-ALL with the introduction of minimal residual disease (MRD) monitoring, bispecific T-cell engager, and CAR-T therapy. Our unit historically offers all adult ALL patients with suitable donors to undergo Allo-HSCT in CR1. Here we retrospectively reviewed the outcome of 70 patients undergoing Allo-HSCT between Jun-2016 and Feb-2020.

Patients / Materials & Methods: Clinical records of 70 consecutive patients undergoing 1st Allo-HSCT for ALL during the study period were reviewed and analyzed. All had at least 6 months follow-up at last data cut-off.

Results: The median follow-up for surviving patients was 22 months (range 7-50). Median age at HSCT was 41 years (range 19-62). Thirty-eight patients were male. Fifty-nine had B-ALL, twenty-nine were Ph-positive (Ph+). Eleven had T-ALL. Fifty-eight (84%) patients had Hyper-CVAD as induction treatment. All Ph+ patients received tyrosine kinase inhibitors before HSCT (Imatinib=17, Dasatinib=12). Majority (80%) had HSCT at CR1. Donor source was related (n=28), unrelated (n=32), and haploidentical (n=10). Fifty-eight (83%) had myeloablative TBI-based conditioning. The overall survival (OS) and disease-free survival (DFS) at 24 months were 75% and 53% respectively. Patients transplanted in >CR1 had worse DFS (median 44 vs 6 months, p=0.00).

Twenty-six patients had pre-transplant MRD tested: 11 positive and 15 negative. Patients who were tested negative had a trend towards better DFS (78% vs 55%, P=0.1). None of the pre-HSCT clinical factors determined MRD status at transplant. Blinatumomab was used in five patients pre-HSCT, two in MRD positive CR1 with one successful MRD eradication. One patient achieved MRD negative CR2 pre-HSCT but developed morphological relapse at 5 months post-HSCT.

Discussion & Conclusion: HSCT performed at CR1 with the aid of MRD detection predicts the best outcome in terms of DFS and OS. The best treatment to achieve MRD negativity before HSCT needs further studies.

Disclosure of Interest: None Declared

Keywords: Acute Lymphoblastic Leukemia (ALL), Allogeneic hematopoietic stem cell transplantation, minimal residual disease, Outcome

ORAL Submission**CONDITIONING REGIMENS (ORAL-761)****NT5E GENE POLYMORPHISM IMPACTS IMPROVED HSCT OUTCOME IN PATIENTS WITH B-THALASSEMIA**

Aswin Anand Pai¹, Ezhilpavai Mohanan¹, John Carl Panetta², Balaji Balakrishnan¹, Kavitha M Lakshmi¹, Eunice S Edison¹, Uday Kulkarni¹, Anup J Devasia¹, Anu Korula¹, Fouzia NA¹, Aby Abraham¹, Biju George¹, Alok Srivastava¹, Vikram Mathews¹, Poonkuzhali Balasubramanian¹

¹Department of Haematology, Christian Medical College, Vellore, India, ²Department of Pharmaceutical Sciences, St Jude Children's Research Hospital, Memphis, United States

Aims & Objectives: Hematopoietic stem cell transplantation (HSCT) is the only proven curative modality available for β -thalassemia major [TM] patients. The ideal conditioning for these patients particularly those at high risk remains to be defined. Recently, fludarabine (F-araA)-treosulfan (Treo) based reduced toxicity conditioning regimen has improved HSCT outcome. However, graft rejection and regimen related toxicities are still a major concern. There is not data on F-araA pharmacokinetics in patients with [TM]. This study has evaluated the dose-exposure-response relationship of F-araA in a cohort of patients with TM and correlated it with polymorphisms in the genes of NT5E (ecto-5'-nucleotidase/CD73-converts F-ara monophosphate (i.v. F-araAMP) to active F-araA) and DCK (Deoxycytidine kinase- phosphorylates F-araA to F-araATP) which are involved in F-araA metabolism.

Patients / Materials & Methods: All TM patients who received F-araA-Treo regimen (40mg/m²/day x 4 days as 1hr infusion from day -5 to day -2 and Treo as 14g/m²/day x 3 days at the rate 5g/hr from day -5 to day -3 and a single dose of thiotepea on day -6 prior to HSCT between 2012 and 2020 were enrolled in this study. F-araA plasma levels were analysed using LC-MS/MS. Selected genetic polymorphisms in the NT5E and DCK genes were screened using pre- HSCT genomic DNA. The influence of F-araA PK and polymorphisms on clinical outcome endpoints such as regimen-related toxicities (RRT's), rejection, overall survival (OS), event-free survival (EFS) and transplant related mortality (TRM D+30 & D+100) were evaluated.

Results: F-araA PK data was available for 169 patients. The median F-araA exposure (AUC) was 19 (3-81) μ mol*h/mL. The inter individual variability (IIV) in F-araA PK was explained by NT5E variant. Patients having variant genotype for the SNP in NT5E (rs2295890) showed significantly lower plasma F-araA clearance (CL) compared to those with wild type genotype (p=0.001)(Table1). None of the F-araA PK parameters were associated with HSCT outcome. However, patients carrying the variant allele for NT5E polymorphism (n=29) showed significantly better EFS (89.7% vs 72.4%, p=0.04), lower rejection (0% vs 9.8%, p=0.05), lower late TRM D+100 (0% vs 16.5%, p=0.012) and lower incidence of Sinusoidal Obstruction Syndrome (0% Vs 23.9%, p=0.001). Although not significant, the patients with NT5E variant genotype showed trend towards better OS (89.7% vs 77%, p=0.12).

Discussion & Conclusion: Our data documents the first evidence of the large IIV in the F-araA PK in patients with TM. More significantly, there is a strong correlation between the polymorphisms in the NT5E gene and veracious outcome parameters - both immunological as well as toxicity related. Further studies are ongoing to elucidate the mechanism of the protective effect of this NT5E variant in HSCT outcome in TM.

Supporting Document: a9ad07df-693a-4c89-9f7d-07dea1f03cc3

PK PARAMETERS	NT5E 5'UTR Polymorphism (rs2295890)	
	Wild type (n=141) Median (range)	Heterozygous variant/mutant type (n=28) Median (range)
Flu AUC ($\mu\text{mol}\cdot\text{h}/\text{mL}$)	18 (3-81)*	27 (7-72)*
Flu Cl ($\text{L}/\text{h}/\text{m}^2$)	8 (2-38)*	5 (2-21)*
<i>*p value <0.05</i>		

Table-1 : Influence of NT5E/CD73 5'UTR polymorphism (rs2295890) in F-araA PK parameters

Disclosure of Interest: None Declared

Keywords: Beta-Thalassemia, HSCT, HSCT, conditioning regimen, outcome

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-772)****PBSC MOBILISATION WITH PEG-GCSF IN PEDIATRIC PATIENTS PLANNED FOR AUTOLOGOUS HSCT**

Dhwane Thakkar¹, Goutomi Chatterjee¹, Rohit Kapoor¹, Neha Rastogi¹, Satya Prakash Yadav¹

¹Pediatric Hematology Oncology and BMT, Medanta, the Medicity, Gurgaon, India

Aims & Objectives: Various methods are known to be effective for peripheral blood stem cell (PBSC) mobilisation including chemotherapy combined with granulocyte-colony-stimulating-factor (GCSF) for patients planned for autologous hematopoietic stem cell transplant (HSCT). The conventional recombinant human GCSF has a short half-life and hence needs repeated administration which is painful and traumatises the child. The pegylated GCSF (peg-GCSF) has a longer half-life and needs a one-time administration. In published studies, it has been found to be non-inferior to conventional GCSF with regard to efficacy and safety. There is paucity of literature of successful use of peg-GCSF and its appropriate dosing for PBSC mobilisation in children. We report our experience of PBSC mobilization with peg-GCSF in 9 children.

Patients / Materials & Methods: Retrospective analysis was done of hospital records of pediatric patients who received peg-GCSF for PBSC mobilisation between May2016 to August2020 in our unit.

Results: Among all children who underwent PBSC mobilisation and autologous stem cell harvest in our unit, 9 received chemotherapy followed by peg-GCSF. Male:Female ratio was 3.5:1, mean age was 7.7years. The diagnoses were: stage4 Neuroblastoma (3/9), metastatic Ewing's sarcoma (1/9), metastatic Germ cell tumor (1/9), recurrent Ependymoma (1/9), relapsed Wilms tumor (1/9), relapsed Osteosarcoma (1/9), relapsed Medulloblastoma (1/9). The mean time from peg-GCSF administration to PBSC harvest was 8.4days and mean CD34 stem cell count collected was 16.6million/kg (range 2.5-30million/kg) recipient body-weight. None of the patients had any major adverse events. 1/9 patient couldn't reach autologous HSCT due to progression of disease. The dosing of peg-GCSF that we followed is as in Table-1. All 8 children engrafted after autologous stem cell infusion and transplant related mortality was nil. Two children relapsed after autologous HSCT.

Discussion & Conclusion: Our experience highlights the successful use of peg-GCSF for PBSC mobilisation in pediatric patients making it less painful. In our experience it is equally effective and safe as conventional GCSF.

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Table 1: Dosing of peg-GCSF

Body weight	Dose of Peg-GCSF
10-20 kg	2 mg
20-30 kg	3 mg
30-40 kg	4 mg
40-50 kg	5 mg
>50 kg	6 mg

Disclosure of Interest: None Declared

Keywords: Autologous hematopoietic stem cell transplant, pediatric HSCT, pegylated granulocyte colony stimulating factor, Peripheral blood stem cell mobilisation

ORAL Submission**LYMPHOMA/MYELOMA (ORAL-780)****IS AUTO-TRANSPLANT REQUIRED IN MYELOMA IN 2020?**

Lalit Kumar¹, Anjali Mookerjee², Ranjit K. Sahoo³, Prabhat S. Malik³, Ankit Jha¹, Anisha Mathew¹, Atul Sharma¹, Ritu Gupta¹
¹Department of Oncology, AIIMS New Delhi, ²Oncology, AIIMS, New Delhi, New Delhi, ³Department of Oncology, AIIMS New Delhi, New Delhi, India

Aims & Objectives: We evaluated the outcome of patients with newly diagnosed multiple myeloma (MM) who had received novel agents based induction followed by autologous stem cell transplant (ASCT) compared to those who continued on maintenance therapy alone

Patients / Materials & Methods: We analyzed data base of three consecutive randomized trials (thalidomide-dexamethasone (Thal-dexa) versus Lenalidomide -dexamethasone (Len-dexa), Len-dexa versus VRD (bortezomib- lenalidomide-dexamethasone), and VRD versus VCD (bortezomib-cyclophosphamide-dexamethasone); these were conducted to evaluate novel agents based induction therapy between year 2009 and 2018. After 4 cycles of induction therapy patients were counselled for ASCT. Remaining patients were continued on maintenance therapy. Endpoints were progression free survival (PFS) and overall survival (OS). Analysis has been done as per protocol.

Results: Patients' characteristics are shown in table-1. 136(29.1%) patients underwent ASCT. Median OS is 72 months (95% CI 63.8-80.2) and median PFS is 33 months ((95% CI 26.8-39.2) for whole group. Transplant recipients had superior PFS in all three studies. OS is superior for transplant group in the initial two studies, in the third study the median follow up is still less (Table). These findings are consistent with recent phase III randomized trials suggesting superior outcome for transplant. Whether transplant can be avoided in a subgroup of patients still needs to be determined

Discussion & Conclusion: Autologous stem cell transplant remains the most effective approach for newly diagnosed patients of myeloma.

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	Total (n=468)	Thal-dexa Vs Len-dexa N=186	Len-dexa Vs VRd N=125	VRd Vs VCd N=157
Age (Years) Median (range)	55 (30-70)	56 (32-70)	56.5 (30-70)	58 (31-70)
Gender				
Male	300 (64.1%)	122(65.6%)	82(65.6%)	97(61.8%)
Female	168 (35.9%)	64(34.4%)	43(34.4%)	60(38.2%)
ISS(n=466)				
I	97(20.8%)	47(25.3%)	18(14.5%)	32(20.5%)
II	153(52.8%)	64(34.4%)	32(25.8%)	57(36.5%)
III	216(46.4%)	75(40.3%)	74(59.7%)	67(42.9%)
ASCT				
Yes	136(29.1%)	58(31.2%)	42(33.6%)	36(22.9%)
No	332(70.9%)	128(68.8%)	83(66.4%)	121(77.1%)
Median PFS (Months)	Tx: 81.5 Non Tx : 22.0 P<0.001	Tx: 73.0 Non Tx : 20.5 P<0.001	Tx : NR Non Tx : 23.0 P<0.001	Tx : NR Non Tx : 24.5 p<0.003
Median OS	Tx:120.0 Non Tx : 50.0 P<0.001	Tx : 120.0 Non Tx : 39 p <0.001	Tx: NR Non Tx: 47.0 P<0.001	Tx : NR Non Tx : NR P=0.07
Median FU (Months)	53.0	91.5	56.5	25.5
Period of study	2009-2018	2009-2014	2014-2016	2016-2018

Tx-ASCT, FU-follow up, PFS-progression free survival, OS-overall survival

Disclosure of Interest: None Declared

Keywords: ASCT, overall survival, progression free survival

E-POSTER PRESENTATION

ORAL Submission**CONDITIONING REGIMENS (ORAL-765)****PRELIMINARY OUTCOMES OF THALASSEMIA TRANSPLANTS IN TERTIARY CENTRE ON BASIS OF RISK BASED APPROACH.**

Neena M. Phade¹, Sujata M. Sharma¹, Shweta V. Bansal¹, Niranjana Rathod², Nikita Shah¹, Mamta Manglani³, Radha Ghildiyal¹
¹Pediatric Hematology Oncology, Lokmanya Tilak Municipal Hospital, Sion, Mumbai, ²Pediatric Hematology Oncology, Lokmanya Tilak Municipal Hospital, Sion, ³Pediatric Hematology Oncology, CTC, PHO& BMT, Borivali, Mumbai, India

Aims & Objectives: With better understanding of transplant procedures, the outcomes of HSCT in thalassemia have substantially improved. Many centres are providing blood transfusion and other support, the over burden of the population, scarcity of blood products and cost of chelation deter the optimal care management leading to high morbidity and mortality in thalasseemics. We discuss the preliminary encouraging results of HSCT in thalassemia patients and the learning curve for the newly established BMT unit of India in a public sector of a tertiary care centre in Mumbai.

Patients / Materials & Methods: Thalassemia patients were screened for the fitness of transplants based on the age, chelation, blood transfusion requirements, size of liver and spleen. The patients who were < 10 years, had good compliant chelation, on regular transfusion with spleen and liver <2 cm were selected. All patients were prepared at least for 6 months prior to transplant which included rigorous chelation with continuous IV chelation for 3 to 4 weeks followed by Subcutaneous chelation, hydroxyurea and given hyper transfusion keeping Hb>12gm/dl to downgrade organomegaly.

Results: There were total 10 transplants done (one patient underwent 2nd transplant post graft failure). The median age was 6 years and M:F ratio 5:4. Among these patients 6 had same blood group, 1 had major ABO & 1 minor ABO incompatibility and 1 had bidirectional ABO mismatch. All patients received 10/10 matched human leukocyte antigen (HLA)-identical sibling stem cells after the GCSF-primed bone marrow or peripheral blood. Stem cell dose ranged between 2.1 to 12.1 x 10⁶ cells/kg (Median -6.4 x 10⁶), with bone marrow as a source in 3 patients & PBSC in 7 patients. Bu-Cy-ATG was used for those who received Bone Marrow stem cells and Flu-Treo-Thio-ATG for PBSC source. All patients received cyclosporine & methotrexate as a GVHD prophylaxis. Median Neutrophil recovery time was day +14 and platelet engraftment Day + 16. The day + 30 chimersim was 100% chimerism in 55% patients, 98% in 34% patient and 86% in 11% patients. In 3 patient with secondary graft failure, 1 patient underwent second transplant after giving PTIS with PBSC with dose of 8.1x 10⁶ cells/kg and post 1.5 years chimerism 100%. There was grade 3 skin and liver GVHD in only one patient in this cohort who ultimately had graft failure. All with graft failure had autonomous recovery. The median follow up of these patients is around 18 months and showed good quality of life in all the patients who had become free from regular blood transfusions.

Discussion & Conclusion: The good preliminary results of thalassemia HSCT has encouraged us to screen more thalassemia patients and counsel them to undergo transplant. The careful selection, rigorous chelation, hypertransfusion and use of PTIS in selected patients can achieve good results.

Disclosure of Interest: None Declared

Keywords: Conditioning regimen, Risk category, Thalassemia

POSTER Submission**LEUKEMIAS (POSTER-767)****HEMATOLOGICAL TOXICITIES OF CAR-T THERAPY FOR ACUTE LYMPHOBLASTIC LEUKEMIA**

Linqin Wang¹, Qin Yu², Ruimin Hong¹, Linghui Zhou¹, Fang Ni¹, Houli Zhao¹, Yongxian Hu¹, He Huang¹

¹The First Affiliated Hospital, School of Medicine, Zhejiang University, ²Zhejiang Chinese Medical University, Hangzhou, China

Aims & Objectives: Among patients with relapsed or refractory (R/R) acute lymphoblastic leukemia (ALL), hematological toxicities, characterized by neutropenia, anemia, and (or) thrombocytopenia, are commonly observed after chimeric antigen receptor (CAR) T cells infusion. We aim to describe the features of hematological toxicities and analyze the correlated factors.

Patients / Materials & Methods: We retrospectively reviewed 72 patients who received CAR T-cell therapy for the treatment of R/R ALL in our center. Severe neutropenia was defined as absolute neutrophil counts lower than $0.5 \times 10^9/L$, severe anemia was defined as hemoglobin concentrations lower than 60g/L, severe thrombocytopenia was defined as platelet counts lower than $20 \times 10^9/L$. Descriptive statistics were used. Continuous variables were analyzed with Mann-Whitney analysis, and categorical variables were analyzed with Chi-Square. Linear regression analysis was applied to analyze the risk factors associated with the duration of severe hematological toxicities.

Results: Altogether there were 72 patients with R/R ALL receiving CAR-T therapy. Twenty-eight of them were infused with CD19/CD22 targeted CAR-T cells and the others were treated with CD19 targeted CAR-T cells. After CAR-T infusion, the incidence of severe neutropenia, severe anemia, and severe thrombocytopenia were 81.94%, 70.83%, and 63.89%, respectively. Among those with severe hematological toxicities, their median onset time were 2 days, 3 days, and 2 days, respectively; and their duration were 12 [1-30] days, 9 [1-27] days, 15 [2-30] days, respectively. The minimum of ANC, the concentration of Hb, and platelet counts were $0.1 [0-2.8] \times 10^9/L$, 57 [22-128] g/L, and $7.5 [1-240] \times 10^9/L$, respectively. The risk factors of duration and severity of hematological toxicities were concluded in table 1.

Discussion & Conclusion: The incidence of severe hematological toxicities are both high among patients with R/R ALL receiving CD19 and CD19/CD22 bispecific CAR-T cells therapy. Cytokines and tumor burden are positively associated with duration and severity of hematological toxicities, which needs further exploration.

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Table 1 Risk factors of duration and severity of hematological toxicities

	Risk factor	P value	R²
Duration of severe neutropenia	Duration of fever	<0.001	0.166
	CRP	0.036	0.061
ANC_{min}	Age	0.045	0.056
	Duration of fever	0.009	0.093
	CRP _{max}	<0.001	0.176
	IFN-gamma _{max}	0.038	0.062
	Ferritin _{max}	0.002	0.163
Duration of severe anemia	Baseline of Hb concentration	0.003	0.123
	Duration of fever	0.004	0.114
	CRP _{max}	0.004	0.112
	Ferritin _{max}	0.046	0.069
	Baseline of LDH	0.019	0.076
Hb concentration_{min}	Baseline of Hb concentration	<0.001	0.431
	Duration of fever	0.001	0.156
	CRP _{max}	0.001	0.153
	IFN-gamma _{max}	0.012	0.089
	Ferritin _{max}	<0.001	0.264
Duration of severe thrombocytopenia	Baseline of platelet count	0.02	0.074
	Duration of fever	<0.001	0.161
	CRP _{max}	0.022	0.073
	IL6 _{max}	0.028	0.056
	Ferritin _{max}	0.003	0.143
PLT_{min}	Baseline of LDH	0.047	0.055
	Baseline of platelet count	<0.001	0.433
	Duration of fever	0.001	0.143
	CRP _{max}	<0.001	0.213
	IL6 _{max}	0.029	0.068
	IFN-gamma _{max}	0.042	0.06
	Ferritin _{max}	<0.001	0.221

Abbreviations: ANC: absolute neutrophil count; CRP: C-reactive protein; Hb: hemoglobin; IFN-gamma: interferon-gamma; IL6: interleukin-6; LDH: lactate dehydrogenase; PLT: platelet.

Disclosure of Interest: None Declared

Keywords: CAR-T, hematological toxicities, Leukemia

POSTER Submission**LYMPHOMA/MYELOMA (POSTER-771)****LONG TERM MORBIDITY AND MORTALITY AFTER AUTOLOGOUS STEM CELL TRANSPLANT IN MULTIPLE MYELOMA**

Thejeswar N¹, Smita Kayal¹, Biswajit Dubasi¹, Prasanth Ganesan¹, Narendran Krishnamoorthi¹, Divya B. Thumaty¹, Luxitaa Goenka¹, Malliha Ram¹, Preetha chakrapani¹, Kalpana Rajesh¹

¹Medical Oncology, JIPMER, Puducherry, India

Aims & Objectives: To find incidence and factors affecting post autologous stem cell transplant (ASCT) morbidity and mortality in multiple myeloma (MM).

Patients / Materials & Methods: We conducted a single-center retrospective study. Eligible patients were MM patients who underwent ASCT and were alive after 30 days of ASCT. Both upfront and ASCT done during relapse were included. Clinical, Treatment, and Post D+30 to D+365 ASCT adverse events details were collected. Neutrophil lymphocyte ratio (NLR) and Lymphocyte monocyte ratio (LMR) were calculated using data obtained from complete blood count (CBC) for 39 patients before ASCT, D+30(± 7) and D+100(± 7).

Results: Between January 2013 to May 2020, 52 MM patients underwent ASCT. We reviewed 51 consecutive files. Before D30, 5 patients expired. 46 patients were included in the final analysis.

Baseline characteristics:

The median age was 51years (31-66), 70% were male and 44% were international staging system (ISS)-II. The most common induction regimen was Bortezomib, Cyclophosphamide, and dexamethasone (VCd) in 19 patients (41%). The median duration from diagnosis to transplant was 8 months (5-38). Hematopoietic stem cell Transplantation specific Comorbidity Index (HCT-CI) score 0 in 22 patients (43%). Melphalan dose was $<200\text{mg}/\text{m}^2$ in 13 patients (25%). Median CD34 cells infused were 4.7×10^6 cells/kg (0.3-13.4). The Median time for Neutrophil and platelet engraftment was 9days (9-14) and 12days (8-26) respectively.

Clinical outcomes:

Adverse events were summarized in Table 1. D+30(± 7) NLR >1.6 and LMR ≤ 3.3 were significantly associated with decreased post D30 infections. Among 46 patients 8(17%) died. The most common cause of death was disease progression 7(15%). At median follow up was 33 months (95%CI:23.3-42.6), estimated Median Progression-free survival (PFS) was 62 months (95%CI:47.7-76.2) and the median overall survival (OS) was not reached.

Discussion & Conclusion: Post ASCT, late adverse events were common in MM. D+30 NLR >1.6 and D+30 LMR ≤ 3.3 were associated with reduced infections.

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POSTER Submission**GVHD (POSTER-774)****COVID 19 INFECTION IN POST STEM CELL TRANSPLANT SETTING- A CASE REPORT**Megha Verma^{*1}, Nitin Gupta²¹Clinical Hematology, ²Cinical Hematology, Sir Ganga Ram Hospital, Delhi, India

Aims & Objectives: Optimal treatment and outcome of bone marrow transplant patients with COVID disease in not clear. In this case report we would share the clinical course of our post stem cell transplant patient with COVID-19 infection.

Patients / Materials & Methods: Our patient, 31 years old male with Acute myeloid leukemia in Complete remission -1 (CR-1) underwent full HLA matched sibling donor stem cell transplantation with his elder sister as donor. Myeloablative regimen with busulfan and cyclophosphamide were used for conditioning. GVHD prophylaxis was done with methotrexate and Cyclosporine. Early Post-transplant period was complicated with severe thrombocytopenia due to cyclosporine induced microangiopathic hemolytic anemia requiring early cyclosporine withdrawal by 3 months. After 4 months of transplant he developed chronic GVHD involving skin, oral mucosa, eyes and liver which was managed with prednisolone and mycophenolate sodium. After 10 months of transplant, while on tapering dose of steroids and mycophenolate sodium, he developed fever, cough and dyspnea on exertion. Examination revealed oxygen saturation of 96% on room air and bilateral rhonchi. COVID RT PCR was done and came positive. Investigations showed CBC of Hb-14.6g/dl, TLC-7.9x 10⁹/Lmm³ (Neutrophil-84%, Lymphocyte-6%) Platelet count- 132 x 10⁹/L, CRP-7mg/L, D dimer- 350ng/ml. Chest X ray was normal but high resolution chest CT scan showed, ground glass opacities/ broncho-consolidatory changes in both lung fields predominantly involving periphery and basal segments. He was treated on outpatient department (OPD) basis with prednisone 40mg (0.7mg/kg), hydroxychloroquine (400mg twice daily on day 1 followed by 400 mg once daily for 5 days) and azithromycin (5-day course).

Results: He became afebrile after 3 days, cough and wheezing significantly reduced. Repeat Covid 19 RT PCR after 2 weeks came negative. COVID-19 antibody done after 3 weeks was positive for IgG antibody. Now, he is one-month post COVID-19, he has persisting complaints of mild dry cough and exertional dyspnea (mMRC grade1). He is on tapering doses of prednisolone 20mg and mycophenolate sodium for mild- moderate chronic GVHD.

Discussion & Conclusion: Our patient had a mild course of COVID-19 infection, despite being on double immunosuppression and chronic GVHD. We need more studies about the COVID-19 infection in post-transplant setting, to establish the severity of illness in this subgroup and the immune mechanisms involved in combating the infection.

Supporting Document: bac67ada-7a27-45f7-8235-4fb78d9e17db

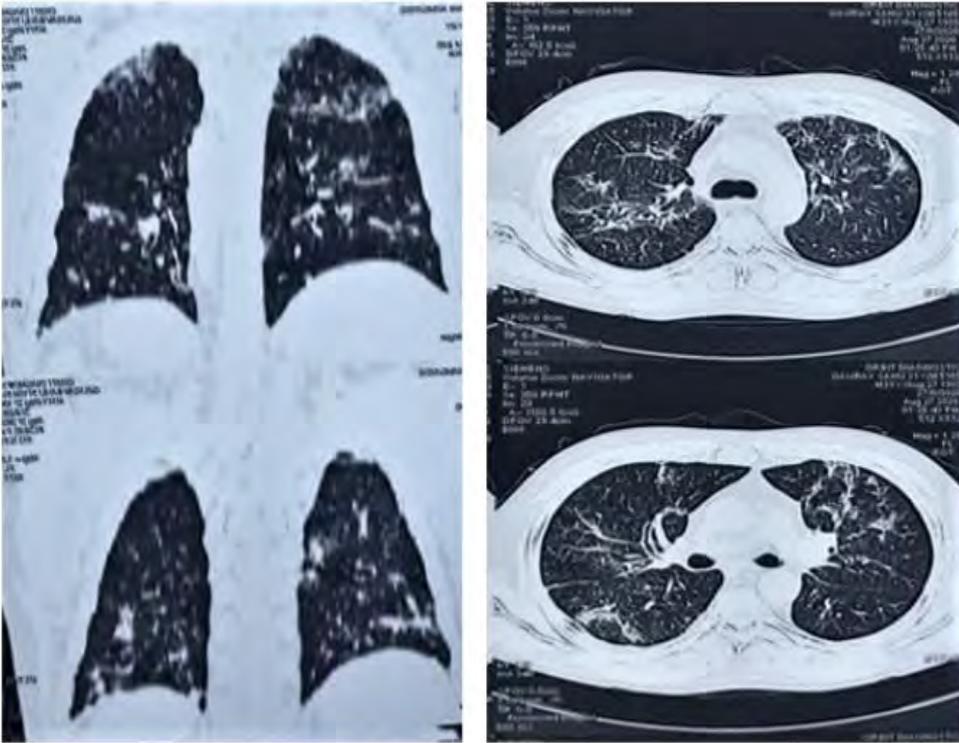


Figure 1. CT chest images showing ground glass opacities and broncho-consolidatory changes in both upper lobes and in basal areas

Disclosure of Interest: None Declared

Keywords: COVID 19 IN HEMATO-ONCOLOGY, COVID 19 POST STEM CELL TRANSPLANT , GVHD AND COVID 19 INFECTION

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-775)****RIC WITH MANIPULATION OF IMMUNOSUPPRESSION & HSCT OUTCOMES IN HEAVILY TRANSFUSED APLASTIC ANEMIA**

Shweta Bansal¹, Sujata Sharma¹, Nikita Shah¹, Purvi kadakia¹, Neena phade¹, Arpita Gupta¹, Sneha waghela¹, Niranjana rathod¹, Mamta Manglani^{1,2}, Radha Ghildiyal¹

¹LTMGH SION Hospital, ²CTC BORIVALI, Mumbai, India

Aims & Objectives: SCT is the treatment of choice for Aplastic anemia (AA). However, resource limited settings and lack of referral services leads to multiple transfusions in these patients leading to increase rate of rejection and graft failure post transplant. Here we report our outcomes in such patients when treated with reduced intensity conditioning.

Patients / Materials & Methods: All the patients from 2015 to 2020 were included in this study. All underwent matched related donor transplant. The work up of patients included bone marrow examination, Clinical exome study to rule out any inherited bone marrow failure syndromes, Chromosomal breakage study and FISH cytogenetics for MDS.

Results: There were 15 children, 14 were acquired AA, 1 was hypoplastic MDS. The median 10 years (5-15 yrs) M:F ratio 12:5. All the patients were heavily transfused with more than twenty transfusions before taking for the transplant. All received the GCSF primed peripheral blood from matched related donors. 8 had same blood group, 3 had major ABO & 1 minor ABO incompatibility and 3 had bidirectional ABO mismatch. All patients received Flu-Cy-Horse ATG except one who received Flu- Cy-rabbit ATG. All patients received cyclosporine & methotrexate as a graft vs host disease prophylaxis. Stem cell dose ranges between 1.96 to 9.1 x 10⁶ cells /kg (Median -6.7 x 10⁶). Median Neutrophil recovery time day +11 (10 - 13 days), median platelet engraftment Day + 13 (7 -24 days). One patient developed PRCA due to major ABO mismatch, received 4 doses of Rituximab and engrafted donor RBC antigen. The median day + 30 chimerism was 97%, of which 100% chimerism was present in 42% patient, 23% had chimerism between 85-90%. The modulation of immunosuppression was required in few patients in whom chimerism was slipping. Currently with median follow up of 1.5 yrs, 12 patient has >95% chimerism while 3 patients have chimerism between 85- 90% and all are transfusion free. Among 15 patients, 2 had grade 1 Liver GVHD, 1 had secondary graft failure. This secondary graft failure was 2 yrs post transplant, but undergone second transplant with peripheral blood as a source with same donor, received Flu-Cy as conditioning regimen with dose of 5.59x 10⁶ cells/kg and post 1.5 yrs chimerism is 100%. Fourteen patients are alive and 1 expired due to sepsis after 8 months of transplant with chimerism of 85%.

The OAS survival is 98% in the cohort of our patients.

Discussion & Conclusion: HSCT is the best option of treatment in young children with aplastic anemia. This procedure is cost effective and not associated with much morbidity and one can achieve excellent results with close monitoring of chimerism followed by manipulation of immunosuppression post transplant.

Disclosure of Interest: None Declared

Keywords: Aplastic anaemia, chimerism, Reduced intensity conditioning

POSTER Submission**INFECTIONS (POSTER-777)****CLINICAL PROFILE OF INFECTIONS IN PATIENTS POST ALLOGENEIC STEM CELL TRANSPLANT**

Divya Bala Thumaty¹, Narendran Krishnamoorthi¹, Smita Kayal¹, Thejeswar N¹
¹JIPMER, PUDUCHERRY, Puducherry, India

Aims & Objectives: Patients undergoing allogeneic stem cell transplant have a high risk of morbidity and mortality associated with infections. Here we present the general profile of infections documented in patients who underwent ASCT at our centre.

Patients / Materials & Methods: Data was collected retrospectively from medical records of all consecutive patients who underwent ASCT from Jan 2014 to March 2020. Last date of follow up was 31st August 2020.

Results: Thirty three patients underwent allogeneic bone marrow transplant consecutively from January 2014 till March 2020. Indications included high risk acute leukemias in CR1 or beyond, chronic myeloid leukemia in blast crisis, aplastic anemia. Median age was 28 years (9 – 52), male: female ratio was 3:1. There were 61 documented infections among 33 transplants. This included bacterial 24 (39%), viral 27/61 (44%), fungal 9/61(14%) and other infections 1/61 (1%) including tuberculosis as indicated in table 1.

Bacterial pathogens were all Gram-negative bacteria. Of those, common ones were *Pseudomonas* sp (30%) and *Klebsiella pneumoniae* (20%) others ones being *Acinetobacter* sp, *Enterococcus* sp and *Stenotrophomonas*. 53% of them were multi drug-resistant infections -37% were carbapenem resistant and 16% were colistin resistant. The major source of positive cultures was blood (62%). In all,17/33 (51%) transplants had 27 documented viral infections. The commonest one was cytomegalovirus infection ; and 9/33 (28%) transplants had 9 documented fungal infections. Tuberculosis was documented in one of them. Catheter associated Blood stream infection was seen in 8% of the transplants (2/33). Infection was cause of death (primary /contributory) in 27% (6/23) of the deaths, with 83% occurring before 100 days.

Discussion & Conclusion: Although the pattern of infections has not differed over the years and across the world, gram negative infections with rising multi-drug resistance (53%) is of concern in the current era of dwindling antibiotic resources.

Supporting Document: 74ed6366-342c-41b2-936f-1264ee027e1e

Parameter	Value
Age	Median 38 (9-52)
Sex	Male: 23 (70%) (Female: 10 (30%))
Disease type	
AML-CR1	7/33 (21%)
RELAPSE AML	3/33 (9%)
ALL-CR1	2/33 (6%)
RELAPSE ALL/TOSL	6/33 (17%)
MPL	1/33 (3%)
APLASTIC ANEMIA	4/33 (12%)
CMML-BC	2/33 (6%)
TYPE OF TRANSPLANT	PROPORTION (%)
MSD	25/33 (76%)
HAPLO	6/33 (18%)
MMSD	3/33 (9%)
MSD	2/33 (6%)
CONDITIONING REGIMEN	PROPORTION (%)
FLU-BU	21/33 (63%)
FLU-CY	0
CY-BU	6/33 (18%)
TCA	4/33 (12%)
GVHD PROPHYLAXIS	PROPORTION (%)
CSA/MTX	21/33 (63%)
POST-TX-CY/TAC/MMP	11/33 (33%)
OTHER/NA	3/33 (9%)
>D-100	
1. BACTERIAL INFECTION-DOCUMENTED	15/33 (45%)
Number of episodes	19*
CARBAPENEM-RESISTANT	8
COLISTIN-RESISTANT	4
2. FUNGAL INFECTION	7/33 (Possible 1, Probable 1, Proven 1)
3. VIRAL INFECTION	13/33
CMV	16/33
BKV	2/13
ADENO	0
VIRAL HEPATITIS	0
4. Tuberculosis	None
TOTAL number of infections	44
>D-100	
1. BACTERIAL INFECTION-DOCUMENTED (MDI)	4/22 (no. of patients)
NO OF EPISODES	5
CARBAPENEM-RESISTANT	0
COLISTIN-RESISTANT	0
2. FUNGAL INFECTION	2/22 (Possible 1, Proven 1)
3. VIRAL INFECTION	7/22
CMV	3
BKV	0
ADENO	0
VIRAL HEPATITIS	3
4. Tuberculosis	0/22
TOTAL number of infections	17
ALL-CAUSE DEATH (TILL 31ST AUGUST)	28/33
DEATH DUE TO INFECTION	
PRIMARY	4/28
CONTRIBUTORY	2/23

* ENTEROCOCCUS 2, PSEUDOMONAS 3, KLEBSIELLA 4, ACINETOBACTER 3, STENOTROPHOMONAS 2, CMV 1

Disclosure of Interest: None Declared

Keywords: infections, MDR infections, Post Allogenic Stem cell transplant

POSTER Submission**LYMPHOMA/MYELOMA (POSTER-778)****THE DETERMINANTS OF CD34 CELL YIELD AND ITS CORRELATION WITH POSTTRANSPLANT OUTCOME PARAMETERS.**Karthika V¹, Rajib De¹¹NRS Medical College, Kolkata, India

Aims & Objectives: Outcome of Autologous Hematopoietic Stem Cell transplant (ASCT) depends on CD 34 cell dose along with other patient and disease related factors. Aim of the present study is to analyze the correlation of CD 34 cell yield with these variables like age, type of disease, staging, response status, chemotherapy regimens, duration of illness as well as relationship of CD 34 cell dose with immediate post-transplant outcome parameters like neutrophil and platelet engraftment, febrile neutropenia and duration of hospital stay.

Patients / Materials & Methods: Retrospective data collected from the transplant registry of Bone marrow transplant unit, department of hematology, NRS medical college, Kolkata from January 2012 to January 2020. Data regarding pretransplant variables, CD 34 cell dose collected after apheresis and transplant outcome parameters were analyzed using standard statistical method.

Results: Out of 62 patients who underwent autologous transplant, patients with Multiple Myeloma(MM), lymphoma and acute myeloid leukemia were 48(77.4%), 11(17.7%), 3(4.8%) respectively. In MM cohort ISS I,II,III were 6(12.5%),12(25%),28(58.3%) respectively, and only 4(8.3%) patients received Lenalidomide based chemotherapy. Patients with Non Hodgkins lymphoma and Hodgkin's lymphoma were 3(27%), 8(73%) respectively. Number of patients received G-CSF and Plerixafor as mobilizing agent were 42(67.8%), only G-CSF were 20(32.2%). In MM cohort, Melphalan used as conditioning regimen, dose were 140, 200mg/m² in 20(41.7%), 28(58.3%) respectively. CD 34 cell yield divided into three cohort <4,4-6,>6 X 10⁶cells/kg, number of patients were 16(25.8%), 23(37.1%) and 20(32.2%) respectively. Cell yield did not have any correlation with age(p=0.6), disease type(p=0.7), stage(p=0.1), Lenalidomide therapy prior to transplant(p=0.1) and dose of Melphalan(p=0.2). Significant correlation noted in patients underwent transplant < 1 year from diagnosis, compared to > 1 year with mean CD 34 count 5.7, 3.1X10⁶/kg respectively (p=0.004). Cell dose did not have any correlation with neutrophil (p=0.09) and platelet (p=0.4) engraftment and duration of hospital stay(p=0.8).

Discussion & Conclusion: In this study significant correlation was found between CD34 cell yield and duration of disease before transplant (<1 year compared to patient >1 year), earlier transplant causing better cell yield. No significant correlation was found with CD34 cell yield and other pre and post- transplant parameters.

Disclosure of Interest: None Declared

Keywords: CD 34 cell dose, Duration between diagnosis and transplant, Engraftment

ORAL Submission**LYMPHOMA/MYELOMA (ORAL-779)****AUTOLOGOUS STEM CELL TRANSPLANT: OUTCOMES IN A RESOURCE CONSTRAINED SETTING**Hashim Ismail Kunju*¹¹Sher-i-Kashmir Institute of Medical Sciences , Srinagar, India

Aims & Objectives: To analyze the overall survival (OS) and progression free survival (PFS) of patients who underwent ASCT, and the factors affecting the outcome thereof. Background: Autologous stem cell transplant (ASCT) is an integral part of the treatment of many hematological malignancies and some relapsed solid tumors. Here we are presenting the data of ASCT from our institute, the only center providing such a facility in this entire region.

Patients / Materials & Methods: Patients who underwent ASCT from 1st December 2010 to 31st July 2018 were included in this study. Data was analyzed in SPSS-v26.

Results: A total of 56 patients underwent ASCT during this period and the cut off follow up date was 31st December 2019. Median age of the patients was 50 (range: 5-65) years, and consisted of 36 males and 20 females. Median duration of follow up was 22.8 months (range: 19.2-30). There were 47 (84%) multiple myeloma patients, six (10.7%) cases of Non Hodgkins Lymphoma (NHL), two (3.6%) of Hodgkins Lymphoma (HL), and one (1.7%) neuroblastoma. In 31 (55%) patients G-CSF + Plerixafor was used as the stem cell mobilization regimen, while in 25 (45%) patients only G-CSF was used. All myeloma patients received melphalan as the conditioning agent, while as BEAM was used in all other cases (except in neuroblastoma). The mean MNC harvest was 7.88 million/kg body weight (range: 1.86 – 15.25), and the mean CD34+ count in the harvest was 6.93 million cells/kg body weight (range: 0.37 – 17.43). The median duration to neutrophil nadir was 5 days (range: 3-8 days), and for platelet nadir was also 5 days (range: 2-8 days). Median duration for neutrophil engraftment was 11 days (range: 8-32 days), while for platelet engraftment it was 13 days (range 7-60 days). One patient developed engraftment syndrome, and there was no engraftment failure. There were 3 (5.35%) cases of treatment related mortality but no mortality up to Day 30. Among the significant acute complications, 29 (52%) patients had Grade3/4 mucositis, 21 (37%) hypotension. During the follow up period, 42 (75%) patients were in CR, 5 (8.9%) relapsed and on salvage treatment, 7 (12.5%) died of relapse, and 2 (3.5%) died of other causes. Median PFS for multiple myeloma cohort was 22.8 months (range: 19.2-30 months), while OS was 29 months (range: 18.76- 39.2 months). CD34+ count in the range of 3.12-6.24 million cells/kg body weight and number of days for neutrophil engraftment ($p=0.005$) were associated with improved survival ($p=0.03$, hazard ratio 0.76) while as number of days for platelet engraftment positively correlated with PFS ($p=0.02$).

Discussion & Conclusion: Our results are comparable to that of other higher centers in the country. Optimal CD 34+ count and early engraftment are important determinants of outcome.

Disclosure of Interest: None Declared

Keywords: ASCT, Myeloma, Transplant

POSTER Submission**LEUKEMIAS (POSTER-517)****SUPERIOR EFS WITH BLINATUMOMAB VS CHEMO IN CHILDREN WITH HR FIRST RELAPSE OF BCP-ALL: A PHASE 3 RCT**

Franco Locatelli¹, Gerhard Zugmaier², Carmelo Rizzari^{3,4}, Joan Morris⁵, Arend von Stackelberg⁶, Bernd Gruhn⁷, Thomas Klingebiel⁸, Rosanna Parasole⁹, Christin Linderkamp¹⁰, Christian Flotho¹¹, Arnaud Petit¹², Concetta Micalizzi¹³, Noemi Mergen², Abeera Mohammad¹⁴, Cornelia Eckert¹⁵, Anja Moericke¹⁶, Mary Sartor¹⁷, Ondrej Hrusak¹⁸, Christina Peters¹⁹, Vaskar Saha^{20,21}

¹IRCCS Ospedale Pediatrico Bambino Gesù, Sapienza University of Rome, Rome, Italy, ²Amgen Research (Munich), Munich, Germany, ³MBBM Foundation, ⁴University of Milano-Bicocca, Monza, Italy, ⁵Amgen Inc., Thousand Oaks, California, United States, ⁶Charite Universitätsmedizin CVK Berlin, Berlin, ⁷Jena University Hospital, Jena, ⁸Universitätsklinikum Frankfurt am Main, Frankfurt, Germany, ⁹Azienda Ospedaliera di Rilievo Nazionale Santobono Pausilipon, Napoli, Italy, ¹⁰Medizinische Hochschule Hannover, Hannover, ¹¹Universitätsklinikum Freiburg, Freiburg, Germany, ¹²Hopital Armand Trousseau, AP-HP Sorbonne Université, Paris, France, ¹³Istituto Pediatrico di Ricerca e Cura a Carattere Scientifico G Gaslini, Genova, Italy, ¹⁴Amgen Ltd., Uxbridge, United Kingdom, ¹⁵Charité Campus Virchow-Klinikum Pädiatrie m.S. Onkologie/Hämätologie, Berlin, ¹⁶Universitätsklinikum Schleswig-Holstein, Kiel, Germany, ¹⁷Westmead Hospital, Sydney, New South Wales, Australia, ¹⁸Charles University, Motol University Hospital, Prague, Czech Republic, ¹⁹St Anna Children's Hospital, Vienna, Austria, ²⁰University of Manchester, Manchester, United Kingdom, ²¹Tata Translational Cancer Research Centre, Tata Medical Center, Kolkata, India

Aims & Objectives: We conducted an open-label, randomized, controlled phase 3 trial to compare blinatumomab with high-risk (HR) consolidation (HC) 3 chemotherapy as pre-transplant consolidation therapy for children with HR first- relapse B-cell precursor acute lymphoblastic leukemia (BCP-ALL).

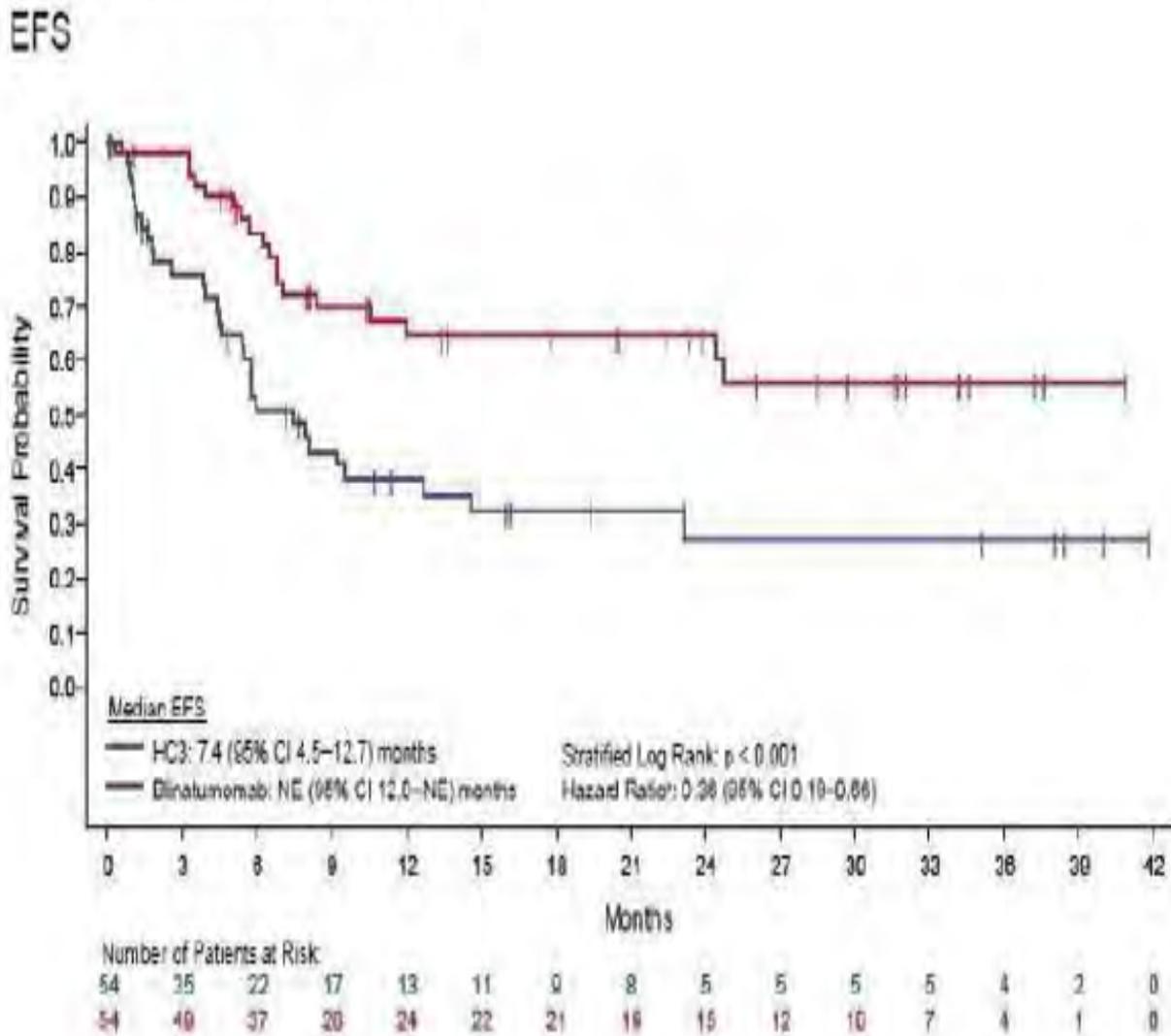
Patients / Materials & Methods: After induction therapy and two chemotherapy cycles, children with M1 (<5% blasts) or M2 (<25% and ≥5% blasts) marrow were randomized 1:1 to receive a third consolidation course with blinatumomab (15 μg/m²/day for 4 weeks) or HC3 (dexamethasone, vincristine, daunorubicin, methotrexate, ifosfamide, PEG- asparaginase). The primary endpoint was event-free survival (EFS; from randomization until relapse date or M2 marrow after a complete remission [CR], failure to achieve CR at end of treatment, second malignancy, or death from any cause). Secondary endpoints included overall survival (OS), cumulative incidence of relapse, minimal residual disease (MRD) status, and incidence of adverse events (AEs).

Results: Enrollment was terminated for benefit (blinatumomab group) based on a predefined efficacy threshold at the planned 50% EFS events interim analysis. From November 10, 2015, to July 17, 2019, 108 patients were randomized to blinatumomab (n=54) and HC3 (n=54). Events were reported for 18/54 (33.3%) and 31/54 (57.4%) blinatumomab- and HC3-randomized patients, with a median EFS of “not reached” and 7.4 months, respectively (Figure). Blinatumomab reduced risk of relapse by 64% vs HC3 (hazard ratio [HR] 0.36, 95% confidence interval [CI] 0.19–0.66; p<0.001). In addition, OS favored blinatumomab vs HC3 (HR 0.43, 95% CI 0.18–1.01). MRD remission occurred in 43/46 (93.5%) blinatumomab-randomized and 25/46 (54.3%) HC3-randomized patients. Grade ≥3 treatment-emergent AEs occurred in 30/53 (57%) and 41/51 (80%) patients in the blinatumomab and HC3 groups, respectively.

Discussion & Conclusion: Blinatumomab monotherapy as pre-transplant consolidation therapy in children with HR first- relapse BCP-ALL leads to significantly better EFS, lower risk of recurrence, and fewer grade ≥3 treatment-emergent AEs vs HC3, suggesting a new standard-of-care treatment.

Supporting Document: 6a799bc2-38ad-4b1f-a86c-d26d2d3803b2

Figure. Kaplan-Meier curves for EFS ¹



Disclosure of Interest: F. Locatelli Research Grant from: Amgen, G. Zugmaier Research Grant from: Amgen, C. Rizzari Research Grant from: Amgen, J. Morris Research Grant from: Amgen, A. von Stackelberg Research Grant from: Amgen, B. Gruhn Research Grant from: Amgen, T. Klingebiel Research Grant from: Amgen, R. Parasole Research Grant from: Amgen, C. Linderkamp Research Grant from: Amgen, C. Flotho Research Grant from: Amgen, A. Petit Research Grant from: Amgen, C. Micalizzi Research Grant from: Amgen, N. Mergen Research Grant from: Amgen, A. Mohammad Research Grant from: Amgen, C. Eckert Research Grant from: Amgen, A. Moericke Research Grant from: Amgen, M. Sartor Research Grant from: Amgen, O. Hrusak Research Grant from: Amgen, C. Peters Research Grant from: Amgen, V. Saha Research Grant from: Amgen

Keywords: B-cell precursor acute lymphoblastic leukemia, Blinatumomab, Event-free survival

POSTER Submission**LEUKEMIAS (POSTER-519)****A STUDY TO EVALUATE EFFICACY AND SAFETY OF BLINATUMOMAB IN CHINESE ADULTS WITH R/R BCP-ALL**

Hongsheng Zhou¹, Qingsong Yin², Jie Jin³, Dong Yu⁴, Jianxiang Wang⁵, Ting Liu⁶, Zhen Cai³, Bin Jiang⁷, Dengju Li⁸, Zimin Sun⁹, Yan Li¹⁰, Yanjuan He¹¹, Liping Ma¹², Yuqi Chen¹³, Paul Gordon¹⁴, Gerhard Zugmaier¹⁵

¹Nanfang Hospital, Southern Medical University, Guangzhou, ²Henan Cancer Hospital, Henan, ³The First Affiliated Hospital, College of Medicine, Zhejiang University, Zhejiang, ⁴China Development, Amgen China, Shanghai, ⁵Institute of Hematology and Blood Diseases Hospital Peking Union Medical College, Beijing, ⁶West China Hospital, Sichuan University, Sichuan, ⁷Peking University International Hospital, Beijing, ⁸Tongji Hospital Tongji Medical College Huazhong University of Science and Technology, Wuhan, ⁹Anhui Provincial Hospital, Hefei, ¹⁰The First Hospital of China Medical University, Shenyang, ¹¹Xiangya Hospital Central South University, Xiangya, ¹²Sun Yat-sen Memorial Hospital, Sun Yat-sen University, Guangzhou, China, ¹³Global Biostatistical Sciences, ¹⁴Global Development, Amgen Inc, Thousand Oaks, CA, United States, ¹⁵Global Development, Amgen Research (Munich) GmbH, Munich, Germany

Aims & Objectives: To evaluate the efficacy and safety of blinatumomab in Chinese adults with Philadelphia negative (Ph-) relapsed/refractory (R/R) B-cell precursor acute lymphoblastic leukemia (BCP-ALL).

Patients / Materials & Methods: Adult patients were treated with up to 5 cycles of blinatumomab. Each cycle was 42 days: 28 days of blinatumomab continuous intravenous infusion followed by a 14-day treatment-free interval. In cycle 1, dosing was 9 $\mu\text{g}/\text{day}$ for days 1–7 and 28 $\mu\text{g}/\text{day}$ for days 8–28; dosing was 28 $\mu\text{g}/\text{day}$ for all subsequent cycles. All patients had >5% bone marrow blasts.

Results: By the interim analysis (IA; 12 Apr 2019), 90 patients (47% male) had completed ≥ 1 cycle of blinatumomab and had a safety follow-up visit, and 43/90 patients (47.8%) were continuing the study. Mean age (SD; range) was 35 (15; 18–74) years, 39% had first relapse with remission duration <12 months, 14% had prior hematopoietic stem cell transplantation (HSCT), and 21% had ≥ 2 prior salvage treatments. The rate of complete remission/complete remission with partial hematological recovery (CR/CRh) within 2 cycles of blinatumomab was 45.6% (41/90 patients; 95% CI 35.0–56.4). Median overall survival time was 9.2 months (95% CI 6.5–11.7); median relapse-free survival time was 4.3 months (95% CI 3.2–9.4). Nine of the 41 patients who achieved CR/CRh during treatment (22.0%) underwent allogeneic HSCT in remission. Mean serum concentrations at steady-state and systemic clearance of blinatumomab in Chinese patients were within the ranges previously reported in adults from the global and Japanese clinical studies. Adverse events were generally consistent with other studies (Table).

Discussion & Conclusion: Efficacy of blinatumomab in heavily pre-treated Chinese patients with Ph- R/R BCP-ALL is comparable to the results reported in the global and Japanese studies. No new safety risks were identified in the analyses of adverse events in Chinese patients.

Supporting Document: b9cf7f52-460d-40c9-9a52-3c9796b48770

Table

	Blinatumomab Arm, n (%)		
	P3 Chinese Adult Study (NCT#03476239) (N = 90)	P3 Global Adult Study (NCT#02013167) (N = 267)	P1b/P2 Japanese Adult Study (NCT# 02412306) (N = 14)
All Treatment-emergent adverse events	90 (100)	263 (99)	14 (100)
Grade ≥3	86 (96)	231 (87)	11 (79)
Leading to discontinuation of investigational product	11 (12)	33 (12)	0
Fatal adverse events	10 (11)	51 (19)	0
Grade ≥3 events of interest			
Infusion reaction	9 (10)	9 (3)	1 (7)
Cytokine release syndrome	6 (7)	13 (5)	0
Neurologic events	5 (6)	25 (9)	0
Neutropenia and febrile neutropenia	53 (59)	101 (38)	12 (86)
Infections	38 (42)	91 (34)	1 (7)

Disclosure of Interest: H. Zhou Research Grant from: Amgen, Q. Yin Research Grant from: Amgen, J. Jin Research Grant from: Amgen, D. Yu Research Grant from: Amgen, J. Wang Research Grant from: Amgen, T. Liu Research Grant from: Amgen, Z. Cai Research Grant from: Amgen, B. Jiang Research Grant from: Amgen, D. Li Research Grant from: Amgen, Z. Sun Research Grant from: Amgen, Y. Li Research Grant from: Amgen, Y. He Research Grant from: Amgen, L. Ma Research Grant from: Amgen, Y. Chen Research Grant from: Amgen, P. Gordon Research Grant from: Amgen, G. Zugmaier Research Grant from: Amgen

Keywords: B-cell precursor acute lymphoblastic leukemia, Blinatumomab, Chinese adults

POSTER Submission**LYMPHOMA/MYELOMA (POSTER-520)****PFS ANALYSIS OF DMAB VS ZA IN MM PATIENTS BASED ON TREATMENT REGIMEN AND BASELINE CHARACTERISTICS**

Evangelos Terpos¹, Ramón García-Sanz², Kazuyuki Shimizu³, Wolfgang Willenbacher^{4,5}, Noopur Raje^{*6}

¹Department of Clinical Therapeutics, National and Kapodistrian University of Athens, School of Medicine, Athens, Greece, ²Hematology department, University Hospital of Salamanca, Spain, ³Higashi Nagoya National Hospital, Nagoya, Japan, ⁴Internal Medicine V: Hematology & Oncology, University Hospital of Innsbruck, Tyrol, ⁵Oncotyrol: Centre for Personalized Cancer Medicine, Innsbruck, Tyrol, Austria, ⁶Hematology/Oncology Massachusetts General hospital, Massachusetts, United States

Aims & Objectives: Denosumab is a monoclonal antibody targeting Receptor Activator of Nuclear Factor-Kappa B Ligand (RANKL) that has been shown to reduce SRE associated with bone lesions in patients with multiple myeloma and solid tumors. Results from the full primary analysis of 1718 patients with NDMM in an international double blind, randomized, controlled phase 3 study that assessed the efficacy of denosumab (Dmab) vs zoledronic acid (ZA) for preventing SREs met its primary end point of non-inferiority time to first SRE. The analysis of the PFS exploratory endpoint showed a clinically meaningful 10.7 months median PFS benefit (HR, 0.82; 95% CI, 0.68-0.99; descriptive P= 0.036) of Dmab vs ZA. Here, we present an in-depth analysis of relevant baseline characteristics, treatment regimens and PFS outcome in patients with intent to undergo ASCT receiving Dmab and ZA.

Patients / Materials & Methods: Adult patients with NDMM and stratified as “intent to undergo ASCT” at randomization were included in this analysis. Patients received subcutaneous denosumab (120 mg) or zoledronic acid (4 mg) in 4-week cycles. In this subgroup, the PFS outcome was examined. Baseline characteristics and treatment regimens were compared between treatment arms.

Results: 54.1% of the 1718 enrolled patients were stratified into “intent to undergo ASCT” as part of their front-line therapy, and 61.8% of “intent to undergo ASCT” did receive an ASCT, among which 19.6% patients had disease progression in the Dmab arm compared to 28.0% in the ZA arm (HR 0.65 (0.49-0.85)) (Figure 1). 55.1% in Dmab vs 52.6% in ZA arm received Triplet Therapies. The percentage of triplet therapies used in the “intent to undergo ASCT” patients was higher than patients with no intent to undergo ASCT.

Discussion & Conclusion: Results from this post-hoc subgroup analysis suggest a more profound PFS benefit in the “intent to undergo ASCT” patient subgroup.

Disclosure of Interest: E. Terpos Research Grant from: Amgen, R. García-Sanz Research Grant from: Amgen, K. Shimizu Research Grant from: Amgen, W. Willenbacher Research Grant from: Amgen, N. Raje Research Grant from: Amgen

Keywords: Denosumab, Multiple Myeloma, Progression-Free Survival

POSTER Submission**LYMPHOMA/MYELOMA (POSTER-524)****CRYOTHERAPY FOR MYELOMA PATIENTS UNDERGOING AUTOLOGOUS TRANSPLANTATION WITH HIGH-DOSE MELPHALAN**

Saliangi Wu¹, Ka Eugenie Hui¹, Tsan Hei Luk¹, Kam Hung Wong², Sze Man Lau¹

¹Department of Medicine, ²Department of Clinical Oncology, Queen Elizabeth Hospital, Hong Kong, Hong Kong, China

Aims & Objectives: High-dose melphalan followed by autologous stem cell transplantation is a common treatment option for young patients with multiple myeloma. Melphalan >140mg/m² was reported to be associated with severe mucositis and increased morbidity. Cryotherapy with ice chips or ice cold water prior to, during and after rapid infusion cause vasoconstriction and reduce blood flow to the oral cavity, leading to decrease exposure of buccal mucosa to melphalan.

Patients / Materials & Methods: We retrospectively analyzed 53 multiple myeloma patients who received cryotherapy during autologous stem cell transplantation in Queen Elizabeth Hospital between June 2014 and December 2019. The degree of mucositis according to the National Cancer Institute (NCI) Common Toxicity Criteria, patients' self-reported pain score, the use of opioids analgesics, the incidence of febrile neutropenia and fungal infection were compared with 23 multiple myeloma patients who did not received cryotherapy between January 2009 and May 2014.

Results: Cryotherapy was associated with significantly lower NCI mucositis grading (1.0 and 2.0, p=0.000) and self-assess pain score (1.0 and 6.0, p=0.000). Patients in the cryotherapy group used fewer analgesics. None of the patients in the cryotherapy group required opioids for pain control, whereas 9 patients in the non-cryotherapy group required opioids. The relative risk of febrile neutropenia and fungal infection in cryotherapy group as compared with non-cryotherapy group was 0.668 and 0.434 respectively, though they were not statistically significant.

Discussion & Conclusion: These results support the use of cryotherapy to reduce mucositis and improve quality of care of multiple myeloma patients underlying autologous stem cell transplantation using high-dose melphalan as conditioning. More patients may be needed to demonstrate the effect of cryotherapy in febrile neutropenia and fungal infection.

Disclosure of Interest: None Declared

Keywords: Autologous transplantation, Cryotherapy, Multiple Myeloma

ORAL Submission**LEUKEMIAS (ORAL-525)****AZACITIDINE MAINTENANCE THERAPY FOR HIGH-RISK REFRACTORY MYELOID MALIGNANCIES AFTER ALLO-HSCT**

Weihua Zhai¹, Yi he¹, Erjie jiang¹, Sizhou feng¹, Mingzhe han¹

¹stem cell transplant center, State Key Laboratory of Experimental Hematology, National Clinical Research Center for Blood Diseases, Institute of Hematology & Blood Diseases Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College, Tian jin, China

Aims & Objectives: To investigate the efficacy and safety of Azacitidine (AZA) maintenance therapy for patients with high-risk refractory myeloid malignancies after allogeneic hematopoietic stem cell transplantation (allo-HSCT).

Patients / Materials & Methods: From December 2016 to February 2020, the clinical data of 8 patients with high-risk refractory myeloid malignancies receiving salvage allo-HSCT treatments in Hematopoietic Stem Cell Transplantation Center of institute of Hematology and Blood Diseases Hospital were collected. AZA maintenance therapy were given to these patients after transplantation. We analyzed the disease relapse after treatments and the occurrence of graft- versus-host disease (GVHD). Then, we evaluated the efficacy and safety of this scheme.

Results: From the beginning of AZA maintenance treatment, the median follow-up period was 168(92~328) d. All 8 patients survived, and the median survival time was 309.5(215~1205) d after allo-HSCT. Among them, 4 cases were disease free survival, 4 patients relapsed, but all these 4 patients achieved hematologic complete remission (CR) after treatment, including 3 cases obtained minimal residual disease (MRD) negative. No GVHD induced or aggravated by use of AZA was observed. Reversible bone marrow suppression with I~IV grade occurred in 6 patients.

Discussion & Conclusion: AZA maintenance therapy after allo-HSCT in patients with high-risk refractory myeloid malignancies can reduce the relapse of the diseases. The hematological adverse reactions were minor and treatments did not increase the risks of GVHD occurrence.

Supporting Document: b391905c-ec77-497f-a6c5-0c49469e61d8

Table 1

Characteristics of 8 High-risk refractory myeloid malignancies patients with Azacitidine maintenance therapy after allogeneic hematopoietic stem cell transplantation

Case	Age	Sex	Diagnosis	Pre-HSCT	Donor	GVHD	AZA maintenance therapy			Survival (d)
							Initial treatment time	Dosage and course		
1	37	Male	M5	NR	Haplo	cGVHD	+55d	60mg/m ² *5d	4	264
2	55	Male	MDS/AML	PD	Haplo	no	+156d	60mg/m ² *5d	3	484
3	49	Male	M5b	PD	Haplo	aGVHD	+1065d	55mg/m ² *10d	2	1205
4	32	Female	MDS/AML	PD	Haplo	no	+69d	50mg/m ² *3-5d	2	215
5	37	Female	M4	NR	Unrelated	aGVHD	+57d	50mg/m ² *10d	3	267
6	42	Male	MDS/AML	PD	Haplo	aGVHD	+95d	60mg/m ² *5d	4	285
7	48	Female	AML	NR	Haplo	aGVHD	+326d	55mg/m ² *3d	1	418
8	49	Male	M5	NR	MSD	cGVHD	+218d	60mg/m ² *7d	2	334

Abbreviations: *allo*-HSCT, allogeneic hematopoietic stem cell transplantation; AZA, Azacitidine; MDS: myelodysplastic syndrome; AML: acute myeloid leukemia; GVHD, graft-versus-host disease; aGVHD, Acute GVHD; cGVHD, Chronic GVHD; NR, non-remission; PD, progression of disease.

Disclosure of Interest: None Declared

Keywords: Allogeneic hematopoietic stem cell transplantation, High-risk refractory myeloid malignancies, Maintenance therapy

POSTER Submission**LEUKEMIAS (POSTER-527)****EFFICACY AND SAFETY OF BLINATUMOMAB IN ASIAN ADULTS WITH RELAPSED/REFRACTORY B-PRECURSOR ALL**

Yukio Kobayashi^{1,2}, Iekuni Oh³, Toshihiro Miyamoto⁴, Joan Morris^{*5}, Hitoshi Kiyoi⁶, Won-Sik Lee⁷, Hiroatsu Iida⁸, Hironobu Minami⁹, Yoshinobu Maeda¹⁰, Jun Ho Jang¹¹, Sung-Soo Yoon¹², Su-Peng Yeh¹³, Qui Tran⁵, Janet Franklin⁵

¹National Cancer Center Hospital, ²International University of Health and Welfare, Mita Hospital, Tokyo, ³Jichi Medical University, Tochigi, ⁴Department of Medicine and Biosystemic Science, Kyushu University Graduate School of Medical Science, Fukuoka, Japan, ⁵Amgen Inc., Thousand Oaks, CA, United States, ⁶Department of Hematology and Oncology, Nagoya University Graduate School of Medicine, Nagoya, Japan, ⁷Department of Internal Medicine, Hemato-Oncology, Busan Paik Hospital, Inje University, Busan, Korea, South, ⁸National Hospital Organization Nagoya Medical Center, Nagoya, ⁹Medical Oncology/Hematology, Kobe University Graduate School of Medicine and Hospital, Kobe, ¹⁰Okayama University Hospital, Okayama, Japan, ¹¹Division of Hematology-Oncology, Samsung Medical Center, Sungkyunkwan University College of Medicine, ¹²Division of Hematology/Medical Oncology, Department of Internal Medicine, Seoul National University Hospital, Seoul National University College of Medicine, Seoul, Korea, South, ¹³Division of Hematology and Oncology, Department of Medicine, China Medical University Hospital, Taichung, Taiwan, China

Aims & Objectives: We assessed the efficacy and safety of blinatumomab in a pooled analysis of 45 Asian adult patients with advanced Philadelphia chromosome–negative relapsed/refractory acute lymphoblastic leukemia (Ph–R/R ALL) — 19 from the blinatumomab arm of the global phase 3 TOWER study (NCT02013167) and 26 from a phase 1b/2 study in Japanese adults (NCT02412306).

Patients / Materials & Methods: Patients in both studies were adults with Ph– R/R ALL, >5% blasts, Eastern Cooperative Oncology Group performance status 0–2, and no central nervous system pathology. Patients received up to 2 cycles of induction blinatumomab by continuous intravenous infusion for 4 weeks (cycle 1: week 1: 9 μ g/day, weeks 2–4: 28 μ g/day; subsequent cycles: 28 μ g/day) in each 6-week cycle. Responders (\leq 5% blasts within 2 induction cycles) received blinatumomab 28 μ g/day up to a maximum of 5 induction/consolidation cycles. In TOWER, patients who continued morphologic remission received up to 12 months of maintenance therapy.

Results: Of the 45 patients enrolled (26 female; median [range] age, 43 [18–75] years; prior hematopoietic stem cell transplantation, 20 [44.4%]; \geq 1 prior salvage therapy, 30 [66.7%]), 44 received at least 1 cycle of blinatumomab. The Table shows responses in the first 12 weeks of treatment. The Kaplan-Meier (KM) median overall survival (OS) time was 11.9 (95% confidence interval [CI] 9.9–17.1) months, and the KM median relapse-free survival time was 8.9 (95% CI 3.8–10.7) months; median OS in the blinatumomab arm of TOWER was 7.7 months. Forty-one (93.2%) patients had grade \geq 3 treatment-emergent adverse events (TEAEs), including neurologic events (4.5%), cytokine release syndrome (2.3%), cytopenias (6.8%), and infections (20.5%). Five patients (11.4%) had fatal AEs.

Discussion & Conclusion: The safety and efficacy of blinatumomab in Asian patients were comparable to previous global studies with similar disease response rates and a favorable safety profile with no new safety signals.

Supporting Document: 27744090-b903-416d-8e91-6132da04659c

Table. Responses in the first 12 weeks of treatment in Asian adult patients

	Asian Adult Patients Blinatumomab 9–28 µg/day N = 45 n (%) [95% CI]
Best response	
CR/CRh	20 (44.4) [29.6–60.0]
CR	14 (31.1) [18.2–46.6]
CRh	6 (13.3) [5.1–26.8]
Partial remission	0 (0) [NE–NE]
Blast-free hypoplastic or aplastic bone marrow (without CRi)	6 (13.3) [5.1–26.8]
Progressive disease	3 (6.7) [1.4–18.3]
Nonresponse	10 (22.2) [11.2–37.1]
Not evaluable/missing postbaseline assessment within 12 weeks	6 (13.3)
MRD ^a	
Patients with CR/CRh and MRD response	15 (75.0) [50.9–91.3]
MRD complete response	12 (60.0) [36.1–80.9]
No MRD response	2 (10.0)
No postbaseline MRD assessment	3 (15.0)

^aPercentages are based on 20 patients who achieved CR/CRh. MRD response is defined as fewer than 10^{-4} detectable blasts, as determined by PCR or flow cytometry; MRD complete response is defined as no detectable leukemic cells, as determined by PCR or flow cytometry.

Abbreviations: CI, confidence interval; CR, complete remission; CRh, CR with partial hematologic recovery of peripheral blood counts; CRi, CR with incomplete hematologic recovery of peripheral blood counts; MRD, minimal residual disease; NE, not estimable; PCR, polymerase chain reaction.

Disclosure of Interest: Y. Kobayashi Research Grant from: Amgen, I. Oh Research Grant from: Amgen, T. Miyamoto Research Grant from: Amgen, J. Morris Research Grant from: Amgen, H. Kiyoi Research Grant from: Amgen, W.-S. Lee Research Grant from: Amgen, H. Iida Research Grant from: Amgen, H. Minami Research Grant from: Amgen, Y. Maeda Research Grant from: Amgen, J. H. Jang Research Grant from: Amgen, S.-S. Yoon Research Grant from: Amgen, S.-P. Yeh Research Grant from: Amgen, Q. Tran Research Grant from: Amgen, J. Franklin Research Grant from: Amgen

Keywords: Asian adults, Blinatumomab, B-precursor acute lymphoblastic leukemia

POSTER Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (POSTER-529)****OPERATION AND NURSING OF CHILDREN WORKING PERIPHERAL BLOOD HEMATOPOIETIC STEM CELL COLLECTION**Xiuyan TAO¹, Tong wu¹¹ Beijing Boren Hospital, beijing, China

Aims & Objectives: To explore the operation and nursing methods of children donor in peripheral blood hematopoietic stem cell collection

Patients / Materials & Methods: (1) The general information From November 2017 to May 2020, 35 pediatric donors aged 1-14 years were collected by COBE Spectra 6.1 blood cell separator for 57 times. Four children were aged 1-3 years, 14 were aged 4-7 years, and 17 were aged 8-14 years. Height: 90-177cm, weight: 12-76kg. Circulating blood volume is 3000-15000ml. The bleeding rate was 14-50ml/min, the ratio of anticoagulant was 1:12-1:15, the collection amount was 53-274ml, and the collection time was 136-348min.

(2) Methods of operation and care In strict accordance with the collection operation specifications, correctly install the collection pipeline, and select AutoPBSC collection procedure. Suitable vascular access was selected according to vascular conditions. Femoral vein catheterization was used in 11 cases (7F double vena cava catheter) and indwelling needle 18-20 was used in 24 cases to puncture the elbow, wrist and dorsal hand vein. In order to reduce the blood loss of the child donor and prevent hypovolemic reaction, 1 unit (200mL) of the same blood type of irradiated suspended red blood cells was used for pipeline prefilling in 11 cases. During the collection process, keep the collection pipeline unobstructed, closely observe the donor's hypocalcemia, hypovolemia response and changes in vital signs, timely notify the doctor if there is any discomfort and give corresponding treatment as prescribed by the doctor. During the collection process, the nursing staff should keep the collection pipeline unblocked. Make sure the blood separator runs normally! Reduce machine alarms! Avoid alarming the donor. Observe the color change of the collection at any time! And give appropriate adjustment to achieve the best acquisition effect. During the collection process, the child donor should also be given psychological care to increase comfort and security so that the donor can cooperate with the collection process successfully.

Results: The collection process of peripheral blood hematopoietic stem cells from 35 children donors was smooth, among which 13 cases were collected once and 22 cases were collected twice, and sufficient MNC and CD34+ were obtained. The donor's vital signs were stable and no serious adverse reactions related to collection occurred.

Discussion & Conclusion: With the extensive application of hematopoietic stem cell transplantation technology! The number of children donors is also increasing gradually. The results of 57 times of collection of 35 children donors show that the peripheral blood hematopoietic stem cell collection of children donors is safe. It is also very important for nurses to master skilled operation techniques and observe and care the whole collection process.

Supporting Document: 8d474774-d9c6-4f75-99ec-f87d1aa1ac91

OPERATION AND NURSING OF CHILDREN WORKING PERIPHERAL BLOOD HEMATOPOIETIC STEM CELL COLLECTION

Xiuyan Tao, WenwenMa, LimeiGao, Fengying Chen and Tong Wu

Apheresis Chamber, Beijing Boren Hospital, Beijing, China

Objective: To explore the operation and nursing methods of children donor in peripheral blood hematopoietic stem cell collection.

Methods:(1) The general information From November 2017 to May 2020, 35 pediatric donors aged 1-14 years were collected by COBE Spectra 6.1 blood cell separator for 57 times. Four children were aged 1-3 years, 14 were aged 4-7 years, and 17 were aged 8-14 years. Height: 90-177cm, weight: 12-76kg. Circulating blood volume is 2-3.5 times of the total body blood volume (3000-15000ml). The bleeding rate was 14-50ml/min, the ratio of sodium citrate anticoagulant was 1:12-1:15, the collection amount was 53-274ml, and the collection time was 136-348min.

(2) Methods of operation and care In strict accordance with the collection operation specifications, correctly install the collection pipeline, and select AutoPBSC collection procedure. Suitable vascular access was selected according to vascular conditions. Femoral vein catheterization was used in 11 cases (7F double vena cava catheter) and indwellingneedle 18-20 was used in 24 cases to puncture the elbow, wrist and dorsal hand vein. In order to reduce the blood loss of the child donor and prevent hypovolemic reaction, 1 unit (200mL) of the same blood type of irradiated suspended red blood cells was used for pipeline prefilling in 11 cases. During the collection process, keep the collection pipeline unobstructed, closely observe the donor's hypocalcemia, hypovolemia response and changes in vital signs, timely notify the doctor if there is any discomfort and give corresponding treatment as prescribed by the doctor. During the collection process, the nursing staff should keep the collection pipeline unblocked. Make sure the blood separator runs normally! Reduce machine alarms! Avoid alarming the donor. Observe the color change of the collection at any time! And give appropriate adjustment to achieve the best acquisition effect. During the collection process, the child donor should also be given psychological care to increase comfort and security so that the donor can cooperate with the collection process successfully. After the collection, the needle extraction site should be pressed locally for 10 minutes to prevent bleeding and local hematoma. The femoral vein catheterization should be rinsed with 20ml normal saline and sealed with sterile gauze. Detailed records of the collection process and post-harvest health guidance should be made.

Results: The collection process of peripheral blood hematopoietic stem cells from 35 children donors was smooth, among which 13 cases were collected once and 22 cases were collected twice, and sufficient MNC and CD34+ were obtained. The donor's vital signs were stable and no serious adverse reactions related to collection occurred.

Conclusions: With the extensive application of hematopoietic stem cell transplantation technology! The number of children donors is also increasing gradually. The results of 57 times of collection of 35 children donors show that the peripheral blood hematopoietic stem cell collection of children donors is safe. It is also very important for nurses to master skilled operation techniques and observe and care the whole collection process.

Disclosure of Interest: None Declared

Keywords: children donor, Nursing, Peripheral blood hematopoietic stem cell collection

POSTER Submission**INFECTIONS (POSTER-532)****COST-EFFECTIVENESS OF LETERMIVIR AS CMV PROPHYLAXIS IN ADULT ALLO-HSCT RECIPIENTS IN HONG KONG**

Thomas S. Y. Chan¹, Sally S. Y. Cheng², Wei-Ting Chen³, Suk Hyun Kang⁴, Yok-Lam Kwong¹

¹Department of Medicine, The University of Hong Kong, ²MSD, Hong Kong, Hong Kong, China, ³MSD, Taiwan, Taiwan, China, ⁴MSD, South Korea, Korea, South

Aims & Objectives: The cost-effectiveness of letermovir as cytomegalovirus (CMV) prophylaxis in adult seropositive patients undergoing allogeneic hematopoietic stem cell transplantation (HSCT), compared with a 'no prophylaxis' strategy, has not been evaluated in Asia.

Patients / Materials & Methods: A decision analytical model, simulating the clinical progression of CMV infection on a lifetime horizon, was developed to compare prophylaxis *versus* no prophylaxis as anti-CMV strategies. Prophylaxis comprised administering letermovir for 14 weeks, with clinical outcomes measured at 24 weeks, followed by preemptive therapy if CMV infection occurred. This approach was modeled on outcomes of the letermovir phase 3 clinical study. The model enumerated the cost of letermovir prophylaxis, quality-adjusted life years (QALYs), and incremental cost per QALYs gained with prophylaxis. No prophylaxis involved regular monitoring and preemptive therapy for CMV reactivation. Real-world costs from the adult HSCT center at Queen Mary Hospital, Hong Kong, were adopted for analysis. Costs and clinical benefits, expressed as QALYs, were discounted at 3% per year.

Results: Letermovir prophylaxis compared with no prophylaxis would lead to an increase of life-year and QALYs at increased costs. Incremental cost-effectiveness analysis showed that letermovir prophylaxis had an associated cost of HKD 193,580 for each life-year gained, and HKD 234,675 for each QALY gained. Probabilistic sensitivity analysis showed that the majority of incremental cost-effectiveness ratio fell below the cost-effectiveness threshold of HKD 382,046 (one gross domestic product per capita) per QALY gained.

Discussion & Conclusion: Letermovir prophylaxis would be cost-effective for preventing CMV infection in adult seropositive allogeneic HSCT recipients in Hong Kong.

Disclosure of Interest: T. Chan: None Declared, S. Cheng But No Conflict with: MSD, W.-T. Chen: None Declared, S. H. Kang: None Declared, Y.-L. Kwong: None Declared

Keywords: cost effectiveness analysis, cytomegalovirus, letermovir

ORAL Submission**LEUKEMIAS (ORAL-533)****THE EFFECT OF THE IMMUNODEFICIENCY GENETIC SUSCEPTIBILITY GENES ON AGVHD AFTER ALLO-HSCT BY WES**Fan Yang^{*1}, Yang Lei¹, Qinlong Zheng¹, Zhihui Li¹, Tong Wu¹¹Transplantation, Beijing Boren hospital, Beijing, China

Aims & Objectives: To study the relationship between the immunodeficiency genetic susceptibility genes and aGVHD after allo-HSCT in patients with hematological malignancies.

Patients / Materials & Methods: A retrospective analysis was performed among 92 patients with hematological malignancies who underwent allo-HSCT from February 2018 to August 2019. The median age of 92 patients was 17 years (1 to 45), diagnoses including AML(37,40.2%), ALL(36,39.1%), NHL(13,14.1%), MDS(6,6.5%) followed by MRD(4,4.3%), MUD(8.7%) and haploidentical donor(80,86.9%). The disease status was CR in 54(58.7%), NR in 23(25%) and relapse in 15(16.3%) before transplantation. The conditioning regimen is myeloablative and the prevention of GVHD was CSA, short-term MTX and MMF, appending ATG in haploidentical transplantation. We included identification by whole exome sequencing (WES) to detect immunodeficiency genetic susceptibility gene alterations.

Results: We found that the heterozygous mutations in IL7R had significant differences between the aGVHD (48,52.2%) or non-aGVHD(44,47.8%) group. There were 7 patients with detected IL7R gene heterozygous mutation in aGVHD group, but none in non-GVHD ($P = 0.041$). The incidence of III-IV aGVHD in patients with mutation was significantly higher than that without mutation. (5/7 to 7/41, $P=0.007$). Among the patients with heterozygous mutations in IL7R in aGVHD group, 5 patients (5/7, 71.4%) had III-IV aGVHD, including 3 patients of III aGVHD (with the same heterozygous mutation site: c.c1241t; p.t414m, the same mutation site as respective donor) and 2 patients of IV aGVHD (with the same heterozygous mutation site: c.g314a; p. S105n).

Discussion & Conclusion: Our data supports that the heterozygous mutations in IL7R may be related to the aGVHD after allo-HSCT.

Disclosure of Interest: None Declared

Keywords: acute graft-versus-host disease, allogeneic hematopoietic stem cell transplantation, IL7R heterozygous mutations, immunodeficiency genetic susceptibility genes, whole exome sequencing(WES)

POSTER Submission**BASIC SCIENCE (POSTER-534)****CRISPR-BASED GENE EDITING METHOD IN MAJOR BETA-THALASSEMIA IS UNDER DEVELOPMENT**

Sahar Taebi^{1,2}, Amir Ali Hamidieh², Mehdi Shamsara¹

¹National Institute of Genetic Engineering and Biotechnology, ²pediatric cell therapy research center, Tehran, Iran

Aims & Objectives: β -thalassemia is the most frequent monogenetic disorders worldwide. Many mutations have been identified in β globin gene, but the IVSII-I mutation is the commonest one in Iran. In this study, IVSII-I mutation will be edited by CRISPR-Cas9.

Patients / Materials & Methods: Guide RNAs (gRNAs) were designed to target the β -globin gene at the nearest site to the IVSII-I mutation. Two gRNAs were selected and cloned in the pX330 vectors and their cutting efficiency was assayed. Homology arms were amplified from human HBB locus and fused each other. A puromycin resistance cassette was inserted between the arms. The plasmid carrying gRNA and HDR template were electroporated into the HEK293T cells and selected by puromycin for two weeks.

Results: The oligonucleotides were annealed each other and cloned in the pX330 vectors and sequencing confirmed the clonings. The T7 endonuclease assay showed higher cutting efficiency by one of the gRNAs. The 5' - and 3' -arms was amplified separately as 770 and 822 bp fragments and then fused together during SOEing PCR to get a 1592 bp fragment. The fusion was cloned in a pX330 vector harboring the gRNA and then the HDR template was obtained by insertion of a PuroR cassette between the cloned arms. Sequencing of the template showed the accurate and mutation free amplification and cloning of the fragments. The vector was transfected into the HEK293 cells and the alive cells in puromycin conditional medium were analyzed by PCR using a Puro specific primer and another primer recognizing a flanking region out of the homologue sequence. The result showed the insertion of HDR template at the desired position in the HBB locus.

Discussion & Conclusion: Collectively, this study showed the potential of CRISPR/Cas9 in targeting of HBB gene. This study is extending to suspension cell culture including K562 cells and patient's hematopoietic stem cells.

Disclosure of Interest: None Declared

Keywords: Beta-Thalassemia , CRISPR, Gene Editing

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-535)****DARATUMUMAB REGIMEN IN TREATMENT OF RELAPSED HEMATOLOGICAL MALIGNANCIES IN CHILDREN AFTER ALLO-HSCT**

Zhihui Li¹, Yongqiang Zhao¹, Xiaopei Wen¹, Tong Wu¹

¹Bone Marrow Transplantation, Beijing Boren Hospital, Beijing, China

Aims & Objectives: To investigate the safety and efficacy of daratumumab-containing regimen in the management of relapsed hematological malignancies in children after allogeneic hematopoietic stem cell transplantation (allo-HSCT).

Patients / Materials & Methods: From January 2019 to June 2020, six children with refractory/relapsed hematological malignancies who relapsed after myeloablative allo-HSCT in our hospital were enrolled. Diagnosis included acute myeloid leukemia (AML, 3 cases), T-lymphoblastic lymphoma/leukemia (T-LBL/L, 2 cases), and B-acute lymphoblastic leukemia (B-ALL, 1 case). The median age was 11 (5-17) years old. The disease status pre-HSCT was either non-remission (4 cases) or minimal residual disease (MRD) positive (2 cases). The expression of CD38 antigen in their tumor cells was all positive by flow cytometry. Three AML patients received at least 1 cycle of chemotherapy or donor lymphocyte infusion (DLI) and failed. Daratumumab-containing regimen was consisted of daratumumab 400mg x 1, cytarabine 100mg/d x 3-5d, etoposide 100mg/d x 3-5d, and venetoclax 10mg bid x 14d.

Results: All patients were tolerant this regimen well. The main adverse events during daratumumab infusion were runny nose, cough, chest tightness, transient decrease of blood oxygen saturation. They all experienced pancytopenia for 2-3 weeks. No life-threatening infections and bleeding were noted. One AML patient underwent the second allo-HSCT after complete remission (CR) with daratumumab-containing regimen. With the median follow-up 188 (30-249) days, CR was achieved in 2/2 T-LBL/L, 1/3 AML, and 0/1 B-ALL. The disease-free survival rate was 50.0%, and the overall survival rate was 83.3%.

Discussion & Conclusion: The prognosis of refractory/relapsed patients with hematological malignancies who relapsed after allo-HSCT is extremely poor, and effective therapeutic regimens are very limited. Our pilot study has shown that daratumumab-containing regimen is feasible and effective in half of CD38 positive hematological malignancies in children who relapsed after allo-HSCT. It seems that better response is found in the patients with T-LBL/L. More patients and longer follow-up are warranted.

Disclosure of Interest: None Declared

Keywords: Children, Daratumumab Regimen, Relapsed Hematological Malignancies

ORAL Submission**LEUKEMIAS (ORAL-542)****CLINICAL OBSERVATION ON VENETOCLAX-BASED COMBINATIONS FOR PATIENTS WITH AML RELAPSING AFTER HSCT**

Fan Yang^{*1}, Yueqian Feng¹, Changwei Dong¹, Yanping Geng¹, Tong Wu¹
¹Transplantation, Beijing Boren Hospital, Beijing, China

Aims & Objectives: To analyze the efficacy of BCL-2 inhibitor (Venetoclax) combined with demethylation/low-dose cytarabine for adult patients with AML relapsing after allo-HSCT

Patients / Materials & Methods:

patients with AML relapsing after allo-HSCT were collected from March 2018 to March 2019.

12 patients with AML relapsing after allo-HSCT were collected from January 2018 to may 2020. Five patients were treated with BCL-2 inhibitor (Venetoclax) combined with low-dose cytarabine (20mg/m²/day d1-14), 2 patients were treated with BCL-2 inhibitor combined with low-dose cytarabine and decitabine, 5 patients were treated with BCL2 inhibitor and azacytidine.

Results: The median age of the 12 patients was 43 years (16,52), 4 males; 6 cases had morphological recurrence, 3 cases had molecular recurrence (MRD +), 3 cases had extramedullary recurrence; 1 case had AML-ETO positive, 3 cases had MLL fusion gene positive, 1 case had CBF β - MYH11 positive; 1 case had NPM1 and FLT3 mutation, 1 case had TP53 deletion mutation; 6 cases had received chemotherapy after recurrence, and 8 cases received DLI; the total remission rate of the first course of treatment was 83% (8 cases of CR (MRD negative), 2 cases of CR (MRD positive) and 2 cases of NR); the median time of continuous oral administration of BCL-2 inhibitor was 18 days (12,28); in BCL-2 inhibitor combined with low-dose cytarabine group, 3 cases had CR, 2 cases relapsed and died during consolidation with the original regimen or single drug, and 1 case was replaced with BCL-2 inhibitor combined with azacytidine for 4 courses, with DFS of 27 months (up to the date of follow-up); In BCL-2 inhibitor combined with azacytidine group, 4 cases survived, 1 case underwent second transplantation, and 1 case died of recurrence; the median follow-up time was 456 days (120,810); the 2 years OS was 7 / 12 cases (including 3 cases of secondary transplantation); DFS was 4/7 cases; The main adverse reactions were myelosuppression, neutropenia with fever in 9 cases, infection (herpes zoster / septicemia) in 5 cases and tumor lysis in 1 case.

Discussion & Conclusion: BCL-2 inhibitor combined with chemotherapy is effective in the treatment of relapse of adult acute myeloid leukemia after allogeneic hematopoietic stem cell transplantation.

Disclosure of Interest: None Declared

Keywords: Allo-HSCT, AML, BCL-2 inhibitor, Relapsed Hematological Malignancies

POSTER Submission**LEUKEMIAS (POSTER-548)****A CLINICAL OBSERVATION OF HAPLOID TRANSPLANTATION IN 27 PATIENTS WITH ACUTE MEGAKARYOCYTIC LEUKEMIA**

Zhijie Wei¹, Fei Pan¹, Guanlan Yue¹, Rong Yang¹, Kang Gao¹
¹Hebei Yanda Ludaopei Hospital, Langfang City, China

Aims & Objectives: AMKL accounts for approximately 10% of childhood AML and 1% among adults. Although AMKL with Down syndrome has a good prognosis, non-DS-AMKL is quite poor with a 3-years survival rate of less than 40%. At present, only allogeneic HSCT can be cured. In our study, 27 cases of AMKL hematopoietic stem cell transplantation were followed up in clinical observation through modified Bu/Cy/Mel protocol.

Patients / Materials & Methods: from August 2015 to July 2020, a total of 27 AMKL patients (14 males, 13 females, male: female = 14:13, all non-Down-AMKL) who were continuously treated in our hospital (He Bei Yanda Hospital) were observed, with a median age of 2 years (ranging from 1 to 9 years old), including 18 cases of chromosome abnormality, 3 cases of CBFA2T3/GLIS2 gene fusion (11.1%). Gene mutation: WT1(8), EVI1(5), JAK2(5): 18.51%, TET2(4), ASXL1(4), PTPN11(4): 14.81%, GATA1(2), GATA2(2): 7.4%. Bone marrow status before transplantation: CR in 19 cases, PR in 3 cases, and NR in 5 cases. There were 24 haploid transplants (including one patient going through 3 transplants), one transplant from HLA-identical sibling donor and two from matched unrelated donors. Source of donor stem cells: 23 cases from parents, 2 cases from brothers, 2 cases from non-blood relationship, and none from offspring. HLA matching between the donor and recipient: 21 cases with HLA 5/10, 6 cases with \geq HLA 6/10. Haplo stem cells all came from BM+PBSC, with a median MNC input of $20.32 \times 10^8/\text{kg}$ (10.1- 26.7), CD34 $11.68 \times 10^6/\text{kg}$ (4.05-22.44), and CD3 $4.66 \times 10^8/\text{kg}$ (2.11-11.29). Pretreatment protocol: 27 cases of modified BU/CY/Mel were treated with GVHD to prevent CSA+MMF+sMTX.

Results: In the follow-up with a median period of 10 months (2-48 months), the 27 cases were all transplanted alive, with the median days of leukocyte transplantation +13 days (9-21 days), the median days of platelet transplantation +9 days (4-38 days). The bone marrow was evaluated 1 month after transplantation, all of which were 100% complete donor type. The overall survival rate was 63.0%, EFS: 59.3%. OS: 84.2% in the CR group, 33.3% in the PR group, and 0% in the NR group ($P < 0.001$). There were 7 cases of recurrence and 10 death, among which 4 were caused by GVHD and 5 due to recurrence. Incidence of aGVHD: I-IV degree 59.25%, and III-IV degree 18.51%. Incidence of cGVHD: 56%, cystitis accounted for 14.81%, CMV 29.62%, EBV 3.7%, TMA 0%, and infection 18.51%.

Discussion & Conclusion: Application of modified Bu/Cy/Mel pretreatment significantly improves the efficacy of haploid transplantation without increasing pretreat-related death. For non-down AMKL, it is a feasible scheme to perform hematopoietic stem cell transplantation in CR as far as possible. But multicenter and large-scale clinical studies require long-term follow-up.

Disclosure of Interest: None Declared

Keywords: AMKL, GVHD, transplantation

POSTER Submission**BONE MARROW FAILURE SYNDROMES INCLUDING MDS. (POSTER-549)****CLINICAL EFFECT OF HAPLOID-SCT AND SCT FROM AN UNRELATED DONOR FOR SEVERE APLASTIC ANEMIA (SAA)**Zhijie Wei^{1,2}, Fei Pan¹, Rong Yang¹, Guanlan Yue¹, Kang Gao¹¹Hebei Yanda Ludaopei Hospital, Langfang City, China, ²Transplantation, Hebei Yanda Ludaopei Hospital, Langfang City, China

Aims & Objectives: Allo-SCT with an HLA-matched sibling donor remains the curative treatment for young patients with SAA. When a matched sibling is not available and a patient does not achieve a response to immunosuppressive therapy (IST), allogeneic SCT from an unrelated donor (URD-SCT) is the preferred alternative therapy. However, Haplo-SCT are increasing because a graft from a related mismatched donor is available for most patients and has the advantage of prompt use. Therefore, Haplo-SCT can be a front-line therapy for very SAA (VSAA) when the patient is not able to receive SCT from emergent compatible donors.

Patients / Materials & Methods: The clinical data of consecutive 38 patients with aplastic anemia (AA) were collected, whom were treated in Lu Daopei hospital from December 2013 to July 2020. Among all the patients, male was 21 and female was 17, and median age was 8 (1-34) years. Of the enrolled patients, there were 4 congenital AA, 34 acquired AA and 3 hepatitis associated SAA. Median time from diagnosis to transplant was 9 (1-282) months. 11 (28.9%) cases failed to receive ATG/ALG treatment. There were 26 patients receiving haploid-SCT, 3 patients receiving sibling HLA-matched SCT and 9 patients receiving URD-SCT. As for the source of donor stem cell, 11 cases were from parents, 6 cases were from brothers and sisters and 9 cases were from unrelated donors. Median age of the donors was 32 (11-57) years. Moreover, there was 13 donors which were incompatible in blood type with the patients. With regard to HLA matching type, 16 cases were HLA 5/10 and 22 cases \geq HLA 6/10. Of the patients, the stem cells were derived from BM+PBSC (29) or PBSC (9) and median dosage of MNC transfusion was 12.385 (4.97-29.44) $\times 10^8$ /kg, CD34 9.42(2.64-22.4) $\times 10^6$ /kg and CD3 2.26 (1.11-7.92) $\times 10^8$ /kg. As for preparative regimen, there were 30 patients adopting Flu/Cy/ATG+TBI 200cGy, 8 patients adopting Bu and 3 patients adopting BU+TBI. with CSA/FK506+MMF+sMTX to prevent GVHD.

Results: The median follow-up was 26.5 (1-103) months. All 36 cases were engrafted and no primary graft failure happened. Only one case of secondary graft failure existed. The median day of leukocyte engraftment was +13 (10-23) days, the median days of platelet engraftment was +10.5 (6-167) days. Evaluation of bone marrow at one month after transplantation, all of them were fully donor type, The overall survival (OS) rate: 92.1%, OS of Haplo-SCT was 88.5%, and OS of HLA-identical SCT (sibling HLA-matched SCT + URD-SCT) was 100%.

Discussion & Conclusion: Outcomes of Haplo-SCT with TBI 200 cGy/Flu/Cy/ATG indicate that Haplo-SCT can be an effective alternative option when fully matched or unrelated matched donors are not available, or for patients with VSAA who need an urgent transplant.

Disclosure of Interest: None Declared

Keywords: ANEMIA, HAPLO, transplantation

POSTER Submission**LEUKEMIAS (POSTER-551)****IMPACT OF DONOR CHIMERISMS MONITORING FOLLOWING ALLOGENIC STEM CELL TRANSPLANTATION**

Nur Adila Anuar¹, Kevin Tey Wen Fei², Veera S. nadarajan¹, Bee P. Chong¹, Gan G. Gin¹, Normala Arshad³, Mardziah Mohamad³
¹haematology, ²Pharmacology, UMMC, Kuala Lumpur, ³Haematology, Haematology Unit,UMMC, Malaysia, Malaysia

Aims & Objectives: The aim of this study is to determine the relationship between chimerism monitoring and the impact on the clinical outcomes following AHST in adult patients with haematological malignancy.

Patients / Materials & Methods: We reviewed data on adult recipients post AHST with underlying malignant hematological disorder between December 2008 and November 2019 at the University Malaya Medical Centre. We excluded patients who were transplanted for primary myelofibrosis and aplastic anaemia where it is difficult to accurately define relapse and patients who did not have available results of chimerism levels. Chimerism was evaluated on days + 30, + 60, + 90 and after the transplant. Short tandem repeat polymerase chain reaction (STR PCR) was used to analyse chimerism. The percentages of total donor chimerism which were grouped as 100%–96% and less than 96%.

Results: Among 80 patients, the relapsed rate is 20 % which is comparable to other studies. Further analysis on relapse shows a trend on day +30 where patient with <96% chimerism will have higher rate of relapse, whereas patients with >96% chimerism on day +60 was observed to significantly have a lower chance of relapse ($p=0.002$). This highlights that day +30 and day +60 are optimum monitoring days on chimerims on relapse. Similarly, with overall survival (OS) on chimerism, patient's with >96% chimerism on day +60 have a significantly higher chance of surviving ($p=0.004$). There were no significant difference observed for chimerism on day +30 and day +90 with OS and relapse. No significance were observed in total donor chimerism on GVHD

Discussion & Conclusion: The data presented in this study provide valuable insight into the analysis of chimerism monitoring in adult with haematological malignancy treated with AHST in our centre. This highlights that day +60 are optimum monitoring days on chimerims on relapse, while day +30 and day +90 may be up for consideration. Our findings suggest that early monitoring of chimerism after HSCT may be a helpful tool in predicting relapse and using successful therapeutic intervention. This study has its limitations, such as no evaluation of the chimerism in lymphocyte subpopulations. Prospective observational studies and multicentre retrospective studies on larger groups of patients will be helpful to confirm these findings

Disclosure of Interest: None Declared

Keywords: Allogeneic hematopoietic stem cell transplantation, chimerism, engraftment, GVHD

POSTER Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (POSTER-558)****INCIDENCE OF POOR MOBILIZER IN FEMALE ARE HIGHER THAN MALE IN ALL AGE GROUP**

Nobuo Masauzi¹, Takahiro Fukuda², Naoki Hosen³, Akifumi Takaori⁴, Tetsuya Eto⁵, Mineno Kurokawa⁶, Koichi Akashi⁷, Nobuhiro Tsukada⁸, Hiromasa Yabe⁹, Yoshihisa Kodera¹⁰ and Working group of Donor's safety, Japan Society for Hematopoietic Stem Cell Transplantation

¹Faculty of Health Sciences, Hokkaido University, Sapporo, ²Department of Hematopoietic Transplantation, National Cancer Hospital, Tokyo, ³Hematology and Oncology, Department of Hematology and Oncology, Graduate School of Medicine / Osaka University / Suita / Japan, Suita, ⁴Hematology and Oncology, Department of Hematology and Oncology, Graduate School of Medicine / Kyoto University / Kyoto / Japan, Kyoto, ⁵Hematology, Department of Hematology / Hamanomachi Hospital / Fukoka / Japan, Fukoka, ⁶Hematology and Oncology, Department of Hematology and Oncology, Graduate School of Medicine / The University of Tokyo / Tokyo / Japan, Tokyo, ⁷Internal Medicine, First Department of Internal Medicine, Faculty of Medicine / Kyusyu University / Fukuoka / Japan, Fukuoka, ⁸Department of hematology, Japanese Red Cross Medical Center, Tokyo, ⁹Department of Cell Transplantation and Regenerative Medicine, School of Medicine, Tokai University, Isehara, ¹⁰Department of Promotion for Blood and Marrow Transplantation, School of Medicine, Aichi Medical University, Nagakute, Japan

Aims & Objectives: We analyzed whether peripheral blood stem cell (PBSC) yields of female donors are lower in all age groups or not, and how age of donors affected to the PBSC yields in male or female donors.

Patients / Materials & Methods: The Japanese Society of Hemopoietic Cell Transplantation conducted National follow up survey of allogeneic peripheral blood stem cell (PBSC) family donor from 2000 to 2005. A total of 3,864 donors were registered, and 3,264 PBSC collections were conducted. In 2,863 (88%) collections, day30 short-term follow up reports were returned data of 5,509 apheresis. We analyzed 2,823 PBSC collections (mean age of donors: 40.6 years old, range of age: 0-77 years old) for this study.

Results: We calculated the incidences of male (n=1,430, age: mean=40.5, range (1-76)) and female (n=1,449, age: mean=40.6, range (0-77)) donors in each age group with interval of 10 years old, from whom PBSC collection were less than 1×10^6 CD34+ / recipient's body weight (RxBWt) (incidence-1) and between from 1 to 2×10^6 CD34+ / RxBWt (incidence-2). We revealed that the incidences of donors of all age (n=2,879). Incidence-1 in male and female were 0.6% (n=18) and 1.5% (n=41), respectively. Incidence-2 in male and female were 2.7% (n=75) and 4.7% (n=133), respectively. Each incidence in female donors was larger than that in male donors in all age groups from 0 to 77 years old. The incidence-1 and incidence-2 of male and female donors in each age group with 10 years interval from 0 to 77 years old increased according to donor's age from 0% in age group 0 (0-9 years old) to 3.2% (n=23) in age group 5 (50-59 years old) and from 8.6% (n=3) in age group 0 to 10% (n=75) in age group 5, respectively. Table-1 indicates these results.

Discussion & Conclusion: The incidence of poor mobilizers in female donors was larger than that in male donors with age from 0 to 59 years old. And that was increasing with donor's age in both male and female donors

Supporting Document: a8269a90-d794-4c59-9f6f-f260f38d18b0

AgeGroup(10)	0 (0-9 y.o.)		1 (10-19)		2 (20-29)		3 (30-39)		4 (40-49)	
	count	%	count	%	count	%	count	%	count	%
< 1 (male)	0	0	0	0	0	0	1	0.2	5	0.8
< 1 (femele)	0	0	1	0.5	3	0.6	8	1.6	7	1.1
< 1 (M & F)	0	0	1	0.5	3	0.6	9	1.8	12	1.8
1 <= < 2 (male)	1	2.9	4	1.8	8	1.7	10	2	12	1.8
1 <= < 2 (femele)	2	5.7	4	1.8	13	2.7	21	4.2	24	3.7
1 <= < 2 (M & F)	3	8.6	8	3.7	21	4.4	31	6.2	36	5.5
2 <= <= 37 (M & F)	32	91.4	210	95.9	458	95	458	92	601	93
total	35	100	219	100	482	100	498	100	649	100
AgeGroup(10)	5 (50-59)		6 (60-69)		7 (70-79)		total			
	count	%	count	%	count	%	count	%		
< 1 (male)	8	22.9	4	1.8	0	0	18	3.6		
< 1 (femele)	15	42.9	5	2.3	2	0.4	41	8.2		
< 1 (M & F)	23	65.7	9	4.1	2	0.4	59	11.8		
1 <= < 2 (male)	21	60	18	8.2	1	0.2	75	15.1		
1 <= < 2 (femele)	54	154	15	6.8	0	0	133	26.7		
1 <= < 2 (M & F)	75	214	33	15.1	1	0.2	208	41.8		
2 <= <= 37 (M & F)	626	1789	167	76.3	4	0.8	2556	513		
total	724	2069	209	95.4	7	1.5	2823	567		

Disclosure of Interest: None Declared

Keywords: family donor, national registry, poor mobilizer

ORAL Submission**LYMPHOMA/MYELOMA (ORAL-562)****ASSESSMENT OF BONE MARROW RECOVERY FOR AUTOLOGOUS STEM CELL TRANSPLANTATION**

Otgonbat Altangerel¹, Baljinnyam Purevsuren², Khishigjargal Batsukh³, Oyundelger Norov³

¹Department of Hematology, School of Medicine, Mongolian National University of Medical Sciences, ²Center of Hematology and Blood & Marrow Transplantation, The First Central Hospital, ³Center of Hematology and Blood & Marrow Transplantation, The First Central Hospital, Ulaanbaatar, Mongolia

Aims & Objectives: To evaluate autologous blood stem cell transplantation result by the number of harvested CD34 stem cells and bone marrow recovery.

Patients / Materials & Methods: The study was conducted using a retrospective and prospective cohort study based on clinical cases from December 2018 to April 2020 and involved totally twenty patients who underwent autotransplantation due to lymphoid malignancies. When the number of progenitor cells capable of producing CD34 PBSC increased in the peripheral blood, the cells were harvested. The apheresis was repeated until the number of CD 34 stem cells reached to the optimal level. Neutrophil recovery was estimated to be $>500/\mu\text{L}$ in peripheral blood for 3 days from the date of CD34 stem cell transplantation, and platelet recovery was estimated to be $> 20000 / \mu\text{l}$.

Results: The mean age of the participants was 41.7 ± 12.5 years, 12 men, 8 women. For the diagnosis; non-Hodgkin's lymphoma 10, multiple myeloma 6 and Hodgkin's lymphoma 4, totally 20 cases. The median numbers of CD34+ cell was 5.21×10^6 cells/kg (range $1.87-13.7 \times 10^6$ cells/kg). In patients infused with $<4 \times 10^6$ cells/kg (n=7), $>4 \times 10^6$ cells/kg (n=13), the median time to neutrophil recovery was 14.1 and 11.7 days, platelet recovery was 21.7 and 14.4 days, respectively. The frequency of chemotherapy was statistically inversely correlated with the number of CD34+ stem cells ($p = 0.01$) and directly correlated with apheresis ($p = 0.006$). A statistically significant relationship was observed between the number of transplanted CD34+ stem cells and neutrophil recovery ($p = 0.02$).

Discussion & Conclusion:

1. A sufficient number of CD34+ peripheral blood stem cells (5.3×10^6 cells/kg) was determined using apheresis.
2. Neutrophil recovery was determined on 12.9 days in patients with lymphoma, on 11.6 days in patients with multiple myeloma, platelet recovery was 13.9; on day 12.3 respectively.
3. The number of CD34+ cells decreases with an increase in the number of chemotherapy regimens and the number of apheresis procedures ($p=0.01$)

Disclosure of Interest: None Declared

Keywords: bone marrow recovery., CD34+ hematopoietic stem cell, lymphoma, multiple myeloma

POSTER Submission**BONE MARROW FAILURE SYNDROMES INCLUDING MDS. (POSTER-568)****DIFFUSE ALVEOLAR HEMORRHAGE MASQUERADING AS RECURRENT ANEMIA POST STEM CELL TRANSPLANTATION**Suthanthira K. Ramamoorthy¹, Logeshwari Bujjigapan²¹Advanced Centre for Blood and Blood Cancer, SRAB, ²Hematology, Sri Ramakrishna Hospital, Coimbatore, India

Aims & Objectives: Diffuse alveolar haemorrhage (DAH) has an incidence of around 3-10% is a serious complication post-transplant and has a mortality of 70-100%. High index of suspicion is needed as symptoms are nonspecific and most of them do not manifest with haemoptysis. Indolent manifestation of DAH presenting with anaemia is rare and pose diagnostic challenge.

Patients / Materials & Methods: 37 year old female with very severe aplastic anaemia received fully matched sibling stem cell transplant one month after the diagnosis. Both donor and recipient were AB positive and were CMV positive. She had conditioning with fludarabine, cyclophosphamide G and received a stem cell dose of 6.0×10^6 /kg. GVHD prophylaxis was cyclosporine and mycophenolate. She engrafted by day 15 (See Tab 1). She had evidence of CMV reactivation on day 35 and Day 72 and was treated with ganciclovir. However she remained transfusion dependent. The cause remained unclear with a normocellular marrow and no evidence for peripheral destruction.

Results: She had achieved >95% of donor chimerism by day 30. The platelet count after engraftment hovered around $60-80 \times 10^9$ /L till day 65 after which it remained around 20×10^9 /L. She required packed red transfusions once in 5 weeks in the post-transplant period. On day 100, she presented with cough and respiratory distress. Chest X ray and CT chest showed features of pulmonary oedema vs PCP (pneumocystis jiroveci pneumonia) with bilateral ground glass appearance. She was on Trimethoprim co trimaxozole prophylaxis, however since there was a suspicion of poor drug compliance, the diagnosis of PCP was still high. She deteriorated rapidly within a day, requiring empirical PCP therapy along with steroids. Induced sputum was negative for PCP. Elective intubation for bronchoscopy was planned but was not done as she showed signs of recovery. The steroid dose was 1mg/kg of oral prednisolone for a week and then tapered rapidly. She required only one transfusion on day 120, after which she presented again on Day 140 with anemia, cough and respiratory distress. She required intubation the next day and an urgent bronchoscopy was done on the day of admission which confirmed the diagnosis of DAH.

Discussion & Conclusion: To our knowledge, this is the first case of an indolent presentation of Diffuse Alveolar haemorrhage. No predisposing causes of DAH such as myeloablative TBI dose, delayed engraftment, old age, high dose cyclophosphamide were evident. The transient response to steroids which she had initially as part of treatment for PCP was not sustained when she presented with the same symptoms on Day 140. Whether earlier diagnosis with prolonged steroids and Factor VIIa support would have helped is not clear.

Supporting Document: 714d7c84-e88a-406b-9d7b-771988fdeff2

Days post stem cell transplant	Hb (G/L)	Packed red cell transfusions	Wbc (x 10 ⁹ /L)	Neutrophils (x10 ⁹ /L)	Platelets (x 10 ⁹ /L)	Platelet transfusions
Day 20	74		3.5	2.7	8	
Day 40	84		6.8	5.4	83	
Day 60	69	1 unit	4.1	3.2	73	
Day 80	82		3.7	2.6	17	
Day 100	72	1 unit	3.0	2.4	15	
Day 120	73	1 unit	19.0	15.5	35	
Day 140	53	4 units	5.4	4.3	10	1 Single donor platelets alternate days x 3
Day 150	120		0.9	0.8	17	

Tab 1: Blood counts post transplant

Disclosure of Interest: None Declared

Keywords: ANEMIA, diffuse alveolar hemorrhage, Stem cell transplantation

POSTER Submission**LYMPHOMA/MYELOMA (POSTER-575)****COMPARISON OF 140MG VS 200MG/M² DOSE OF MELPHALAN IN MYELOMA AUTOGRAFT EXPERIENCE FROM CHENNAI, IN.**

Kishore Kumar¹, Durai Prabu², Dharani Devi³, Bhagavathy Subramanian⁴, Chezian Subash⁵

¹HAEMATOLOGY & BMT, The Madras Institute of Orthopaedics and Traumatology, CHENNAI, ²MIOT chennai, RMO BMT Department MIOT chennai, Cheenai, ³MIOT chennai, RMO BMT Department MIOT chennai, ⁴MIOT chennai, BMT Coordinator BMT Department MIOT Chennai, ⁵HAEMATOLOGY & BMT, MIOT, CHENNAI, India

Aims & Objectives: Melphalan at a dose of 200mg/m² is considered the standard dose in patients with myeloma without major co-morbidity. This was formulated before the era of novel agents. Considering the deeper remission by novel agents and refractory GNB sepsis in most Indian setups, we compared 140mg/m² vs 200mg/m² of Melphalan in Indian myeloma patients who achieved a CR before transplant.

Patients / Materials & Methods: We analyzed myeloma autograft patients from September 2014 to August 2017. 42 patients received MEL200 and 43 patients received MEL140. These patients were clinically randomized. ISS-III patients were 48% and 49% in MEL200 vs MEL140 respectively. The standard induction was 3 to 4 cycles of RvD chemotherapy. Around 16% patients in MEL140 group had a CrCl between 30-50ml/min. Overall 12% of patients in both groups needed a second day collection. Three year OS, PFS, incidence of relapse, rate of refractory sepsis, hematopoietic recovery kinetics and secondary cancers were compared.

Results: In outcome analysis, there was no TRM in both groups. The mean day of engraftment was around Day +9 in MEL140 vs Day +11 in MEL200. The rate of GNB sepsis was around 14% in MEL140 vs 27% in Mel200 (p 0.02). This reflected in use of high end antibiotics in such patients and there was a delay in engraftment which may have been confounded by sepsis. The median PFS was 26.1 months in MEL200 and 27.2 months in MEL140 group. The CI of relapse at 3 years was not significantly different between the Mel200 (33.3%) and Mel140 (34.9%) groups. The adjusted HR for relapse was 0.98. Subgroup analysis suggests that in OS, PFS, and cumulative incidence of relapse there was no significant advantage associated with melphalan 200 mg/m². Age, renal status, proteasome inhibitor treatment, gender, or Karnofsky score did not interact with OS/PFS. One patient in MEL200 group developed -5q deletion Myelodysplastic syndrome after 5 years of transplant.

Discussion & Conclusion: Discussion - This study was conducted taking into account the changing scenario in myeloma induction and maintenance to novel agents and increasing rate of resistant gram negative sepsis in Indian febrile neutropenic patients. This may not be an issue in western countries where gram negative sepsis rates are lower. The biggest worry for us is not to compromise the myeloma outcome due to lower doses of Melphalan in fit patients who achieve complete remission. This study concluded that there is not much of a difference in overall survival, Progression free survival and cumulative incidence of relapse at three years among MEL200 vs MEL140. Conclusion: - We conclude that Melphalan autograft at a dose 140mg/m² can achieve comparable responses to 200mg/m² in Indian myeloma patients who are taken to transplant post complete remission.

Disclosure of Interest: None Declared

Keywords: AUTOGRAFT, MELPHALAN, Transplant

POSTER Submission**LEUKEMIAS (POSTER-579)****THE FIRST AUTOLOGOUS STEM CELL TRANSPLANTATION FOR ACUTE MYELOID LEUKEMIA IN MONGOLIA: A CASE REPORT**

Altanshagai Boldbaatar^{1,1}, Khishigjargal Batsukh^{1,1}, Elbegjargal Erdenebaatar¹, Myadagsuren Sukhbaatar¹, Nansalma Ayurzana¹, Oyundelger Norov¹

¹The first Central Hospital of Mongolia, Ulaanbaatar, Mongolia

Aims & Objectives: More than half newly diagnosed acute myeloid leukemia (AML) will attain a complete remission (CR) with chemotherapy. Yet, without additional cytotoxic therapy, practically all of these patients will relapse. In contrast, patients who receive post-remission therapy may expect higher survival rates. There are three options for post-remission therapy: consolidation chemotherapy, autologous hematopoietic stem cell transplantation (auto-HSCT), or allogeneic HSCT. Mongolia has introduced auto-HSCT for the first time in 2014. At present, a total of 16 patients have been successfully administered auto-HSCT. In 2019, we initiated the 1st triumphant auto-HSCT for the patient with AML.

Patients / Materials & Methods: A 22-year-old man, moderate symptoms had occurred and home-treated in December 2017. From that period of time, he complained of fatigue and exhaustion. June 2018, presented to the hospital with 48% of blast cells with Auer rods in peripheral blood (PB) and 60% bone marrow blast cells with MPO ++, diagnosed AML-M2. One-time induction therapy following with consolidation treatment were administered, with the high dose cytosine for four courses. In May 2019, patient received auto-HSCT. 10mg/kg CSF was administered for 7 days prior to the collection of PB stem cells. Total of $2.45 \times 10^6 / \text{kg}$ ($0.24 + 0.8 + 1.4$) CD34+ cells are collected using an apheresis machine after being mobilized from the bone marrow to PB.

Results: Conditioning regimen protocol had been done by By/Cy/E. CSF was administered 5 mg/kg for 12 days after the stem cell infusion. On the 15th day, the ANC>500 and IRP>5.0, the bone marrow was recovered. Transfusion and additional medication were administered according to the patient's needs. Currently, the patient has been discharged and under the weekly monitoring.

Discussion & Conclusion: Auto-HSCT could be an alternative consolidation treatment for AML. Moreover, there might occur relapses after auto-HSCT, but the countries which are not able to perform allo-HSCT, auto-HSCT would be the better option for extending the lifespan.

Disclosure of Interest: None Declared

Keywords: Acute leukemia, auto transplantation, chemotherapy

POSTER Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (POSTER-582)****BENDAMUSTINE AND MELPHALAN IN HEMATOPOIETIC STEM CELL TRANSPLANTATION FOR MULTIPLE MYELOMA**Yaya Suryana¹, Eko A. Pangarsa¹¹Hematology Medical Oncology, DR Kariadi Hospital, Semarang, Indonesia

Aims & Objectives: A 48-year-old woman was diagnosed as multiple myeloma using bendamustin and melphalan as conditioning regimen for HSCT. The diagnosis was based on 60% plasma cells on bone marrow aspiration, normocytic normochromic anemia, and lytic lesions on bone survey and head CT scan, immunofixation showed monoclonal IgA. Scintigraphy oncology showed malignant cells in the cranium, shoulder, sternum, and lumbosacral vertebrae, pelvis, right and left femur

Patients / Materials & Methods: MM patient had been given chemotherapy with vincristine 0.4 mg/m²/day, adriamycin 9 mg/m²/day, and dexamethasone 40 mg/day for 6 cycles. Patient achieved stringent complete remission (sCR) with 1% plasma cells, Kappa 8.23 mg/dl, and lambda 19.46 mg/dl, kappa/lambda ratio 0.42. The lytic lesions were treated with zoledronic acid 4 mg every 28 days. Patients were classified as eligible for transplant and low risk for hematopoietic cell transplantation-specific comorbidity index. Mobilization by giving intravenous cyclophosphamide 4000 mg/m² and lenogastim 263 mcg/12 hours. Lenogastim was given until harvest-day. Then, we gave bendamustin 175 mg and melphalan 140 mg as a conditioning

Results: Complication during mobilization was febrile neutropenia, a temperature of 40°C and leukocytes 1000/uL (ANC 0). Clinically improved after administration of intravenous meropenem 1 g/8 hours and gentamicin 80 mg/12 hours.

Mobilization was reached on the 16th day and followed by harvest. Harvest products obtained volume 200 ml with CD34⁺ 13131.76/uL (CD34⁺ viability 97.89%), and after cryopreservation obtained CD34⁺ 5683.72/uL (CD34⁺ viability 97.27%, CD34⁺ 22.7. 106 cells/kg BW). Post-conditioning complications were mild anemia and severe thrombocytopenia (Hb 10.6%, leukocytes 0.01/uL, platelets 13,000/uL). After administration of 400 ml stem cell infusion, engraftment was achieved within 6 days with parameters Hb 11, 2 g%, leukocytes 8,100/uL, and platelets 46,000/uL

Discussion & Conclusion: Giving bendamustin and melphalan as a conditioning regimen is safer and effective. Patient acceptance was good, and only got mild mucositis

Supporting Document: a7261adc-8b8e-4e36-9b8b-e3cd3c921022



BENDAMUSTIN AND MELPALAN AS A CONDITIONING REGIMEN IN HEMATOPOIETIC STEM CELL TRANSPLANTATION (HSCT) FOR A 48 YEAR OLD WOMAN WITH MULTIPLE MYELOMA (MM)

Yaya Suryana¹, Budi Setiawan², Damai Santosa², Eko Adhi Pangarsa², Mika Lumban Tobing², Catharina Suharti²

¹)Trainee of Hematology and Medical Oncology, Dr Kariadi Hospital, Semarang

²)Department of Hematology and Medical Oncology, Dr Kariadi Hospital, Semarang

Aim

A 48-year-old woman diagnosed as multiple myeloma using bendamustin and melpalan as conditioning regimen for HSCT. The diagnosis was based on 60% plasma cells on bone marrow aspiration, normocytic normochromic anemia, and lytic lesions on bone survey and head CT scan, immunofixation showed monoclonal IgA. Scintigraphy oncology showed malignant cells in the cranium, shoulder, sternum, cervical and lumbosacral vertebrae, pelvis, right and left femur.

Methods

MM patient had been given chemotherapy with vincristine 0.4 mg/m²/day, adriamycin 9 mg/m²/day, and dexamethasone 40 mg/day for 6 cycles. Patient achieved stringent complete remission (sCR) with 1% plasma cells, Kappa 8.23 mg/dl, and lambda 19.46 mg/dl, kappa/lambda ratio 0.42. The lytic lesions were treated with zoledronic acid 4 mg every 28 days. Patients were classified as eligible for transplant and low risk for hematopoietic cell transplantation-specific comorbidity index. Mobilization by giving intravenous cyclophosphamide 4000 mg/m² and lenogastim 263 mcg/12 hours. Lenogastim was given until harvest-day. Then, we gave bendamustin 175 mg and melphalan 140 mg as a conditioning.

Results

Complication during mobilization was febrile neutropenia, a temperature of 40°C and leukocytes 1000/uL (ANC 0). Clinically improved after administration of intravenous meropenem 1 g/8 hours and gentamicin 80 mg/12 hours. Mobilization was reached on the 16th day and followed by harvest. Harvest products obtained volume 200 ml with CD34⁺ 13131.76/uL (CD34⁺ viability 97.89%), and after cryopreservation obtained CD34⁺ 5683.72/uL (CD34⁺ viability 97.27%, CD34⁺ 22.7. 106 cells/kg BW). Post-conditioning complications were mild anemia and severe thrombocytopenia (Hb 10.6%, leukocytes 0.01/uL, platelets 13,000/uL). After administration of 400 ml stem cell infusion, engraftment was achieved within 6 days with parameters Hb 11, 2 g%, leukocytes 8,100/uL, and platelets 46,000/uL.

Conclusion

Giving bendamustin and melphalan as a conditioning regimen is safer and effective. Patient acceptance was good, and only got mild mucositis.

Keywords: MM, conditioning regimen, good outcome

Disclosure of Interest: None Declared

Keywords: HSCT, conditioning regimen, outcome, MM, HSCT, conditioning regimen, MM, HSCT, outcome

ORAL Submission**LYMPHOMA/MYELOMA (ORAL-591)****IMPACT OF SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS ON TREATMENT OUTCOMES IN PATIENTS WITH MYELOMA**

Swaroop Revannasiddaiah¹, Prathap R. Varma¹, Rasmi Palassery¹, Vinayak V. Maka¹, Nalini Kilara¹, Apoorva Jagadish¹, Deepa Dhanabalan², Kalpana Kumari³, Damiano Rondelli⁴, Santhosh K. Devadas¹

¹Medical Oncology, ²Blood Bank & Transfusion Medicine, ³Pathology, Ramaiah Medical College, Bengaluru, India, ⁴Hematology/Oncology & BMT, University of Illinois, Chicago, United States

Aims & Objectives: A significant proportion of multiple myeloma (MM) patients fail to undergo autologous hematopoietic stem cell transplant (AHSCT) as part of their treatment. This study assessed the impact of patients' education level, distance between home to hospital, and source of treatment funding on the likelihood of receiving an AHSCT, and survival.

Patients / Materials & Methods: All MM patients registered in our institution from January-2016 to January-2020 were included. Data on the patients' education level, distance to the hospital and finances were collected. These were compared against the number of patients who underwent AHSCT and the overall survival (OS) of all the patients included in the study.

Results: Education background was retrievable for 70 patients. While 18 (25.7%) patients were illiterate, 52 (74.3%) had some form of formal education. Illiterate patients were less likely to be offered AHSCT in comparison to those with education (27.7% vs. 62%; p 0.0153), and less likely to undergo AHSCT (11.1% vs. 42%; p 0.0208). The one-year OS was slightly lower in the illiterate patients in comparison to those with education (81.8% vs 88%; p 0.43). Funding information was retrievable for 80 patients. Cash, government insurance, private insurance and crowd funding were the sources for 40 (50%), 27 (33.8%), 12 (15%), and 1 (1.2%) patient, respectively. There was no significant difference in the rate of AHSCT or survival with regards to the source of funding and the distance to the hospital.

Discussion & Conclusion: Patients with some form of formal education were more likely to be offered AHSCT and to undergo AHSCT than illiterate patients. A perceived bias regarding the patient's ability to understand complex treatment plans, an actual disability in comprehending the details of therapy due to lack of education, or a greater likelihood of unaffordability among the illiterate patients could be the reasons for this.

Disclosure of Interest: None Declared

Keywords: Autologous transplantation, literacy, Multiple Myeloma, socioeconomic status

POSTER Submission**LEUKEMIAS (POSTER-593)****MITIGATION OF IN-HOSPITAL COVID-19 RISK IN A HAEMATOLOGY-ONCOLOGY AND STEM CELL TRANSPLANT SETTING**

Suvir Singh¹, Davinder Paul², Kunal Jain², Jagdeep Singh²

¹Clinical Hematology and Stem Cell Transplantation, ²Medical Oncology, Dayanand Medical College, Ludhiana, India

Aims & Objectives: Patients with hematologic malignancies receiving chemotherapy are immunocompromised and at high risk of COVID-19 infection and complications. We describe our experience with minimizing COVID risk in haematology-oncology and stem cell transplant patients treated with curative intent.

Patients / Materials & Methods: This prospective observational study was conducted from April to August 2020 in a 99 bedded cancer centre of a tertiary care hospital with at least 300 beds dedicated to COVID patients. Preventive measures included: A. Staff: Daily screening, mandatory personal protective equipment(PPE), risk stratification, testing/isolation after potential exposure. B. Patients: Mandatory viral PCR, segregation of positive patients, family testing of transplant recipients. C. Environment: Four hourly cleaning of hard surfaces, visitor restriction and reassignment of clinic visits to telemedicine. Treatment of underlying conditions was continued with added precautions.

Results: A total of 51 patients were included in the analysis, which included 21 (41%) with lymphoma (all subtypes), 13 (25.4%) with ALL, 7 (13%) with AML, 3 (5.8%) with APL, and six (11.7%) for stem cell transplantation. Intensive chemotherapy was initiated as per protocol after documenting COVID19 negativity on nasopharyngeal PCR. Nasopharyngeal PCR for SARS-CoV2 was found positive for 3 patients (5.8%) before starting and one during chemotherapy, while in cytopenia. For pre-treatment infections therapy was delayed and restarted uneventfully after 14 days. One patient with AML and SARS-CoV2 infection on day +15 of chemotherapy died with respiratory failure and another with APL is presently on invasive ventilation. In the entire cohort, 8 patients died after first cycle of chemotherapy, including one with SARS-CoV2 infection and seven with sepsis or complications of primary disease.

Discussion & Conclusion: In the wake of the COVID-19 pandemic, chemotherapy and stem cell transplantation for hematologic malignancies must be continued while balancing infection risk. Our report emphasises the effectiveness of basic infection control measures and pre-treatment testing and segregation which was able to markedly reduce the risk of infection in an extremely high risk clinical setting.

Supporting Document: 64d4b4fb-59a8-4e15-9f04-ca1efdd63a82

Age	Sex	Diagnosis	Phase of COVID detection	Indication for Testing	Severity	Action	Outcome
35	F	Acute Myeloid Leukemia	Post 7/3 induction Day + 15	Fever with cough	Severe with ARDS	Supportive Care	Died within 48 hours in peak cytopenia
20	M	Acute Myeloid Leukemia	Post induction, before starting HiDAC	Routine Pre Admission	Asymptomatic	Delayed Chemotherapy	In remission, HiDAC planned after 14 days
27	F	Acute Promyelocytic Leukemia	Presentation	Hypoxic on room air	Severe with ARDS	Intubated and Ventilated	On Ventilator, chemotherapy started
14	M	Acute Lymphoblastic Leukemia	Presentation	Routine Pre Admission	Asymptomatic	Delayed Chemotherapy	Chemotherapy started uneventfully

Table 1: Details of patients with hematologic malignancies positive for SARS-CoV2 nasopharyngeal PCR

Disclosure of Interest: None Declared

Keywords: chemotherapy, COVID-19, Leukemia

POSTER Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (POSTER-594)****THE STATUS AND INNOVATIONS OF HSCT MEDICAL PRACTITIONERS IN THE COVID-19 PANDEMIC IN HYOGO, JAPAN**

Hisayo Doi¹, Mayumi Matsumoto², Mika Tsunogi³, Shiho Kadono⁴, Masaaki Tanda⁵, Marika Watanabe⁶, Hideaki Goto⁷, Keiji Kurata⁸, Yoshiharu Miyata⁹, Akihito Kitao⁶, Yoshiyuki Kosaka¹⁰, Kimikazu Yakushijin⁶

¹Nursing, Kobe University Hospital, ²Nursing, Hematology Center, Shinko Hospital, Kobe, ³Nursing, Hyogo Cancer Center, Akashi, ⁴Nursing, Konan Medical Center, ⁵Pharmacy, ⁶Medical Oncology and Hematology, Kobe University Hospital, Kobe, ⁷Hematology and Oncology, Kita-harima Medical Center, Ono, Japan, ⁸Medical Oncology, Dana-Farber Cancer Institute, Harvard Medical School, Massachusetts, American Samoa, ⁹Bioresource Research and Development, Kobe University Graduate School of Medicine, ¹⁰Hematology/ Oncology, Hyogo Prefectural Kobe Children's Hospital, Kobe, Japan

Aims & Objectives: The worldwide COVID-19 pandemic is causing tension and anxiety even among medical professionals involved in hematopoietic stem cell transplantation (HSCT). Thus, we surveyed the problems and innovations related to COVID-19 at each institution.

Patients / Materials & Methods: We surveyed 62 medical professionals registered in the mailing list of the HSCT team meeting in Hyogo Prefecture between May 1 and 14, 2020, using a web-based survey (SurveyMonkey), about the problems and innovations under the COVID-19 pandemic.

Results: Twenty-six participants, consisting of 11 physicians, 10 nurses, 3 HSCT coordinators, 1 physical therapist, and 1 pharmacist, answered the questionnaire. To prevent the hospital-acquired infection of COVID-19, in the workplace, hand hygiene, cough etiquette, and not going to places where many people gather (96.2%); not going to places with poor public ventilation (76.9%); and not talking at a close distance from others (65.4%) were common responses. Workplace problems included inadequate supplies of personal protective equipment and disinfectants, inability to examine and perform surgeries for high risk patients with COVID-19, adversely-affected training of new employees, and exhaustion of medical personnel. The efforts were restriction on visitors for patients, changing conferring methods to avoid speaking within close distances, and medical treatment and prescriptions online. They felt increased stress and the inability to relax outside the workplace, inadequate care for their families, and anxiety about using public transportation daily. To overcome the pandemic, they had the correct knowledge, used reliable techniques to prevent infections, changed their moods to the extent possible for relaxation, and devised ways to keep their bodies and minds peaceful.

Discussion & Conclusion: It is not enough to cope with the stress of a long-term COVID-19 pandemic; mental support for medical staff is also necessary.

Disclosure of Interest: None Declared

Keywords: COVID-19, HSCT, survey

POSTER Submission**LEUKEMIAS (POSTER-598)****RELAPSED T-ALL/LBL AFTER TRANSPLANTATION THAT IS DIFFERENTIATED FROM DONOR CELL LEUKEMIA.**

Marika Watanabe¹, Kimikazu Yakushijin¹, Hideaki Goto¹, Yoshiharu Miyata¹, Hiroya Ichikawa¹, Ako Higashime¹, Shigeki Nagao¹, Sakuya Matsumoto¹, Yoko Ishikawa¹, Rina Sakai¹, Yu Mizutani¹, Keiji Kurata¹, Seiji Kakiuchi¹, Akihito Kitao¹, Katsuya Yamamoto¹, Hiroshi Matsuoka¹, Hironobu Minami¹

¹Department of Medical Oncology/Hematology, Kobe University Hospital, Kobe city, Japan

Aims & Objectives: Chimerism analyses using two-color fluorescence *in situ* hybridization with X and Y chromosome-specific DNA probes (XY-FISH), or polymerase chain reaction of short tandem repeats (STR-PCR) are often performed after allogeneic hematopoietic stem cell transplantation (allo-HSCT). Leukemia relapse derived from donor cells, known as donor cell leukemia (DCL), is rarely observed. However, cases may occasionally be encountered with results that are difficult to interpret, suggesting DCL.

Patients / Materials & Methods: A 61-year-old man visited the hospital owing to right cervical lymph node swelling. A lymph node biopsy indicated T-cell lymphoblastic lymphoma/leukemia (T-ALL/LBL), and a chromosomal analysis revealed 47, X,-Y,+mar1x2[4]/46,XY[16]. Complete remission was achieved after chemotherapy, and subsequently, cord blood cell transplantation from a female donor was performed. However, after two years with full donor chimerism, the patient relapsed.

Results: G-banded karyotyping revealed 46, XX[20], implying that the cells were derived from donor cells. Nevertheless, XY-FISH results demonstrated an XO signal of 85.0% and an XY signal of 0.6%. In addition, STR-PCR analysis indicated an 87.5% recipient pattern, suggesting that the correct diagnosis was a relapse, and not DCL. Consequently, chemotherapy was administered followed by a second cord blood transplant, and the patient has since remained in complete remission.

Discussion & Conclusion: Chimerism analysis to disclose the origin of leukemia cells is crucial after allo-HSCT. In this case, we used multiple techniques to differentiate between relapse and DCL. At relapse after the first transplantation, a chromosomal analysis revealing 46, XX karyotype suggested DCL. However, XY-FISH results demonstrated the absence of a Y chromosome, and STR-PCR analysis indicated a high-recipient pattern, suggesting recipient relapse. We speculated that the leukemia cells were unable to proliferate sufficiently for karyotyping.

Conclusions: Multiple modalities should be used to interpret donor chimerism as chromosomal analysis alone could lead to a misdiagnosis of DCL.

Disclosure of Interest: None Declared

Keywords: chimerism, donor cell leukemia, transplantation

POSTER Submission**LEUKEMIAS (POSTER-600)****CLINICAL EXPERIENCE OF VENETOCLAX AS A BRIDGE TO ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION**

Tigting Yang¹, Yanmin Zhao¹, Yi Luo¹, Yamin Tan¹, Jian Yu¹, Xiaoyu Lai¹, Huarui Fu¹, Weiyan Zheng¹, Jie Sun¹, Jingsong He¹, Guoqing Wei¹, He Huang¹, Jimin Shi¹

¹Bone Marrow Transplantation Center, the First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China

Aims & Objectives: The use of Venetoclax (Ven) combinations are changing the management of acute myeloid leukemia (AML) and other hematologic malignancies. Our study aimed to understand the outcome of patients undergoing allogeneic hematopoietic stem cell transplantation (allo-HSCT) following Ven therapy.

Patients / Materials & Methods: We retrospectively reviewed all patients (including relapsed/ refractory AML or ALL, and CMML) undergoing HSCT following Ven combinations at our center from November 2018 to February 2020. Treatment prior to allo-HSCT, transplant outcomes and overall survival were analyzed.

Results: A total of 9 patients underwent allo-HSCT after receiving at least 1 cycle of Ven combinations. For relapsed/refractory AML or ALL patients (n=7, 77.8%), Ven combinations were treated as salvage therapy proceeding to HSCT. One patient with bone marrow CR2 and positive MRD was treated for molecular remission, and 1 patient for newly diagnosed CMML. After a median of 1 (range, 1-4) cycle of Ven combinations, complete remission (CR) was observed in 5 patients (55.6%), CR with incomplete hematologic recovery in 3 patients (33.3%) and partial remission (PR) in 1 patient (11.1%). Among patients performed HSCT, the median time of neutropenia recovery and platelet recovery were 12 days and 13 days. At day +100 after transplantation, cumulative incidence of grade II-IV acute graft- vs-host disease (GVHD) was 22.2%; while chronic GVHD at 6 months developed in 12.5%. Within +100 days, cytomegalovirus (CMV) reactivation occurred in all patients (100%), and Epstein-Barr virus (EBV) reactivation in 3 patients (33.3%). With a median follow-up of 6.5 months, the incidences of one-year relapse and PFS were 35.7% and 64.3%. All patients were still alive at the end of follow-up.

Discussion & Conclusion: Ven combinations provided treatments options for these relapsed/refractory patients and were generally well tolerated. The use of Ven combinations in the sequence of therapies prior to allo-HSCT appears to be safe.

Disclosure of Interest: None Declared

Keywords: hematopoietic stem cell transplantation , relapsed or refractory, Venetoclax

POSTER Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (POSTER-601)****A STUDY TO ASSESS PERCEIVED STRESSORS AND COPING STRATEGIES ADOPTED BY POST HSCT PATIENTS.**Bhushan R. Shelar¹, Meera S. Achrekar¹¹NURSING, ADVANCED CENTER FOR TREATMENT RESEARCH AND EDUCATION IN CANCER, KHARGHAR NAVI MUMBAI, India

Aims & Objectives: Battling a life threatening illness like cancer is not only physically demanding but also put tremendous stress on other aspects of patients life considering this researcher had undertaken the study to assess perceived stressors and coping strategies adopted by them.

Patients / Materials & Methods: Research methodology - survey method

Tool - interview schedule
 Research approach - Descriptive exploratory
 Sample size - Thirty
 Sampling technique - Non probability convenience sample
 Setting of study - Cancer hospital in India

Results: 30 patients completed the survey majority 77% were male and mean age of patients was 36.26 years. most 63% were employed but only 27% had income above Rs 40000 per month. around 63% of patients had undergone allogeneic transplant. The complication experienced by patients was mucositis (97%), diarrhea (60%) and around 33% had GVHD & neutropenic sepsis. VOD was diagnosed in 7% of patients.

In physical stressors 83% patients experienced fatigue other stressors included pain and anorexia 77% and 70% had nausea and vomiting, fullness of abdomen.

In psychological stressors fear of disease relapse 83%, guilt due to dependency on other 73%. In social stressors lack of family support 50% and social isolation 57%. Financial stressors experienced by 73% while 70% experienced spirituality stressors.

The coping strategies adopted was taking rest 60%, taking prescribed medication in time 70%, taking of plenty of oral fluid 83%, pray to god by 70%, adhere to medical regime 100%. Most 82% of patient also mentioned that they participate in self care activities and try to connect with friends & family members through social media. Financial issues were overcome by financial trust was 82%.

Discussion & Conclusion: DISCUSSION: Fear of treatment outcome was significant in patients with ALL (p=0.019). patients with neutropenic sepsis had higher incidence of skin problem (p=0.05) and constipation (p=0.001). female experienced dryness of mouth (p=0.002), patients felt discontinue the treatment is higher in GVHD complication (0.009).

CONCLUSION: Most common perceived stressors among post-transplant patient is fatigue and fear of disease relapse. Nurses need to plan their patient care activity and ensure adequate comfort and rest is achieved. Fear of relapse has positive impact with all patients adhere to medical regime. counseling (multidisciplinary approach) will help in decreasing fear, anxiety.

Disclosure of Interest: None Declared

Keywords: coping strategies, perceived stressors, post transplant

POSTER Submission**LEUKEMIAS (POSTER-604)****ISOLATED CNS RELAPSE IN A CASE OF CMML POST ALLOGENEIC STEM CELL TRANSPLANT.**

Shipra Verma¹, Deepti Mutreja¹, Sanjeevan Sharma², Venkatesan S³, Satyaranjan Das⁴

¹Pathology, Armed Forces Medical College, Pune, ²Hematology, Command Hospital, Lucknow, ³Pathology, Research and Referral Hospital, New Delhi, ⁴Hematology, Command Hospital, Pune, India

Aims & Objectives: To present an extremely rare case of isolated central nervous system (CNS) relapse of Chronic Myelomonocytic Leukemia (CMML) post allogeneic stem cell transplant (SCT).

Patients / Materials & Methods: A 47 years old female presented with weight loss, easy fatigability and loss of appetite for three months. Examination revealed pallor and generalized lymphadenopathy. Hemogram showed severe anemia (hemoglobin 5.4 g/dL) with total leucocyte count (TLC) of 23,000/uL. Bone marrow (BM) was hypercellular with myeloid preponderance, 7% blasts, dyserythropoiesis and dysmegakaryopoiesis. Lymph node biopsy showed extramedullary hematopoiesis. Patient was managed with hydroxyurea however she continued to have raised TLC with absolute monocytosis. At three months of follow up, she was opined as a case of CMML 2 in view of persistent monocytosis and BM blasts of 12% with Auer rods.

Results: Next generation sequencing showed FLT3 gene mutation. Patient was administered two cycles of Azacitidine, following which she achieved hematological remission (BM blasts 3%). Matched allogeneic SCT with sibling as donor was done and post-transplant course was uneventful with 96% donor chimerism. Six months later, patient presented with acute quadriplegia and bulbar symptoms. Her blood counts were normal, and cerebrospinal fluid (CSF) showed positivity for blasts. MRI brain was normal. Flow cytometry of CSF sample confirmed CNS involvement by myelomonocytic leukemia. Patient was managed with intrathecal triple therapy with cytosar, dexamethasone, methotrexate. Subsequent CSF studies showed reduction in blasts. She is planned for cranial irradiation.

Discussion & Conclusion: CMML is a clonal hematopoietic disorder classified under WHO 2016 as a part of Myelodysplastic/Myeloproliferative syndrome. CNS involvement post-transplant is less commonly described in cases of acute myeloid leukemia with few case reports in chronic myeloid leukemia. Extensive literature search did not reveal any cases of CNS relapse in CMML. Risk factors for CNS relapse and management are discussed. To our knowledge this is the first case of isolated CNS relapse in CMML post allogeneic SCT.

Disclosure of Interest: S. Verma But No Conflict with: Nil, Research Grant from: Nil, D. Mutreja But No Conflict with: Nil, Research Grant from: Nil, S. Sharma But No Conflict with: Nil, Research Grant from: Nil, V. S: None Declared, S. Das: None Declared

Keywords: Allogeneic hematopoietic stem cell transplantation, Chronic myelomonocytic leukemia, Relapse

POSTER Submission**LEUKEMIAS (POSTER-607)****LONG-TERM OUTCOMES IN PATIENTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA POST ALLOGENEIC TRANSPLANT**

Melinda Tan¹, Jeffrey Quek¹, Yeh Ching Linn¹, William Hwang¹, Yeow Tee Goh¹, Jing Jing Lee¹, Aloysius Ho¹
¹Hematology, Singapore General Hospital, Singapore, Singapore

Aims & Objectives: Allogeneic transplant is a potentially curative option in patients with high-risk Acute Lymphoblastic Leukemia (ALL). There is a paucity of data on the long-term outcomes of these patients who survive the initial post-transplant period. We therefore aim to retrospectively analyse the overall survival (OS), relapse-free survival (RFS) and long-term complications in our cohort of patients.

Patients / Materials & Methods: Patients with ALL who underwent an allogeneic transplant from January 2005 to December 2017 were identified from our institutional disease registry. STATA (version 14.0) was used to analyse the data.

Results: We identified 89 ALL patients who underwent allogeneic transplants with a median follow-up of 6.4 years. The median age at diagnosis was 37 years, and 56% had Philadelphia chromosome (Ph) positivity. 42% of patients relapsed and 51% died. The 2-year and 5-year OS in our cohort were 66.4% (95% CI=55.3-75.3.0, SE 0.05) and 52.8% (95% CI=41.6-62.9%, SE 0.05) respectively. RFS at 2 years and 5 years were 54.9% (95% CI=43.8-64.7, SE 0.05) and 43.7% (95% CI=32.9- 53.9, SE 0.05) respectively. Non-remission prior to transplant (HR 0.3) was associated with higher mortality, while taking more than 4 weeks to achieve complete remission (HR 0.3) and Ph positivity (HR 0.4) were associated with relapse. The long-term complications included endocrinopathies in 7 patients-4 had adrenal insufficiencies, 1 had Cushing's syndrome, and 2 had hypothyroidism. Musculoskeletal complications occurred in 4 patients-3 had osteopenia/osteoporosis and 1 had avascular necrosis of the hip. 2 patients had cardiomyopathy attributed to chemotherapy. 3 patients had secondary malignancies, including 2 who had post-transplant lymphoproliferative disease, and 1 who had acute myeloid leukemia 3 years post-transplant.

Discussion & Conclusion: A majority of deaths and relapses occurred within the first 2 years post-transplant, but the long-term non-relapse mortality remains high. This highlights the need for close follow-up in the early years post-transplant and continued importance of screening for complications with a focus on endocrinopathies and musculoskeletal complications.

Disclosure of Interest: None Declared

Keywords: Acute Lymphoblastic Leukemia (ALL), allogeneic transplant, long-term outcomes

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-610)****PEDIATRIC HEMATOPOIETIC STEM CELL TRANSPLANT IN COVID-19 PANDEMIC: OUR PROBLEMS AND OUR STRATEGIES**

Tahereh Rostami¹, Azadeh Kiumarsi¹, Amir Hesabi¹

¹Pediatric HSCT, HORCSCT, Tehran, Iran

Aims & Objectives: The current COVID-19 pandemic has challenged hematopoietic stem cell transplant (HSCT) clinicians to profoundly re-organize their medical care in order to reduce complications without compromising patients' inquiries. Since this pandemic is a foggy novel disease, scientific approved data is unavailable, and so decisions should be made on the basis of expert opinions.

Patients / Materials & Methods: This is a pediatric HSCT center experience, including preventive and solving strategies specifically undertaken to cope with the problems caused by COVID-19 outbreak.

Results: In this report, we have shared our experience in order to alert healthcare professionals worldwide to get prepared accordingly.

Discussion & Conclusion: We are not aware of the duration or outcome of the pandemic, but we are intended to learn from our experiences and figure out the best strategies to minimize the possible harms.

Supporting Document: [a88c5eca-e348-4c9c-8ceb-5e13713f80f1](https://doi.org/10.1188/2020-1188)

Figure 1. HSCT candidate selection according to their COVID-19 status

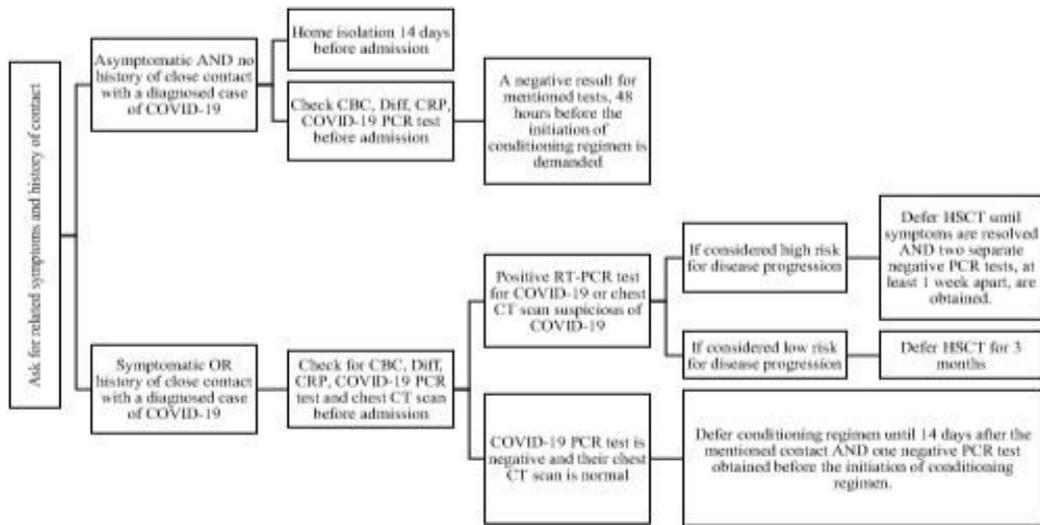
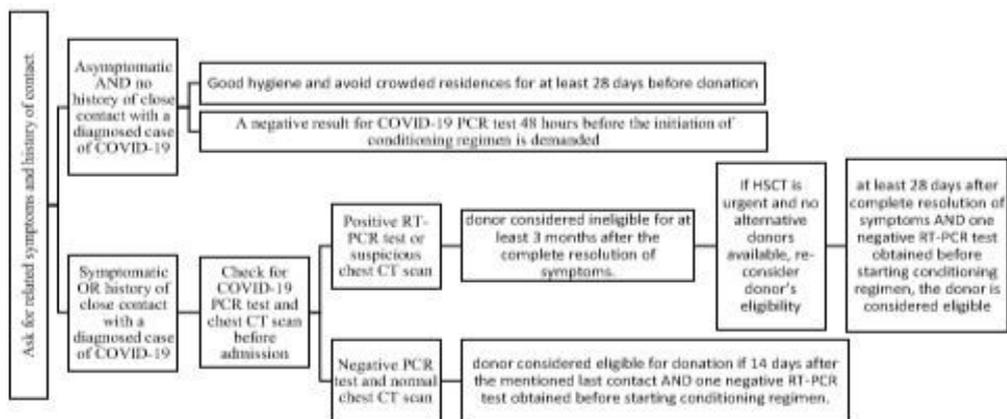


Figure 2. HSCT donor selection according to their COVID-19 status



Disclosure of Interest: None Declared

Keywords: COVID-19 Pandemic, hematopoietic stem cell transplantation, pediatric, SARS-Cov-2

POSTER Submission**LYMPHOMA/MYELOMA (POSTER-613)****TANDEM VERSUS SINGLE AUTOLOGOUS HEMATOPOIETIC CELL TRANSPLANTATION FOR MULTIPLE MYELOMA IN NOVEL ERA**

Po-Huang Chen^{*1}, Cho-Hao Lee², Yi-Ying Wu²

¹Department of General Medicine, ²Division of Hematology and Oncology Medicine, Department of Internal Medicine, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan, China

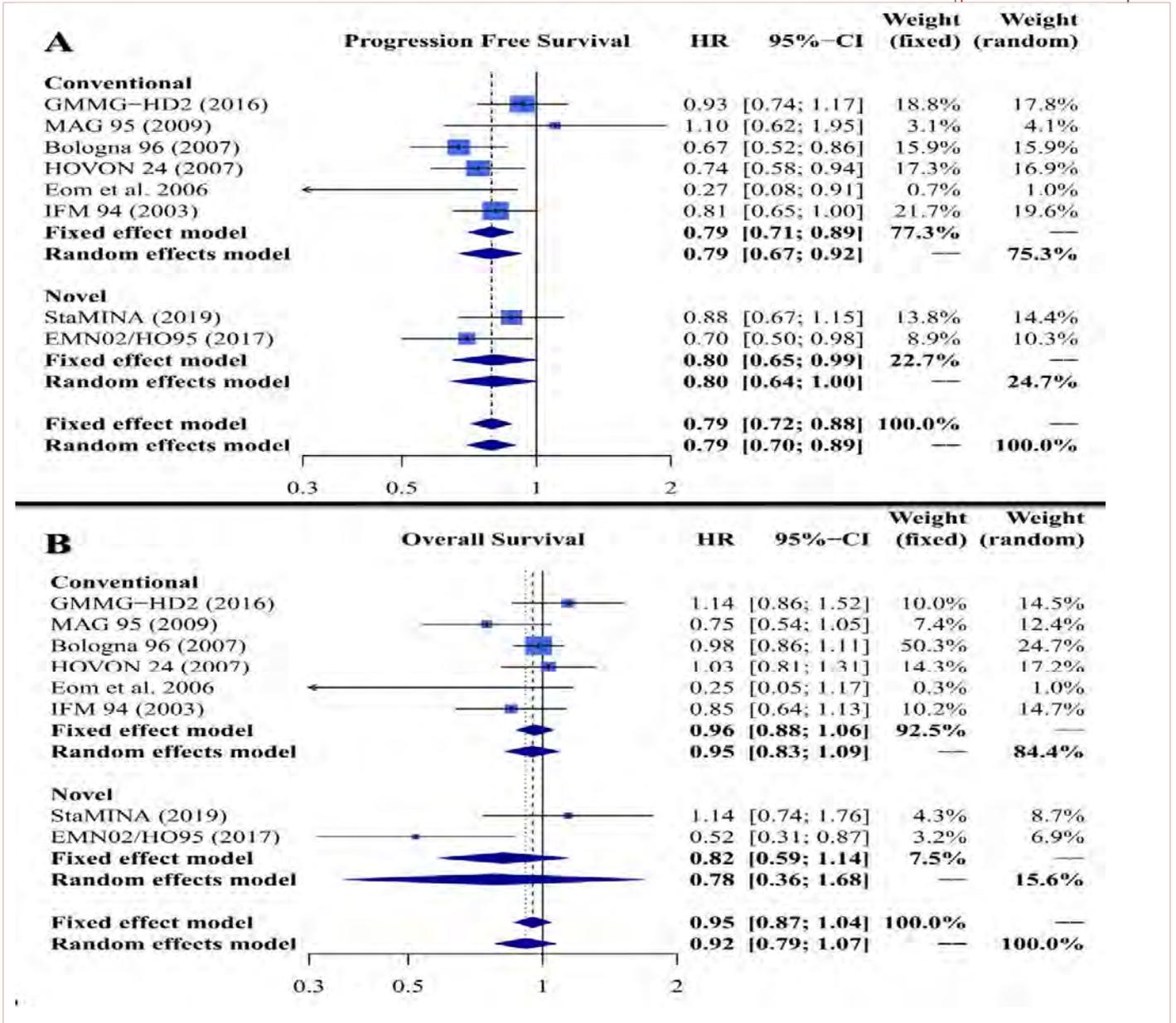
Aims & Objectives: Tandem Autologous hematopoietic cell transplantation (AHCT), which had been developed in a generation where conventional chemotherapy was the only available choice, has demonstrated to improve survival outcome for fit patients with newly diagnosed multiple myeloma (MM). Recently, novel drugs, such as lenalidomide, have demonstrated deeper response post-transplant, prevent progression, and prolong survival for post-AHCT maintenance therapy. Taking the novel maintenance therapy into consideration, the role of tandem AHCT is conflicting.

Patients / Materials & Methods: We systematically searched controlled trials published through August, 2020 in two bibliographic databases (MEDLINE and Embase), and conference proceedings. Studies that compared tandem versus single AHCT in patients with newly diagnosed MM were included. The main outcomes were progression-free survival (PFS) and overall survival (OS). We preplanned subgroup analysis to separate enroll patients into tandem AHCT followed by novel or conventional maintenance group. Heterogeneity was evaluated through the I square (I^2) statistic.

Results: 378 articles were identified, from which 8 randomized trials, involving 2,793 patients, were included in the meta-analysis. For the prespecified subgroup analysis, the conventional agents group has statistically better PFS in tandem AHCT (HR = 0.79; 95% CI = 0.67 to 0.92, I^2 = 39%, Fig. A), but there was no improvement in OS (HR = 0.95; 95% CI = 0.83 to 1.09, I^2 = 34%, Fig. B). In the subgroup analysis of novel maintenance therapy, treated with tandem versus single AHCT did not have better PFS (HR = 0.80; 95% CI = 0.64 to 1.004, I^2 = 7%, Fig. A) or OS (HR = 0.78; 95% CI = 0.36 to 1.68, I^2 = 81%, Fig. B).

Discussion & Conclusion: Considering the use of novel agents for maintenance in individuals with MM, tandem AHCT was not superior to single AHCT in terms of PFS and OS. However, further studies in tandem AHCT with novel agents are needed to confirm our results.

Supporting Document: f58905f6-dd7c-4b3c-9a18-fab3ea0c72ff



Disclosure of Interest: None Declared

Keywords: Autologous Hematopoietic Cell Transplantation, Lenalidomide, Multiple Myeloma, Tandem

ORAL Submission**BONE MARROW FAILURE SYNDROMES INCLUDING MDS. (ORAL-615)****HAPLOIDENTICAL BONE MARROW TRANSPLANTATION FOR PATIENTS WITH NONMALIGNANT INHERITED DISORDERS**

Cheng-Tao Zhang¹, Hong-Chen Liu¹, Jin-Song Yan^{* 1}

¹Department of Hematology, Liaoning Medical Center for Hematopoietic Stem Cell Transplantation, Second Hospital of Dalian Medical University, Dalian, China

Aims & Objectives: Nonmalignant inherited disorders (NIDs) are heterogenous and driven by germline genetic alterations. Most of them manifested clinically by presence of dysfunction of blood cells or of inherited bone marrow failure syndromes (IBMFs). Notably, allogeneic hematopoietic stem cell transplantation is a curative option to correct the dysfunction of hematopoiesis by eradicating HSCs with newborn errors. In this study, the outcome of haploidentical bone marrow transplantation (haplo-BMT) with ATG-based conditioning in patients with NIDs was investigated.

Patients / Materials & Methods: Twelver patients were recruited with written informed consents from February, 2015 to January, 2020. They consisted of 2 cases of Fanconi Anemia (FA), 2 congenital amegakaryocytic thrombocytopenia, 1 dyskeratosis congenita, 1 Diamond-Blackfan anemia, 1 Shwachman-Diamond syndrome, 2 Wiskott-Aldrich syndrome (WAS), 1 Klinefelter syndrome, 1 Glanzmann thrombasthenia, 1 familial hemophagocytic lymphohistiocytosis and 1 Krabbe disease. Flu-Bu/Cy-ATG was used as conditioning regimen, containing fludarabine (30 mg/m²) for 3 days, busulfan (3.2 mg/kg) for 2 days, cyclophosphamide (50 mg/kg) for 4 days, and 2.5 mg/kg rabbit ATG for 4 consecutive days. G-CSF-primed HSCs plus marrow grafts were infused into recipients.

Results: Their median age was 6.2 (0.5-15) years, with an IBMFs disease duration of 13.5 (3.5-72) months. They all (100%) had achieved successful engraftments. The median time to neutrophil recovery was 11.2 (range, 9-14) days, and to platelet recovery 13.2 (range, 11-18) days. Seven patients experienced EBV reactivation and three with CMV reactivation. Unfortunately, one FA died of intracranial hemorrhage and one WAS died of TMA. Two patients experienced skin grades III aGvHD, two patients developed mild cGVHD in GI and liver, respectively. They all recovered with addition of methylprednisolone and ruxolitinib. With Kaplan-Miere analysis, two-year estimated overall survival (OS) was 83.3 ± 1.1%.

Discussion & Conclusion: Two-year OS (83.3%) indicated haplo-BMT with ATG-based conditioning to be efficacious and an alternative for patients with NIDs when lacking HLA-matched siblings or unrelated donors.

Disclosure of Interest: None Declared

Keywords: haploidentical bone marrow transplantation, inherited bone marrow failure syndromes, Nonmalignant inherited disorders

POSTER Submission**HEMOGLOBINOPATHIES, PRIMARY IMMUNE DEFICIENCY DISEASES AND METABOLIC DISORDERS. (POSTER-617)****SUCCESSFUL ALLOGENEIC STEM CELL TRANSPLANT FOR CARMIL2 DEFICIENCY**Neha Rastogi¹, Rohit Kapoor¹, Goutomi Chatterjee¹, Dhwanee Thakkar¹, Satya P. Yadav¹¹Medanta Hospital, India, Gurgaon, India

Aims & Objectives: CARMIL2 deficiency is a rare autosomal recessive PID characterized by impaired T cell activation, differentiation, and migration. Patients present with dermatitis, esophagitis, inflammatory bowel disease, recurrent skin and chest infections with combined immunodeficiency. Hematopoietic stem cell transplantation (HSCT) is a curative option. Previously only one case of HSCT for CARMIL2 deficiency has been reported. We here report a successful allogeneic HSCT for the same.

Patients / Materials & Methods: 1½ year old boy, product of consanguineous marriage, from Yemen, presented with recurrent chest infections, diarrhoea, eczematous dermatitis and had a history of CMV pneumonia @ 11 months age and was treated with Gancyclovir but still had persistent CMV. Work-up showed Hb-9.7gm%, TLC-18920/mm³, N- 39.3% L-54.2%, Platelet-5.85lakh/mm³, CD4-2533, CD8-2298, CD19-3859, NKcells-242 cells/mm³. Whole Exome sequencing showed pathogenic homozygous variant c.490dupG (p.Ala164Glyfs+ 4) in CARMIL2 gene.

Results: Child had persistent CMV infection. He received Gancyclovir as well as IVIG. His CMV titre pre-transplant was 180 copies/ml. He underwent HSCT from his father (10/10 HLA matched). Conditioning included Rituximab (100mg/m²), Fludarabine (40mg/m²/dayX4days), Busulphan (3.6mg/kg/dayX4days), Rabbit ATG (5.5 mg/kg/total dose). Stem cell dose @20.14 million/kg CD34+cells. Gancyclovir was continued till Day-2 and then shifted to Valacyclovir. Cyclosporine and Methotrexate were used for GVHD prophylaxis. Post-transplant Voriconazole for fungal prophylaxis. Post-transplant period was uneventful. Platelet engrafted on Day+12 and neutrophil engrafted on Day+18. Gancyclovir was restarted from Day+17. IVIG infusions were given on Day+11 and +18. CMV titre on Day+22 was 180 copies/ml but became negative on Day+47 and remained negative thereafter. Child had mixed but gradually improving chimerism on Day+21-63.5%, Day+78-80.82% and Day+90-86.32% donor cells. Now, child is Day+270 and is doing fine with no evidence of GVHD/infection/eczema.

Discussion & Conclusion: CARMIL2 deficiency can be treated with allogeneic HSCT. Although Busulfan and fludarabine based conditioning is well tolerated but patients should be monitored for mixed chimerism.

Disclosure of Interest: None Declared

Keywords: Allogeneic hematopoietic stem cell transplantation, CARMIL2 Deficiency, CMV

POSTER Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (POSTER-620)****ALTERATION IN CALORIC INTAKE DURING HOSPITALIZATION FOR HAEMATOPOIETIC STEM CELL TRANSPLANTATION**

Kanwarpal Singh¹, Suvir Singh^{1,1}, Manpreet Kaur², Harpreet Khara², Rohini Gill³, Gagandeep Kaur², Davinder Paul⁴, Jagdeep Singh⁴, Kunal Jain⁴, Navjot Kaur²

¹Clinical Hematology and Stem Cell Transplantation, ²Nursing, Dayanand Medical College, ³Nursing, Dayanand Medical College, Ludhiana, ⁴Medical Oncology, Dayanand Medical College, Ludhiana, India

Aims & Objectives: To describe changes in caloric intake in patients undergoing stem cell transplantation.

Patients / Materials & Methods: Patients undergoing autologous and allogeneic stem cell transplantation over an 11 month period were included. Baseline calorie and protein intake was calculated according to National Institute of Nutrition (India) guidelines. Prophylactic local cryotherapy was used for all patients before melphalan and symptomatic local analgesia was provided to all patients developing mucositis. On reduction of caloric intake to <50% of baseline, diet was changed to semi solid or liquid enteral diet and parenteral nutrition (TPN) was reserved as the last resort if no oral intake was possible for more than 48 hours.

Results: After initial screening for completeness of caloric intake data, a total of 12 patients were included in the analysis, with 7 males and 5 females. The median age of the cohort was 43 years (Range, 6 – 67) with a median BMI of 21.9 kg/m² (Range, 11.9 to 31.8 kg/m²) at baseline. The median calorie intake at baseline was 28 kcal/kg/day (Range, 18-50 Kcal/day) and protein intake was 0.47 g/kg/day (range 0.19 to 0.87 g/kg/day). During the course of treatment, maximum grade of mucositis was grade III in 7 (58%) patients and grade II in five (41%). The median caloric deficit from baseline at the time of lowest intake was 75% (range, 11 to 96%), with the nadir occurring by median day 6.5 (range, -1 to 12). At the time of discharge, the median oral intake deficit was 25.1% from baseline (Range, 58% to +75%). Most patients showed a weight loss during admission, with a median of 3.8% (Range, 12% to +0.4%). No patient required TPN during admission.

Discussion & Conclusion: Compared to dietary guidelines, patients undergoing stem cell transplantation demonstrated a significantly low oral intake at admission which further reduced significantly during hospitalization. Pre transplant optimization of calorie intake and in-hospital symptomatic control along with daily monitoring of calorie intake is essential so that a reduction can be picked up early and corrective actions taken.

Disclosure of Interest: None Declared

Keywords: Food, Nursing, Nutrition, Transplant

ORAL Submission**BASIC SCIENCE (ORAL-621)****HLA GENOTYPING IN NANOPORE SPACE**

Steffen Klasberg¹, Vineeth Surendranath¹, Gerhard Schoeffl¹, Alexander H. Schmidt², Vinzenz Lange¹

¹DKMS Life Science Lab, Dresden, ²DKMS, Tübingen, Germany

Aims & Objectives: Attempts to leverage ONT's nanopore sequence data for HLA genotyping are rapidly gaining traction in the HLA community as the technology promises an easy and cost-effective library preparation as well as reads that may cover the full extent of HLA Class I and Class II genes. ONT's range of devices from the small MinION to the PromethION, capable of genotyping HLA with high-throughput, can serve sequencing facilities as well as smallest immunogenetic labs. However, the high per-read error rates of nanopore reads diminish the accuracy of HLA typing when compared to that of short-read technologies. Here, we show our efforts to highly accurate, fast and scalable HLA typing using solely nanopore reads.

Patients / Materials & Methods: We analyzed a total of 741 samples in five cohorts of 68 to 243 samples each. Full-length amplicons of each of the six major HLA loci were sequenced per sample. We used ONT's most recent sequencing chemistries and pores for each run, i.e. developing from R9.4 over R10 to R10.3. The resulting nanopore reads were analysed with two different in-house genotyping approaches, one classical alignment-based and one alignment-free, k-mer based approach. Part of the data were also analysed using two existing HLA genotyping software solutions for benchmark purposes. To create a ground-truth we generated high resolution HLA genotypes based on Illumina MiSeq data with full gene coverage.

Results: Best results were obtained using the R10.3 pore and our alignment-free in-house software kTypeR. With this algorithm virtually error-free genotyping seems in reach, provided that amplification is well balanced.

Discussion & Conclusion: Our results show that highly-accurate genotyping based solely on nanopore sequences is feasible. The alignment-free approach seems to be superior to classical mapping approaches for reads prone to higher per-read error rates. Overall, nanopore sequencing shows great potential to accurate genotyping in high-quality in the near future.

Disclosure of Interest: None Declared

Keywords: Full-length typing, HLA typing, Nanopore sequencing

ORAL Submission**INFECTIONS (ORAL-631)****ADENOVIRUS INFECTION IN HAPLOIDENTICAL TRANSPLANT WITH POST-TRANSPLANT CYCLOPHOSPHAMIDE CHILDREN**Neha Rastogi¹, Rohit Kapoor¹, Goutomi Chatterjee¹, Dhwanee Thakkar¹, Satya P. Yadav¹¹Medanta Hospital, India, Gurgaon, India

Aims & Objectives: Adenovirus is endemic in paediatric population but it becomes potentially life-threatening after haploidentical hematopoietic stem cell transplants (HSCT). We describe our experience of managing Adenovirus induced complications in children undergoing haploidentical HSCT with PTCy.

Patients / Materials & Methods: We retrospectively analysed data from April 2016 to July 2020 of children who underwent haploidentical HSCT with PTCy at our institute. Adenovirus was tested in blood by quantitative PCR.

Results: Out of 57 children who underwent PBSC haploidentical HSCT with PTCy, five developed adenoviral infection (9%). Mean age-6.1yrs (1.8-12yrs). M: F=4:1. Fanconi anemia-2, thalassemia-2 and leukemia-1. All were conditioned with Fludarabine 40 mg/m²X4days and TBI 2Gy. Three children received cyclophosphamide 14.5mg/kgX2days and one Thiotepa 10mg/kg. Three received Rabbit anti-thymoglobulin 4.5 mg/kg. GVHD prophylaxis was PTCy 50mg/kg on day+3 and +4 (In Fanconi anemia @ 25mg/kgX2days) and mycophenolate mofetil and tacrolimus. All were on valacyclovir prophylaxis. Everyone diagnosed after developing symptoms. Diarrhoea(n-4) followed by bronchopneumonia(n-3) were most common symptoms along with hepatitis, haemorrhagic cystitis, renal dysfunction, cardiac dysfunction and encephalitis. First symptom appeared at median day+44 (day+10 to day+145). Four patients had other concurrent complications like GVHD(n-3), TATMA (n-3) and other infections(n-2). Four patients engrafted and day+30 chimerism was fully donor in three and mixed in one. Child with adenoviral infection at day+10 failed to engraft. All except one were treated with cidofovir. Cidofovir was started within 8.5 days (1-16 days) from first symptom. Ribavirin also used in three patients. Median adenovirus copies in blood were 4.1million/ml (Range-1.08X10¹⁰ and 1.37X10⁴ copies/ml). Two children recovered, are alive and disease-free. Both had received cidofovir. Three children died due to adenovirus associated complications (1-primary graft failure, 1-steroid refractory GVHD and 1-TATMA)

Discussion & Conclusion: Adenovirus is serious cause of morbidity and mortality among children undergoing haploidentical HSCT with PTCy. Adenovirus PCR monitoring should be considered for early diagnosis and treatment.

Disclosure of Interest: None Declared

Keywords: Adenovirus, haploidentical transplants, Post-transplant cyclophosphamide

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-633)****CMV REACTIVATION AFTER HAPLOIDENTICAL STEM CELL TRANSPLANT POSTTRANSPLANT CYCLOPHOSPHAMIDE CHILDREN**

Rohit Kapoor¹, Neha Rastogi², Dhwanee Thakkar³, Goutomi Chatterjee⁴, Satya P. Yadav⁵

¹Pediatric Hematology Oncology & Bone Marrow Transplant Unit, Medanta The Medicity, Gurugram, Haryana, India, ²Pediatric Hematology Oncology & Bone Marrow Transplant Unit, Medanta The Medicity, Gurugram, Haryana, ³Medanta- The Medicity ,Gurugram , Haryana, India, ⁴Pediatric Hematology Oncology & Bone Marrow Transplant Unit, Medanta- The Medicity , Gurugram, Haryana ,India, ⁵Pediatric Hematology Oncology & Bone Marrow Transplant Unit,, Medanta The Medicity, Gurugram, Haryana, India , Gurugram, India

Aims & Objectives: Cytomegalovirus (CMV) reactivation post allogenic stem cell transplant (SCT) is more common after alternate donor transplant. However, data in children undergoing haploidentical SCT is lacking. We describe our outcome of children with CMV reactivation after haploidentical SCT with Post Transplant Cyclophosphamide (PTCy).

Patients / Materials & Methods: We retrospectively analyzed data from Apr 2016 to November 2020 of 56 consecutive children who underwent haploidentical SCT at our center.

Results: A total of 17 patients developed CMV reactivation 17/56 (30.35%). The median age was 7 years (0.6 to 18 years). The male: female ratio was 4.6:1. Diagnosis were, bone marrow failure-5, hemoglobinopathy-5, leukemia-5 and others-2. Graft source was peripheral blood stem cells (PBSC) in all. All patients engrafted. The conditioning regimen was non-myeloablative -5 and myeloablative-12. Rabbit anti-thyroglobulin 4.5 mg/kg was given as apart of conditioning to 14 children. The graft vs. host disease (GVHD) prophylaxis was PTCy 50 mg/kg on day+3 and +4 along with mycophenolate mofetil (MMF) and tacrolimus in 7 and cyclosporine in 10. The median CD34 positive stem cell dose infused was 9.6 million/kg (2 to 21million/kg). All patients engrafted. The median day of neutrophil engraftment was 19 days (14 to 40 days). The median day of platelet engraftment was 16 days (9 to 38 days). The mean day of CMV activation was 97.411 days (Median -50 days, Range-4 to 751 days, SD+177.65 days). Mean CMV titers were 5799668.23 copies /ml (Median-1980, Range- 170 to 98164350 copies/ml). Chimerism was fully donor in 16 and mixed chimerism was seen in 1. Only 1 child developed CMV disease in the form pneumonia. All patients were treated with IV ganciclovir followed by oral valganciclovir. All except one responded. A total of 5 patients died 5/17 (29.41%) but only 1 died due to active CMV infection which caused pneumonia others died due to GVHD and H1N1-2, BK virus encephalitis-1 and Adenovirus-1 Incidence of acute GVHD was 5/17 (29.41%). Grade III in 1. Incidence of chronic GVHD - 3 /17 (17.6%) and 2 had severe chronic GVHD. Total number of patients that are alive until the last follow-up 12/17 (70.58%). The median survival was 0.955 ±0.642 years.

Discussion & Conclusion: CMV reactivation is common in children after haploidentical SCT with PTCy and usually responds to treatment. If CMV disease develops then it can prove fatal.

Acknowledgments-A special gratitude to Mr. Indra Bhushan Pandey for helping us in data collection.

Disclosure of Interest: None Declared

Keywords: Cytomegalovirus Reactivation , Haploidentical Stem Cell Transplant, Post Transplant Cyclophosphamide

ORAL Submission**LYMPHOMA/MYELOMA (ORAL-638)****OUTCOMES OF FIRST 100 (HEMATOPOIETIC) TRANSPLANTS IN NEWLY SET UP TRANSPLANT UNIT IN RURAL INDIA**

Soumya Das^{*1,2}, Chandran K. Nair¹, Vineetha Raghavan¹, Manuprasad A¹, Praveen K. Shenoy¹, Jithin T. K¹, K. G. Gopakumar¹, Roshan Vinod¹, Lokesh Sharma¹

¹Department of Clinical Hematology & Medical Oncology, Malabar Cancer Center, Thalassery, ²Department of Transfusion Medicine, All India Institute of Medical Sciences (AIIMS), Nagpur, Nagpur, India

Aims & Objectives: To find out the outcomes of first 100 transplants from a tertiary centre under State Government, located in rural part of Kerala, India.

Patients / Materials & Methods: A retrospective audit of patients who had undergone HSCT at our center was carried out. In addition to regular outcome measures, proportion of patients who could complete the process utilizing Government schemes was also noted.

Results: Out of 100 patients (M: F: 69:31), 79 underwent autologous transplant for multiple myeloma (n=53), Hodgkin's (n=12), non-Hodgkin's lymphoma (n=13) and one case of plasma cell leukemia. Twenty one underwent allogeneic transplant for aplastic anemia (6), acute myeloid leukemia (10), acute lymphoblastic leukemia (3) and chronic myeloid leukemia (2). Median age was 46 years (range 12-63). Median CD 34 count was 5×10^6 cells/kg (range 2-16). 82 patients (82 %) could complete the transplant process through either full or partial support by government schemes. Transplant related mortality (TRM) was 8 % for the entire cohort. Median follow up was 36 months. For the autologous group, estimated 5 year overall survival (OS) was 67 % (95 CI 64-82) and progression free survival (PFS) was 57% (95 CI 41-80). For the allogeneic cohort, 5 year OS was 51% (95 CI 33-78) and PFS/RFS was 69 % (95 CI 47-100). Figure 1.

Discussion & Conclusion: 82 % of the transplants could be completed through either full or partial support through government funding. Our study emphasizes that, even in rural or remote areas of countries like India, with the help of strong government support, successful transplants can be accomplished for helping poor patients. As nearly two-thirds of the population of India resides in rural areas, priority should be given for establishing government aided transplant centers in these areas for optimum benefit.

Supporting Document: [d3f5dc2c-2cc2-429e-9410-acc9dd0e597b](https://doi.org/10.1182/10115.2020.118210115)

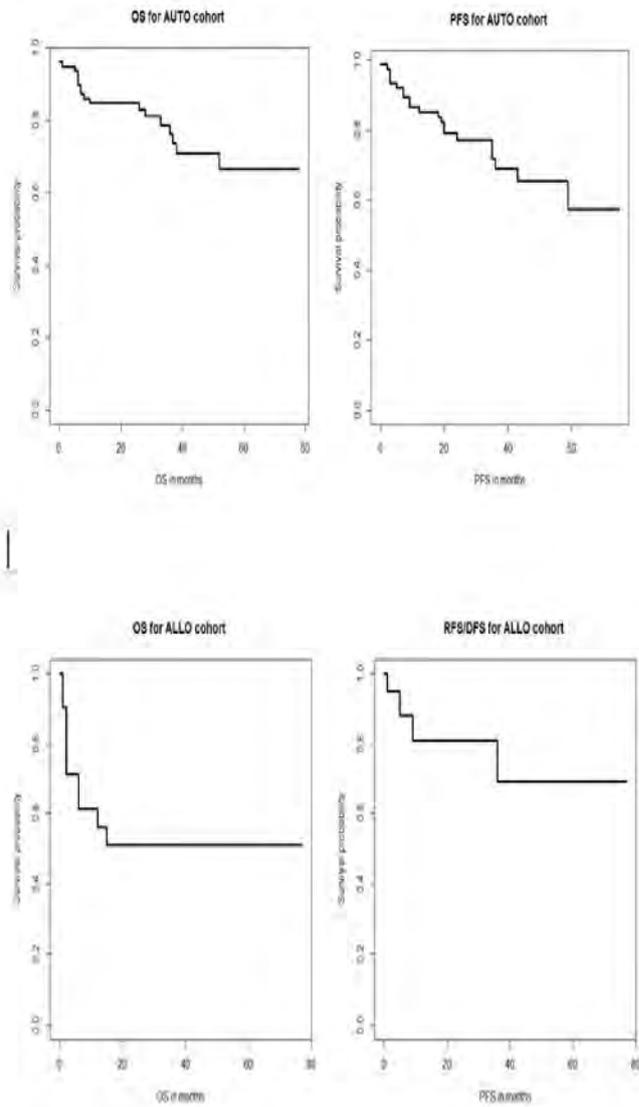


Figure 1: Survival Curves for Autologous and Allogeneic Transplants

Disclosure of Interest: None Declared

Keywords: government supported, hematopoietic stem cell transplantation, poor patients, rural india

ORAL Submission**GVHD (ORAL-639)****INTERIM ANALYSIS OF ITOLIZUMAB FOR TREATMENT OF STEROID REFRACTORY CHRONIC GRAFT VS HOST DISEASE.**

Aditi Shah^{*1}, Nataraj K S¹, Shilpa Prabhu¹, Bharath Ram¹, Shiva Kumar Komaravelli¹, Sharat Damodar¹
¹Hematology, Narayana Hrudayalaya, Bangalore, India

Aims & Objectives: To assess the efficacy and safety of Itolizumab (anti-CD6 monoclonal antibody) in steroid refractory chronic GVHD involving mucocutaneous and musculoskeletal system.

Patients / Materials & Methods: This is an interim analysis of a study which is designed for 2 years with a sample size of 10. After taking ethics committee's approval 4 patients have been recruited from May 2020. Inclusion criteria includes; patients more than 18 years of age with steroid refractory chronic mucocutaneous and/ or musculoskeletal GVHD of NIH score 2 and above. Itolizumab is given at a dose of 1.6 mg/kg every 2 weekly upto 1 year or till complete resolution of GVHD, whichever is sooner. This dose has been selected based on its use in psoriasis. Side effect in terms of infusion reaction, transaminitis, cytopenia and development of infection are monitored. Response assessment is done before every dose by both patient and clinician as per 2014 NIH Consensus Updated Response Criteria.

Results: Case 1 has chronic oral mucosal GVHD of NIH score 2. He has received 9 doses of Itolizumab till September 2020. Response was noted after 3rd dose. According to self-assessment, symptoms improved from 4/10 at baseline to 1/10 after 9 doses and overall, patient felt moderately better. According to clinician's assessment, oral mucosal changes score improved from 5/12 at baseline to 3/12 after 9 doses and overall, patient was moderately better. Steroid was gradually tapered and stopped. No side effect is noted till now.

Case 2 has chronic skin GVHD of NIH score 2 and has received 6 doses of Itolizumab till September 2020. Response was noted after 2nd doses. According to self-assessment, symptoms improved from 5/10 at baseline to 3/10 after 6 doses and overall, patient felt moderately better. According to clinician's assessment, NIH score for skin GVHD improved from 2 at baseline to 1 after 6 doses and overall, patient was moderately better. Patient developed mild muscle fasciculations which were attributed as probable adverse event and the frequency of dosing was reduced to once in 4 weeks. Fasciculations have improved with no worsening of GVHD symptoms. There was no other side effect. In both cases CMV PCR remained negative and donor chimerism was normal. Case 3 and Case 4 have received 2 and 1 dose respectively till September 2020. Response assessment of these patients requires longer duration.

Discussion & Conclusion: Definite subjective and objective response is seen after 3rd and 2nd dose in case 1 and case 2 respectively. No major side effect has been noted and chimerism remains stable. Hence, we recommend that Itolizumab should be considered in treatment of steroid refractory chronic GVHD.

Supporting Document: 67c54ee5-e898-411f-b2d3-5addad1c18fc



Disclosure of Interest: None Declared

Keywords: chronic graft vs host disease, Itolizumab, response assessment

ORAL Submission**LYMPHOMA/MYELOMA (ORAL-640)****INFLUENCE OF PRETRANSPLANT ANEMIA ON PBSC COLLECTION AND PERI-TRANSPLANT RBC TRANSFUSIONS IN MYELOMA**

Merline Augustine¹, Mohandoss Murugesan¹, Chandran K. Nair², Sangeetha K. Nayanar³

¹Transfusion Medicine, ²Clinical Hematology and Medical Oncology, ³Oncopathology, Malabar Cancer Centre, Thalassery, India

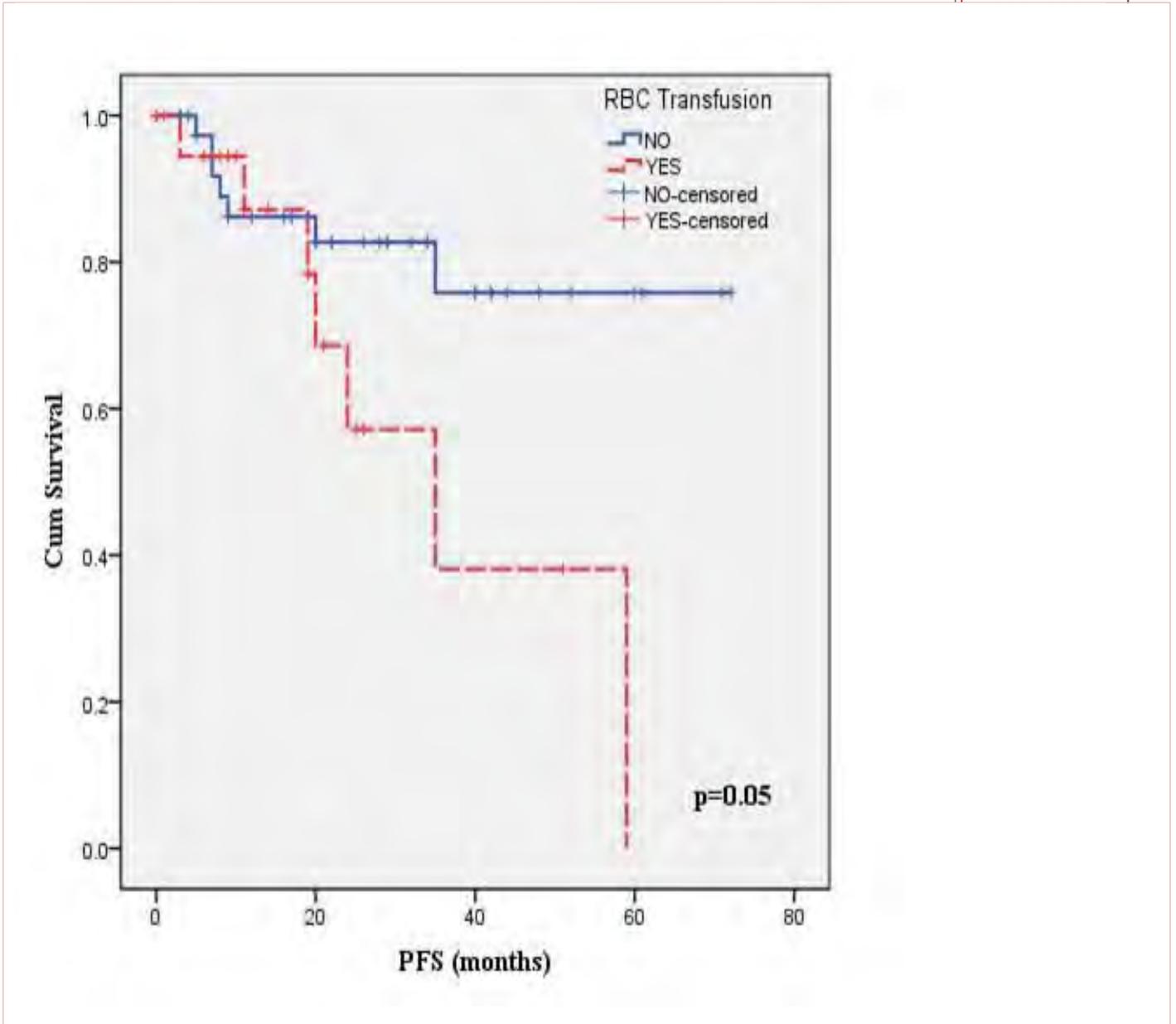
Aims & Objectives: To determine if pre-transplant anaemia can influence peripheral blood stem cells (PBSC) collection and peri-transplant transfusion requirements in Multiple Myeloma.

Patients / Materials & Methods: Multiple myeloma patients (n=67) who underwent collection of stem cells and transplantation were included. Patient's were stratified based on hemoglobin levels at time of mobilization, PBSC collection and PBSC infusion. Operational definitions were: pre-transplant anemia: Hb<12g/dL; good mobilization when peripheral blood CD34 ≥ 20 cells/ μ l and adequate yield when $\geq 2 \times 10^6$ CD34 cells/kg in PBSC collection. Chi-square test was used to study association of pre-transplant anemia on peripheral blood CD34 mobilization and PBSC collection. Mann Whitney U test was used to study association of pre-transplant anemia and RBC transfusion requirements in peri-transplant period. Log-rank test was used to compare progression free survival (PFS) among the transfused and non-transfused patients.

Results: Out of 67 patients, the prevalence of anemia before mobilization, PBSC collection and PBSC infusion were 37%, 58%, 70% respectively. 86% had good mobilization with median 48 cells/ μ l and anemia prior to mobilization did not affect the mobilization (p=0.83). Adequate CD34 yield from the first apheresis collection was observed in 78%, and their Hb levels at time of collection did not influence CD34 yield (p=0.83). 31% patients received peri-transplant RBC transfusion with median of one unit (range 1-5). Presence or absence of anemia on the day of infusion did affect the RBC transfusions in the peri-transplant period (p=0.03). The differences in mean Hb between mobilization and collection was 0.45 (p<0.01) and between PBSC collection and infusion was 0.57 (p<0.01). The median PFS was lower in the transfused group (35 months vs median not attained; p=0.50).

Discussion & Conclusion: Pre-transplant anemia neither affected PBSC mobilization nor PBSC collection. Furthermore anemia exacerbates at time of infusion which leads to increased RBC transfusion, and thereby affecting transplant outcome as reflected in decreased PFS

Supporting Document: e549f3e1-ac27-4391-addd-bf56bfa31ac5



Disclosure of Interest: None Declared

Keywords: ANEMIA, myeloma, Transfusion Medicine, Transplant

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-641)****THE OUTCOME OF CHILDREN WITH MPS FOLLOWING ALLOGENEIC PERIPHERAL BLOOD HSCT USING NON-SIBLING DONORS**

Rashin Mohseni¹, Maryam Behfar¹, Dima Barhoom¹, Fahimeh Jafari¹, Leila Hejazipour¹, Zeynab Nikfetrat¹, Sahar Taebi¹, Amir Ali Hamidieh¹

¹Pediatric Cell Therapy Research Center (PCTRC), Tehran University of Medical Sciences, Tehran, Iran

Aims & Objectives: Allogeneic hematopoietic stem cell transplantation (allo-HSCT) has become a treatment option for a group of patients with mucopolysaccharidoses (MPS), including those with MPS types I, II, VI, and VII. Here we evaluated the HSCT results in patients with MPS who were referred to the Children's Medical Center (Center for Excellence) in Iran.

Patients / Materials & Methods: A total of 14 patients with MPS underwent HSCT between February 2017 and January 2020 in our center. Among the cases, 2 cases were type I, 2 type II, and 10 were type VI. The median age at transplantation was 4.7 years (range, 1-13 years). The peripheral blood was used as the stem cell source in all patients that were provided by HLA-matched related donor (n=6), HLA-mismatched related donor (n=4), full matched unrelated donor (n=1), HLA-mismatched unrelated donor (n=2), and HLA-identical sibling (n=1). A Busulfan-based myeloablative conditioning regimen was used. All patients except the patient who had the HLA-identical sibling donor received ATG. The graft-versus-host disease (GvHD) prophylaxis regimen were consisted of cyclosporine A and a short course of MTX.

Results: Engraftment occurred in all patients. The median time to neutrophil and platelet engraftments were 11 and 14 days, respectively. The incidence of grade II-IV acute GvHD was 28.5% (4 of 14). The chronic GvHD happened in 2 (14.3%) patients (1 limited and 1 extensive). Two patients expired due to the infections. With the median follow-up time 18 months (range, 8-44), 12 out of 14 patients are alive and free for enzyme therapy.

Discussion & Conclusion: Progress in the transplantation protocols has demonstrated to improve MPS patient's prognosis. As in the metabolic disorders, the related donors may be heterozygous for the responsible enzyme and do not result in a high yield of enzymes, so the unrelated donors can take precedence as the HSCT donors.

Disclosure of Interest: None Declared

Keywords: Hematopoietic stem cell transplantation, Hunter syndrome, Maroteaux-Lamy syndrome, Mucopolysaccharidosis

ORAL Submission**GVHD (ORAL-642)****MYOCARDITIS—A RARE AND FATAL MANIFESTATION OF CHRONIC GRAFT-VERSUS-HOST DISEASE-RELATED POLYMYOSITIS**

Mengni Yan¹, Fengqin Su¹, Yi Luo¹, Jimin Shi¹, Weiyan Zheng¹, Hui Lu², Jianwen Wang², He Huang¹, Yamin Tan¹

¹Bone Marrow Transplantation Center, The First Affiliated Hospital, Zhejiang University School of Medicine, ²The First Affiliated Hospital, Zhejiang University School of Medicine, HangZhou, China

Aims & Objectives: To report a case of chronic graft-versus-host disease-related polymyositis presents as myocarditis in a long-surviving patient.

Patients / Materials & Methods: A 38-year-old male patient was diagnosed with acute T-lymphoblastic leukemia (ALL) underwent hematopoietic stem cell transplant (HSCT) from his HLA-identical sister on May 12, 2008 after complete remission. During the 12 years after the transplantation, he was transfused mesenchymal stem cell 8 times and chronically treated with methylprednisolone and tacrolimus due to the presence of extensive chronic graft-versus-host disease(cGVHD). Since April 2020, he had recurrent fever, with myalgia and scleroma of both upper limbs. After admission on August 11, 2020, the patient developed persistent precordial pain. Considering the possibility of myocardial injury, we did myositis antibody profile, muscle biopsy of the left forearm, electromyography examination and monitored the myocardial enzyme spectrum, troponin-I, electrocardiogram dynamically.

Results: The above indicators increased significantly, with the highest creatine kinase isoenzyme(CK-MB) 283U/L (normal range 2-25) and troponin-I 24.663ng /ml (normal range 0.00-0.016) . Myositis antibody HA /Tyr IgG was positive. The electrocardiogram showed a dynamic change of poor r-wave increase in the anterior leads and incomplete right bundle branch block. Histopathological examination showed scattered chronic lymphocytic infiltration in muscle, fascia, skin tissue and dermis. Immunohistochemical indicated CD3 (+),CD34 (vascular +),CD20 (scattered+). cGVHD with myocarditis was considered firstly. The patient was treated with ruxolitinib 5mg twice daily combined with methylprednisolone 2mg·kg⁻¹·d⁻¹ and tacrolimus 0.5mg twice daily. The patient's symptoms of myalgia, scleroma, and precordial pain disappeared and the myocardial enzyme spectrum and troponin decreased progressively.

Discussion & Conclusion: Myocarditis is a rare and fatal manifestaion of cGVHD-related polymyositis. By muscle biopsy, myositis antibody examination, dynamic monitoring of myocardial enzyme spectrum, troponin-I, the dignosis of cGVHD- related polymyositis with myocarditis is specific. Ruxolitinib combined with glucocorticoid and Calcineurin inhibitors has a good therapeutic effect.

Supporting Document: [cdb99f99-4ad0-46d7-ae48-39236ad837da](https://doi.org/10.1188/9781462626262.cdb99f99-4ad0-46d7-ae48-39236ad837da)

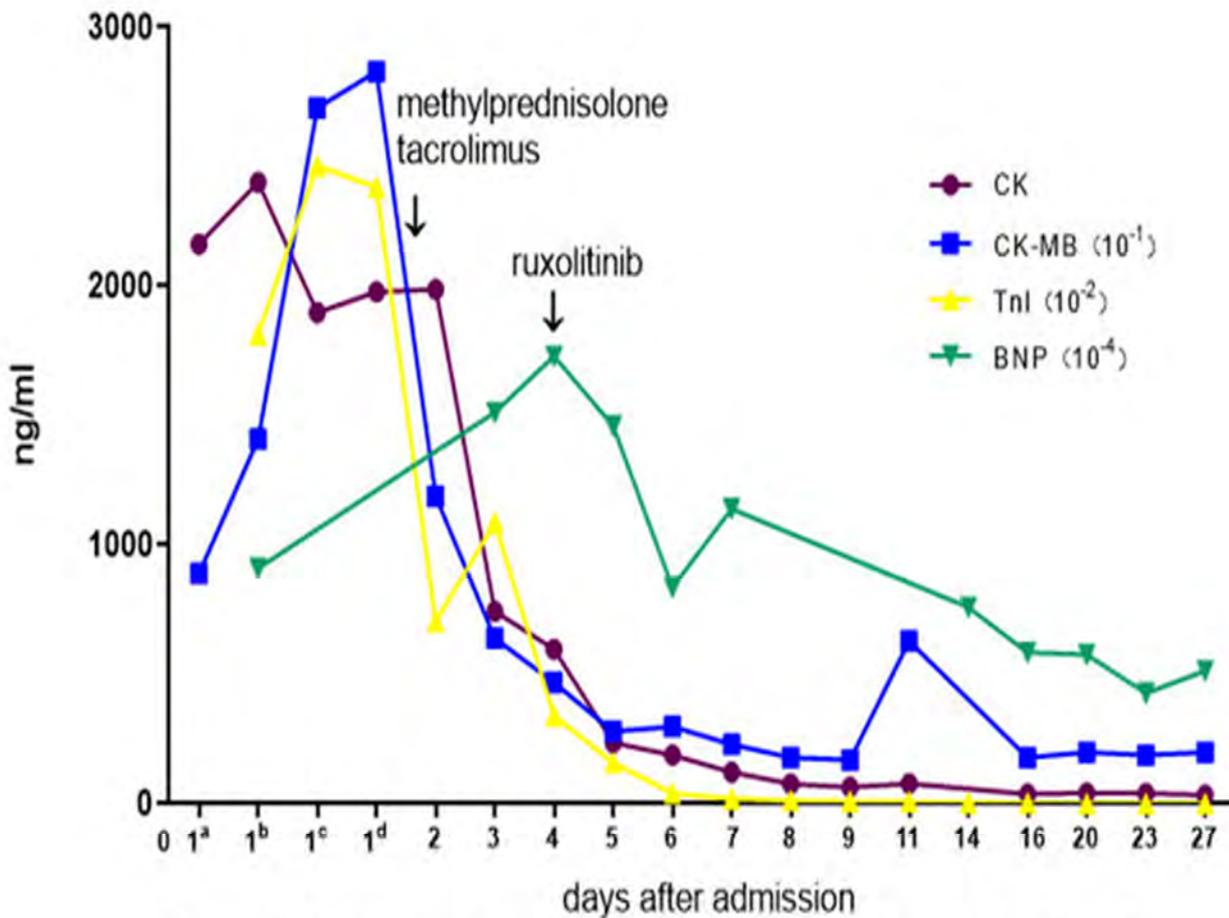


Figure 1: Dynamic changes of cardiac injury markers and natriuretic peptide after admission. The day of admission was day 0. a,b,c,d mean the different time of the first day. CK: creatine kinase, CK-MB: creatine kinase isoenzyme, Tnl: troponin I, BNP: brain natriuretic peptide.

Disclosure of Interest: None Declared

Keywords: Chronic graft-versus-host disease , Myocarditis, Polymyositis

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-644)****REDUCED-INTENSITY HSCT FOR CHRONIC GRANULOMATOUS DISEASE: A SINGLE CENTRE EXPERIENCE**

Maryam Behfar¹, Mahta Mardani¹, Rashin Mohseni¹, Dima Barhoom¹, Hamid Farajifard¹, Sahar Taebi¹, Amir Ali Hamidieh^{1,2}
¹Pediatric Cell Therapy Research Center, ²Tehran University of Medical Sciences, Tehran, Iran

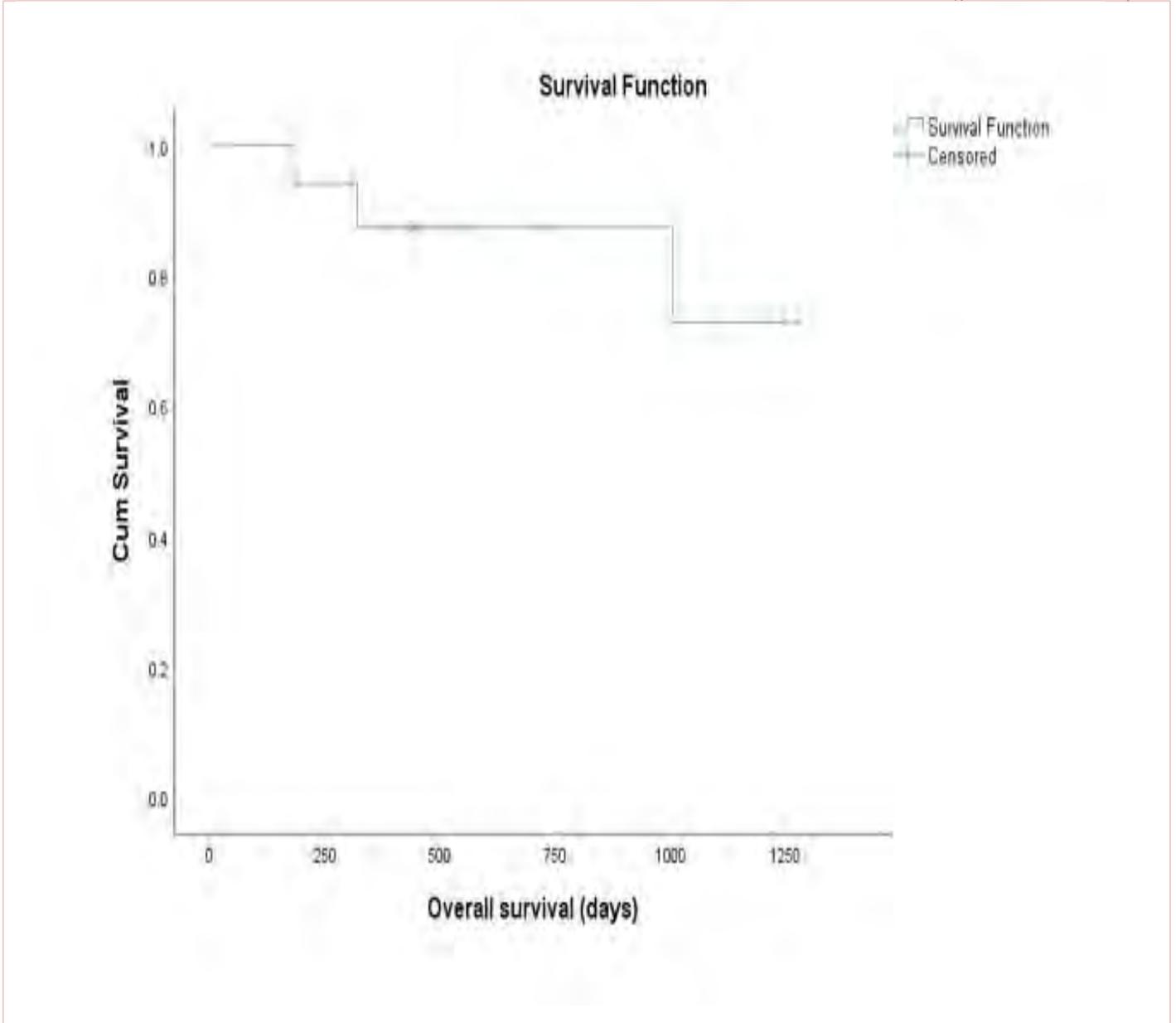
Aims & Objectives: Hematopoietic stem cell transplantation is the only curative treatment for patients with chronic granulomatous disease. While myeloablative conditioning regimens are associated with significant treatment-related toxicity as well as long-term sequels, reduced-intensity conditionings (RIC) have resulted in improved transplant outcomes.

Patients / Materials & Methods: We retrospectively analysed the outcomes of 17 paediatric CGD patients (11 male and 6 female) who underwent HSCT between 2017 and 2020 at the Children's medical centre, the largest paediatric hospital in Iran. The median age was 5.5 (1-16) years. Patients underwent transplantation from matched-sibling donors (n=5), matched other-related donors (n=8), matched-unrelated donor (n=1), and mismatched-unrelated donors (n=2). Graft sources were from peripheral blood (n=16) and cord blood (n=1). All patients received RIC regimen with fludarabine, melphalan, and ATG. Cyclosporine and methylprednisolone were used for GvHD prophylaxis.

Results: The median interval from diagnosis to transplantation was 2.7 (0 - 14.4) years. Before transplantation, eight patients suffered from pre-existing mycobacterial infection (five with pulmonary tuberculosis and three with disseminated BCG-osis). All patients achieved neutrophil and platelet engraftment with a median duration of 12 and 13 days. Mixed chimerism occurred in five patients and all of them underwent donor lymphocyte infusion. Acute GvHD occurred in 13 patients (10 with grades 3, 4) and chronic GvHD was observed in eight patients (6 limited and 2 extensive). Three patients died during the observation period, two patients because of GvHD and one patient due to mucormycosis infection. With a median follow up of 1.4 (0.5 – 3.5) years, 3-year overall survival was 72.8% (Figure1).

Discussion & Conclusion: RIC regimens have become a well-established approach in many centers over the past decade because many patients with PID have pre-existing infections at the time of transplantation and are ineligible for myeloablative conditioning. However, it seems that the use of RIC regimens is associated with high levels of GvHD in CGD patients.

Supporting Document: b811bb8c-93c8-4f91-8d82-91b7441f67d2



Disclosure of Interest: None Declared

Keywords: CGD, Conditioning, HSCT, Pediatrics

POSTER Submission**LYMPHOMA/MYELOMA (POSTER-651)****FOLLOW-UP STUDY ON NON-CRYOPRESERVED AUTOLOGOUS STEM CELL TRANSPLANTATION FOR MULTIPLE MYELOMA**

Mie M. Khine^{*1}, Khin T. Htut², Yin N. Han², Hnin M. Thandar², Yi M. Thant², Aye A. Gyi²

¹Department of Clinical Haematology, North Okkalapa General and Teaching Hospital, ²Department of Clinical Haematology, NOGTH, Yangon, Burma

Aims & Objectives: Although it is a standard practice to cryopreserve stem cells for autologous stem cell transplantation (ASCT), due to resource limitation, since 2014, non-cryopreserve method has been utilized in our center. In this study, outcome of multiple myeloma (MM) patients who underwent ASCT without cryopreservation were reviewed retrospectively for complications and survival.

Patients / Materials & Methods: After bortezomib based induction, peripheral blood stem cells (PBSC) harvested from MM patients were stored at 1-4 degree Celcius in a pharmaceutical refrigerator until reinfusion after 12-24 hours from high dose melphalan injection and followed-up for minimum of one year.

Results: From May 2014 to February 2019, thirteen MM, including 3 relapse, at median age of 57 years (range 47-63), male to female ratio of 1: 1.6 with 85% having International Staging System stage III received ASCT. Four (30%) had impaired renal function. One had high risk cytogenetics. The median dose of melphalan was 160mg/m² (range 110- 200mg/m²) where 46.2% received ≤ 140mg/ m². The median viable CD34 + cell dose was 3.30 x 10⁶ cells/kg (range 1.45-4.87) having viability above 90% in all. Time to neutrophil and platelet engraftment were 11 days (range 9-12) and 16 days (range 9-44) respectively without graft failure or mortality during first 100 days. At a median follow up of 22 months (range 4-64 months), the mean progression free survival was 27.8 months (±17.85). Four (30.8%) relapsed including one patient with poor risk cytogenetics, one with previous solid tumor and one with renal failure. Non-relapse mortality was 2 (15.4 %) attributed by development of secondary myelodysplasia (1 case) and autoimmune cytopenia (1 case). Infectious complications observed included herpes zoster (1 case) and invasive fungal infections (3 cases).

Discussion & Conclusion: ASCT without cryopreservation provides reasonable survival in our series despite high risk and proved as feasible option in resource limited areas.

Disclosure of Interest: None Declared

Keywords: autologous stem cell transplantation, Multiple Myeloma, non-cryopreserved, survival

ORAL Submission

PEDIATRIC TRANSPLANTATION (ORAL-653)

PAEDIATRIC TRANSPLANTATION

Jayashree Sonawane¹, Vijay M. Ramanan²

¹Oncology, ²HAEMATOLOGY, RUBY HALL CLINIC, PUNE, India

Aims & Objectives: THE AIM OF PAEDIATRIC TRANSPLANT IS TO ACHIEVE REMISSION BY KILLING AS MANY LEUKEMIA CELLS AS POSSIBLE, RETURNING BLOOD COUNTS TO NORMAL, RIDDING THE BODY OF SIGNS OF DISEASE FOR A LONG TIME, PROMOTE GOOD QUALITY OF LIFE.

Patients / Materials & Methods: RETROSPECTIVE STUDY

Results: ALIVE & WELL, FIVE YEARS AFTER MUD TRANSPLANT

Discussion & Conclusion: THE JOURNEY OF THE PATIENT AND FAMILY WAS NOT EASY. HE DEVELOPED SKIN GVHD IN 2017. HE HAD TO UNDERGO MULTIPLE SURGERIES FOR THE SAME. TODAY, THOUGH WITH LIMITATIONS IN MOBILITY, HE IS ABLE TO PERFORM DAILY LIVING ACTIVITIES.

Disclosure of Interest: None Declared

Keywords: ACUTE LYMPHOBLASTIC LEUKEMIA, PAEDIATRIC TRANSPLANTATION MUD, PEDIATRIC CANCER

POSTER Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (POSTER-655)****TRANSFUSION SUPPORT IN HEMATOPOIETIC STEM CELL TRANSPLANT PATIENTS: A SINGLE-CENTER STUDY**

Abhishekh Basavarajegowda¹, Smita Kayal², Pragya Silwal¹, Pragya Silwal¹

¹Transfusion Medicine, ²Medical Oncology, JIPMER, Pondicherry, India

Aims & Objectives: To assess the pattern and requirement of blood products transfused in post HSCT patients

Patients / Materials & Methods: A prospective study was conducted among consecutive patients who underwent peripheral HSCT from January 2019 to May 2020 in our institute to see the requirement of blood products post transplant. Data was collected from the patient's case record sheets and issue register from the blood bank.

Results: Out of 41 transplants, 25 (61%) were males and 16 (39%) were females with median age of 38 (6-55) years. Among auto-transplants, 17 (71%) were Multiple Myeloma and among allo-transplants, 5 (29%) were CML and AML each and 4 (24%) were B-ALL patients. Out of 17 allo-transplants, 70.5% were MSD. Major ABO mismatch was 29%, 18% had minor, 6% had bidirectional and 47% had no mismatch. The mean CD34 dose infused was $6.15 \pm 2.16 \times 10^6/\text{kg}$ with median time to neutrophil and platelet engraftment of 11 (9-17) and 12 (7-26) respectively. 5 (29%) allo patients had increased CMV load and 10 (37%) had GvHD (acute or chronic) within 100 days of transplant. Transfusion requirement in post-HSCT patients within 30 days and from 30-100 days is given in table no 1.

Discussion & Conclusion: PRBC and SDP transfusion during 30-100 days post-transplant was significantly more in allogeneic cases compared to autologous ones. Periodic audit of blood product usage can help in planning and counseling for requirement in transplant procedures. Identification of factors affecting transplant is undergoing and analysis of these factors will help in proper management and planning of transfusion in future.

*signifies p-value significant at <0.05

Supporting Document: [bb7b41fc-a1c4-447e-b312-e0e4076f0d1f](https://doi.org/10.1182/blood-2020-11-111111)

Blood product	Auto(n= 24)	Allo(n=17)	p-value
Packed Red Blood Cells			
Till Day 30(Mean+/-SD)	1.75± 1.96	2.47± 1.91	0.25
D30-D100(Mean+/-SD)	0.16± 0.62	3.76± 4.25	0.0002*
Platelets(SDP)			
Till Day 30 Mean+/-SD)	4± 3.12	2.88± 2.63	0.24
D30-D100 (Mean+/-SD)	0.04±0.20	5.94± 6.99	0.0002*

Disclosure of Interest: None Declared

Keywords: Platelets, Transfusion, Transplant

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-657)****BKV HEMORRHAGIC CYSTITIS IN HAPLOIDENTICAL TRANSPLANT WITH POST TRANSPLANT CYCLOPHOSPHAMIDE CHILDREN**

Rohit Kapoor¹, Dhwanee Thakkar², Goutomi Chatterjee³, Neha Rastogi⁴, Satya P. Yadav⁵

¹Pediatric Hematology Oncology & Bone Marrow Transplant Unit, Medanta The Medicity, Gurugram, Haryana, India, ²Medanta- The Medicity, Gurugram, Haryana, India, ³Pediatric Hematology Oncology & Bone Marrow Transplant Unit, Medanta- The Medicity, Gurugram, Haryana, India, ⁴Pediatric Hematology Oncology & Bone Marrow Transplant Unit, Medanta The Medicity, Gurugram, Haryana, India, ⁵Pediatric Hematology Oncology & Bone Marrow Transplant Unit, Medanta The Medicity, Gurugram, Haryana, India, Gurugram, India

Aims & Objectives: BK virus (BKV) reactivation can present as asymptomatic viruria, hemorrhagic cystitis and BKV nephropathy post allogeneic stem cell transplant (SCT). Here we describe our outcomes of BKV induced hemorrhagic cystitis (BKV-HC) in children undergoing haploidentical SCT with post-transplant cyclophosphamide (PTCy).

Patients / Materials & Methods: We retrospectively analyzed data from February 2017 to March 2020 of 85 consecutive children who underwent haploidentical SCT with PTCy at our center for BKV-HC.

Results: A total of 11/85 (13%) children developed BKV-HC (mean age 8 +3.54 years). All had blood clots in urine and 4 required catheterizations. All except 1 were male. Diagnosis were Fanconi anemia (FA)-3, thalassemia major-3, leukemia-3 and aplastic anemia (AA)-2. Total body irradiation (TBI) based conditioning was given to 55%. The stem cell source was peripheral blood stem cells (PBSC) in all patients. The donor sex was female in 63%. Nine patients engrafted. Two patients had primary graft failure (thalassemia-1, AA-1) and both died post second haploidentical SCT (adenovirus with BKV-HC-1 & BKV-HC with multi-drug resistant E. coli sepsis-1). The mean stem cell dose infused was 10.76 million CD34 positive cells/kg. Neutrophil engrafted among remaining 9 patients at median of 18 days (13 to 40) and platelet engrafted in 7 patients at median of 20 days (11 to 38). Overall incidence of acute graft vs. host disease (GVHD) 36% (grade III-IV-27%). Overall incidence of chronic extensive GVHD was 18%. BKV activation occurred at median of 26 days post SCT (12 to 116). BK virus levels by quantitative PCR in blood ranged from 990 to 76,70,880 copies/ml and median levels were 10,000 copies/ml. CMV reactivation was also seen in 72%. Prophylactic ciprofloxacin treatment was given to all patients. Mefloquine was given to 64% patients and Cidofovir to 18%. The chimerism was fully donor in 82%. Another 4 patients (FA-2, thalassemia-1, leukemia-1) died post engraftment (GVHD grade III with BKV induced thrombotic microangiopathy-1, BKV encephalitis with intracranial bleed-1, Human Corona virus pneumonia-1, BKV & Adenovirus induced thrombotic microangiopathy with Candida Auris sepsis-1). Five patients (45.45%) are alive and disease free at median follow-up of 1.6 + SD 0.88 years.

Discussion & Conclusion: BKV-HC continues to be serious cause of morbidity and mortality among children undergoing haploidentical SCT with PTCy. BKV-HC was frequently associated with PBSC graft, CMV co-infection, female donor, TBI based conditioning, GVHD and rejection.

Acknowledgements- We thank Mr. Indra Bhushan Pandey, our database manager, for retrieving the data.

Disclosure of Interest: None Declared

Keywords: CMV co-infection, female donor, GVHD and rejection, TBI based conditioning

POSTER Submission**LYMPHOMA/MYELOMA (POSTER-665)****RELAPSED REFRACTORY LYMPHOMA AND TRANSPLANTATION OUTCOMES FROM A TERTIARY CARE CANCER CENTRE**

Shailesh Bamborde¹, Vivek S. Radhakrishnan¹, Jeevan Kumar¹, Saurabh J. Bhave¹, Arijit Nag¹, Reghu K. Sukumaran Nair², Mita Roychowdhury³, Rizwan Javed⁴, Mayur Parihar⁵, Niharendu Ghara², Deepak K. Mishra⁵, Reena Nair¹, Mammen Chandy¹

¹Clinical Hematology Oncology and HCT, ²Pediatric Hematology Oncology, ³Clinical Nursing, ⁴Apheresis and Cryopreservation, ⁵Laboratory Hematology Cytogenetics and Molecular Pathology, Tata Medical Center, Kolkata, India

Aims & Objectives: To evaluate outcomes of Hematopoietic Cell Transplantation (HCT) in patients with relapsed refractory Lymphomas

Patients / Materials & Methods: Retrospective chart review of 63 HCT undertaken for 58 patients with relapsed and refractory Lymphomas between Jan 2012 and Jan 2020 (M:39, F: 19). Median age: 32 yrs (9-66 yrs). Relapsed and refractory Hodgkin Lymphoma (n=33), B-NHL (n=25) and T-NHL (n=5). There were 53 autologous HCT (AHCT) procedures and 10 allogeneic HCT (alloHCT) procedures [4 were post-AHCT]. 55 (87%) patients were in complete remission, 4 (6%) in partial remission and 4 (6%) patients had refractory disease, pre-HCT. All patients received peripheral blood stem cell product. In alloHCT group, 8 received haploidentical and 2 matched unrelated donor products. Conditioning regimens in autoHCT were R-BEAM (n=26), BEAM (n=24), or Gem-Bu-Mel (n=3); and alloHCT received RIC (n=9) and MAC(N=1). Mobilization regimen in most was Plerixafor plus G-CSF (71%).

Results: Median CD34+ cells dose = 4.9 x 10⁶ cells/ Kg (1.7-14.49). Median follow-up: 386 days (07-1883 days). Median days to neutrophil engraftment = 10 days (10-19 days). Primary graft failure: 3 (1=AHCT, 2=alloHCT). Mortality at 100 days was 6% (n=4). Complete Response at day 100 was 87% (n=55). Overall Relapse rate was 20% (n=13), most (92%) occurred within 2 years. In the alloHCT group: 5 are in remission, 6 had aGHVD, none cGHVD, and 5 died (3: <100 days, 2:<1 year). Causes of death overall: Relapse (3 patients) and non-relapse mortality (11 patients). One year overall survival and progression-free survival outcomes were 87.9% and 72% respectively in the AHCT group.

They were both 46.7% in alloHCT group (as no patient in this group has relapsed).

Discussion & Conclusion: In this single centre retrospective study, AHCT is an effective salvage therapy for relapsed/ refractory lymphomas. In the alloHCT group, there was good disease control at the cost of high transplant related mortality.

Disclosure of Interest: None Declared

Keywords: Allogeneic hematopoietic stem cell transplantation, Autologous haematopoietic stem cell transplantation, lymphoma, relapsed or refractory

ORAL Submission**INFECTIONS (ORAL-666)****EXPERIENCE OF INFECTIONS IN AUTOLOGOUS STEM CELL TRANSPLANT (ASCT) IN NON HEPA FILTER SETTING**

Malini Garg^{*1}, Prakash S. Shekhawat¹, Avriti Baveja¹, Shuvra N. Baul¹, Prakas K. Mandal¹, Rajib De¹, Tuphan K. Dolai¹
¹Hematology, NRS Medical College and Hospital, Kolkata, India

Aims & Objectives: To study the infection characteristics of patients undergoing ASCT in a non HEPA setting.

Patients / Materials & Methods: Retrospective analysis of data of 47 patients, who underwent ASCT from September 2016 to August 2020 at hematology department, NRSMCH, Kolkata was done. All patients received recommended prophylaxis. Cultures were sent from various sites during febrile neutropenic episodes and tested in *Bactalert 3D Biomeriux* analyzer. Positive cultures were compared with period of neutropenia, antibiotic duration and hospital stay following transplant using Pearsons correlation coefficient.

Results: The mean age was 44.7 (12-65) years with male to female ratio of 1.9:1. Most common diagnosis was plasma cell dyscrasia (34,72.3%) followed by lymphoma (11,23.4%) and relapsed AML (2,4.2%). A total of 359 cultures, including throat swab(10.8%), blood culture from periphery (16.7%) and from venous catheters (72.4%) were sent. Positive cultures were 33(9.2%), wherein majority were from venous catheters(14,42.4%). Amongst catheters, Cultures from right internal jugular vein catheter were commonest (6/14,42.8%). MDR Klebsiella(24.4%) was commonest isolate, followed by Pseudomonas aeruginosa(15.1%), MRSA(12.1%), and CONS(12.1%). Patients with positive cultures(9.2%) had prolonged antibiotic usage (Mean=17.3 days, P<0.05) and increased hospital stay (Mean=21.3 days, P<0.05). However, neutrophil engraftment and period of febrile neutropenia had no association with positive cultures(P>0.05) nevertheless, they were significantly associated with preinfusion CD34 doses (P<0.05). Four patients had respiratory symptoms, for which HRCT thorax was done, which was not suggestive of any infections. One patient died of septic shock with delayed engraftment.

Discussion & Conclusion: Overall, positive cultures were 9.2%, wherein majority were venous catheter related(42.4%). Most common organism was MDR Klebsiella(24.4%) followed by Pseudomonas(15.1%) with no documented fungal infection. Patients with positive culture had prolonged antibiotic usage(P<0.05) and prolonged hospital stay(P<0.05) with no effect on period of neutropenia(P>0.05). Hence, from our work, we conclude that ASCT can safely be performed in a non HEPA setting with minimal risk of infection.

Disclosure of Interest: None Declared

Keywords: ASCT, HEPA filter, infections

POSTER Submission**LYMPHOMA/MYELOMA (POSTER-669)****MELPHALAN DOSE IN MYELOMA PATIENTS UNDERGOING AUTOLOGOUS STEM CELL TRANSPLANTATION**

Liqin Cao¹, Fangshu Guan¹, Yanmin Zhao¹, Yi Luo¹, Yamin Tan¹, Jian Yu¹, Xiaoyu Lai¹, Huarui Fu¹, Weiyan Zheng¹, Jie Sun¹, Jingsong He¹, Guoqing Wei¹, He Huang¹, Zhen Cai¹, Jimin Shi¹

¹Bone Marrow Transplantation Center, the First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China

Aims & Objectives: To compare the effectiveness and toxicities among autologous stem cell transplantation (ASCT) eligible multiple myeloma (MM) patients of conditioning regimens melphalan at 200mg/m² (MEL200) and melphalan at 140 mg/m² plus bortezomib (MEL140-Bor).

Patients / Materials & Methods: we performed a retrospective study with 108 MM patients who received ASCT in our center from January 2011 to March 2020.

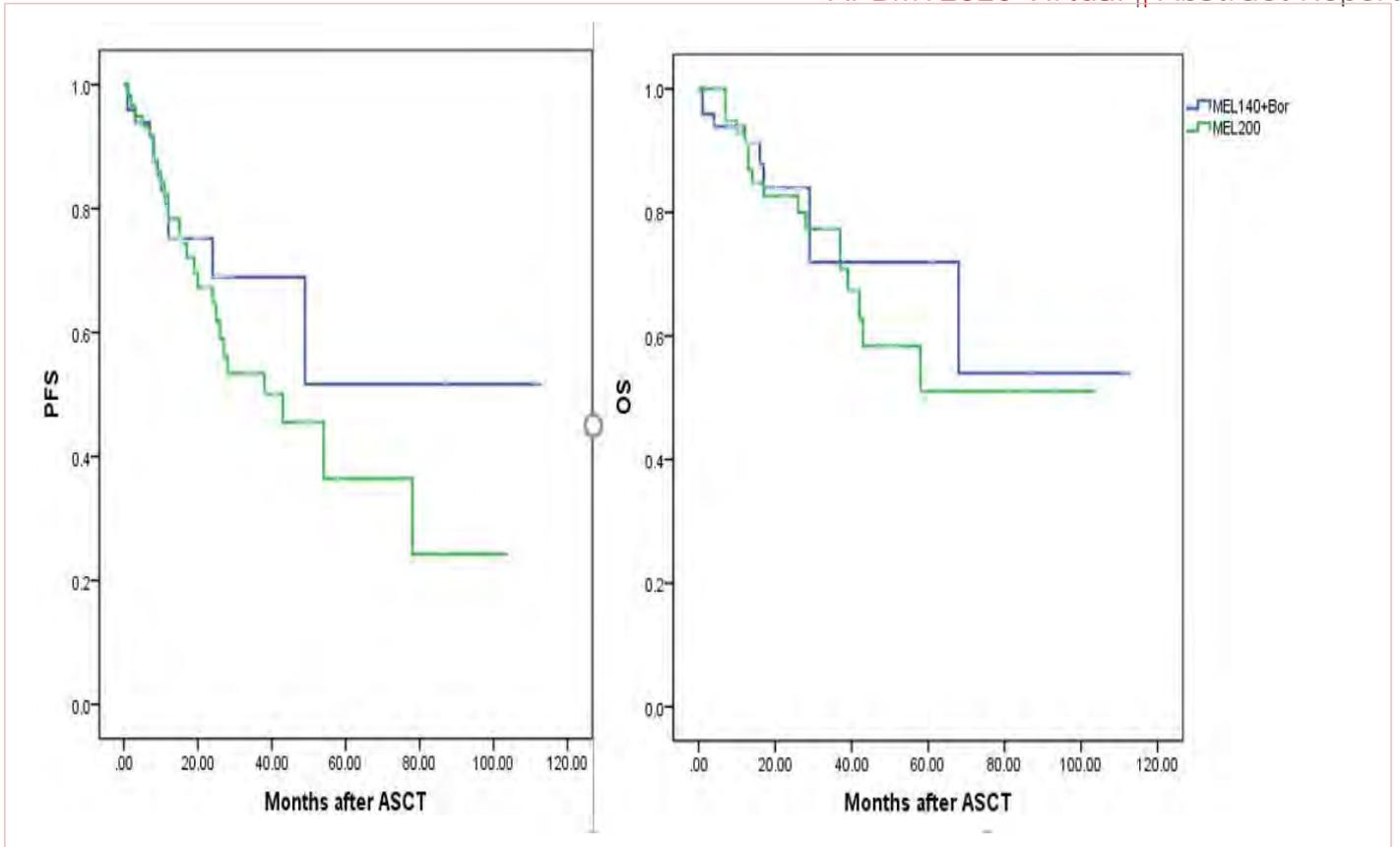
Results: All of 108 patients underwent ASCT as first line therapy, with 59 patients (54.6%) receiving a melphalan dose of 200 mg/m² (MEL200), and 49 patients (45.4%) receiving lower doses melphalan plus bortezomib (melphalan 140 mg/m², bortezomib 1.0 mg/m²; MEL140-Bor). The depth of response increased from 60.2%≥VGPR prior to ASCT to 75.9%≥VGPR by day +100 after ASCT. The 5-year estimated OS (overall survival) and PFS (progress free survival) in 108 patients were 57.2%, and 41.2%.

The baselined characteristics were comparable between the MEL200 patients and MEL140-Bor patients. The proportion of patients achieving at least a VGPR by day +100 after ASCT in the MEL200 group was comparable to the MEL140-Bor group (71.2% vs 81.6%; p=0.206). The 5-year PFS and OS in MEL140-Bor group were slightly higher than that in MEL200 group, but without statistically difference (PFS: 51.5% vs 36.4% P=0.414; OS 72% vs 51.1% P=0.684) (Fig1, Fig2). There was 1 patient death in each group within 100 days after ASCT (P=0.903).

Causes of death were infections in one (0.9%) patient and gastrointestinal hemorrhage in another (0.9%) patient. As shown in table 1, there were no significant differences between the two group in the adverse events observed during ASCT including infections, hematological toxicities, cardiological toxicities, mucositis, gastrointestinal toxicities, cardiological toxicities and media days of hospitalization.

Discussion & Conclusion: In conclusion, our data reveal no significant differences in safety and effectiveness for multiple myeloma patients treated with MEL200 or with lower MEL doses plus bortezomib.

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Disclosure of Interest: None Declared

Keywords: autologous stem cell transplantation , bortezomib, melphalan, myeloma

ORAL Submission**GVHD (ORAL-670)****RETROSPECTIVE ANALYSIS OF ATG VERSUS RUXOLITINIB IN TREATMENT OF STEROID REFRACTORY ACUTE GVHD**

Shiva Kumar Komaravelli*¹, Nataraj K S¹, Shilpa Prabhu¹, Bharath Ram¹, Aditi shah¹, Monisha H¹, Sharat Damodar¹
¹Hematology, Narayana health city, bangalore, India

Aims & Objectives: To compare the response rates of ATG and Ruxolitinib in steroid refractory acute GVHD.

Patients / Materials & Methods: The study included patients who underwent allogeneic HCT at Narayana hospital, between January 2015 and April 2020, developed Steroid refractory aGVHD and received ATG, Ruxolitinib as second line therapy. Baseline patient characteristics are mentioned in table. Patients were divided into 3 groups. Patients received ATG without Ruxolitinib were included in Group 1. Patients received Ruxolitinib without ATG were included in Group 2. Patients received both drugs included in Group 3. Day 28 and day 100 responses were analyzed in 3 groups.

Results: Total 24, 31 & 11 patients were included in Group 1,2 &3 respectively. On Day 28, In Group1 2 (9%), 5 (22.8%), 15 (68.2%) patients achieved CR, PR and NR respectively. In Group 2 12 (41.4%), 8 (27.6%), 9 (31%) patients achieved CR, PR and NR respectively. P value is 0.01. On Day 100, In Group 1 6 (27.3%), 2 (9%), 14 (63.7%) patients achieved CR, PR and NR respectively. In Group 2, 14 (51.8 %), 3 (11.2%), 10 (37 %) patients achieved CR, PR and NR respectively. P value is 0.16. ORR of Groups 1, 2 & 3 at Day 28 are 31.8%, 69% and 45.5% respectively. ORR of Groups 1, 2 &3 at Day 100 are 36.3%, 63% and 36.4 % respectively.

Discussion & Conclusion: Steroid-resistant acute graft-versus-host disease (SR aGVHD) is a major challenge after allogeneic stem cell transplantation and associated with significant morbidity and mortality. Antithymocyte globulin (ATG), Ruxolitinib and many other drugs are studied as treatment options. Recently Ruxolitinib is approved for SR aGVHD. In resource limited settings ATG is preferred over other options. In our study we compared response rates of ATG and Ruxolitinib. Ruxolitinib produced durable responses and encouraging survival compared with ATG in patients with SR aGVHD who otherwise have dismal outcomes.

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	ATG group (24)	Ruxolitinib Group (31)	ATG + Ruxolitinib (11)
Mean Age in yrs	24.4 (2 -63)	13.5 (1-51)	24.2 (1 – 68)
Sex – Male	17	24	7
Type – MSD	10	8	7
Haplo	6	17	2
MUD	8	6	2
Source – PBSC	21	27	10
BM	3	4	1
Conditioning – MAC	21	27	7
RIC/NMA	3	4	4
Mean stem cell dose	7.8 (4.9 – 18.2)	9.2 (3.9 – 21.4)	8.9 (3.5 – 43.3)
Mean day of onset of GVHD	27.5 (12 – 46)	27 (11- 99)	
Organ involvement			
SKIN	1	3	1
GUT	6	17	4
LIVER	1	0	0
2 ORGANS	14	10	5
3 ORGANS	2	1	1
Peak MAGIC GRADE			
4	18	21	10
3	4	8	0
2	2	2	1

Disclosure of Interest: None Declared

Keywords: Acute GVHD, ATG, GVHD, Ruxolitinib, Steroid refractory aGVHD

POSTER Submission**CONDITIONING REGIMENS (POSTER-672)****REPORT ON NON-CRYOPRESERVED AUTOLOGOUS STEM CELL TRANSPLANTATION FOR RELAPSED/REFRACTORY LYMPHOMA**

Hnin Mya Thanda*^{1,1}, Khin Thida Htut T. Htut¹, Mie M. Khine¹, Yin N. Han¹, Yi M. Thant¹, Yu Y. Mon¹, Aye A. Gyi¹

¹Department of Clinical Hematology, North Okkalapa General and Teaching Hospital, Yangon, Burma

Aims & Objectives: Lymphoma has been listed among top cancers in Myanmar and many require treatment beyond first-line chemotherapy. Unlike myeloma, where more cost-effective and less toxic non-cryopreserved methods have been successfully introduced for autologous stem cell transplantation (ASCT) in our institute, prolonged period of refrigerated storage of stem cells over 6 days if standard BEAM conditioning of lymphoma is used may compromise cell viability. To investigate the feasibility of non-cryopreserved ASCT for lymphoma, a preliminary study was carried out after approval from institutional review board.

Patients / Materials & Methods: Relapsed/ refractory (R/R) Hodgkin and non-Hodgkin Lymphomas (HL and NHL) who had received salvage chemotherapy were prepared for ASCT following BEAM conditioning modified either by skipping one day doses of etoposide and cytarabine or by reducing duration between doses of chemotherapy of standard protocol to allow re-infusion of harvested stem cells in less than 6 days of storage at 1-4 degree Celsius in pharmaceutical refrigerator. Viability and dose of CD34+ cells were enumerated before transfusion by BD FACS Canto flow-cytometer using 7-Amino-Actinomycin-D dye.

Results: Between September 2017 to August 2020, four R/R lymphoma, 3 males and 1 female, mean age 35 years (± 13.32), with primary refractory HL (2 cases) and R/R diffuse large cell lymphoma (2 cases) consented for the study. The median duration of refrigeration was 118.5 hours (range 103-132 hours). The mean viable CD34+ cell count was 3.10×10^6 cells/kg (± 0.64). Median viability was 72.3% (36.7%>88.4%). All patients achieved engraftment except one who died during pre-engraftment period from severe pneumonia. Median days of neutrophil and platelet engraftment were 11 days (range 9-13) and 12 days (range 11-18) respectively.

Discussion & Conclusion: Modified BEAM conditioning and non-cryopreserved ASCT is a feasible option for relapsed refractory lymphoma in resource limited countries. Further studies are needed to confirm the findings in this study.

Disclosure of Interest: None Declared

Keywords: Engraftment, Non cryopreservation, BEAM conditioning

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-674)****RISK FACTORS FOR HYPERTENSION/ PRES IN CHILDREN UNDERGOING HEMATOPOIETIC STEM CELL TRANSPLANTATION**

Satish K. Meena¹, Harika Varla², Venkateswaran V. Swaminathan², Balasubramaniam Ramakrishnan³, Indira Jayakumar⁴, Ramya Uppuluri², Revathi Raj²

¹Department of Pediatric Hematology, Oncology, Blood and Marrow Transplantation, Apollo Speciality Hospital, Chennai, India, ²Department of Pediatric Hematology, Oncology, Blood and Marrow Transplantation, ³Department of Biostatistics, ⁴Department of Pediatric Critical Care, Apollo Cancer Institute, Chennai, Chennai, India

Aims & Objectives: Hypertension and posterior reversible encephalopathy syndrome (PRES) are known complications of hematopoietic stem cell transplantation (HSCT). We aimed to derive variables and predictive factors in the peri-transplant period that impact the incidence, morbidity, and mortality associated with the above.

Patients / Materials & Methods: We performed a retrospective analysis of data in children up to 18 years of age who underwent HSCT from January 2016 to December 2019.

Results: A total of 423 children were included with a Male: Female ratio of 1.4:1. Donors were matched family in 47%, a matched unrelated in 21%, and haploidentical donors in 31%. Conditioning was myeloablative (MAC) in 77% transplants and reduced intensity (RIC) in 23%. Hypertension was documented in 27.4%, presenting symptoms of headache in 32%, visual disturbances in 10%, encephalopathy in 18%, and seizures in 19%. Hypertension was documented predominantly in the period from Day+1 to Day+14 post-HSCT. In the 24 children with imaging, we recorded features suggestive of PRES in 79%. The overall incidence of PRES of 4.5% in the cohort. The majority of our children required two antihypertensive drugs (54%). Up to 6% children required over five antihypertensive drugs, including Labetalol and Sodium Nitroprusside. 3% NaCl was infused in all children with PRES, and intubation was required in 31% of children with PRES. There was a significant association of concomitant steroids (97%, p-value 0.0001). There was a significantly higher incidence of hypertension noted among those who underwent haploidentical/MUD HSCT as compared to those in the MFD group (39% versus 14%, p-value 0.0001), and among those who received RIC versus MAC conditioning (43.8% versus 22.8%, p-value 0.0001). There was no mortality noted due to hypertension and PRES in this cohort.

Discussion & Conclusion: Hypertension and PRES are seen in 27% and 4.5% of children, respectively, undergoing HSCT in the peri-transplant period, with RIC conditioning, haploidentical/MUD HSCT, and use of concomitant steroids being significant risk factors. Preemptive use of antihypertensive drugs can help minimize mortality in this cohort.

Disclosure of Interest: None Declared

Keywords: Hematopoietic stem cell transplantation, Hypertension, posterior reversible encephalopathy syndrome (PRES)

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-676)****HEMATOPOEITIC STEM CELL TRANSPLANTATION IN RARE TRANSFUSION DEPENDANT HAEMATOLOGICAL CONDITIONS**

Harika Varla¹, Satish K. Meena¹, Venkateswaran V. Swaminathan¹, Ramya Uppuluri¹, Revathi Raj¹

¹Department of Pediatric Hematology, Oncology, Blood and Marrow Transplantation, Apollo cancer institute, Chennai, India

Aims & Objectives: Hematopoietic stem cell transplantation (HSCT) can be curative for rare hematological disorders resulting in transfusion dependant anemia, including pure red cell aplasia (PRCA), congenital sideroblastic anemia (CSA), and congenital erythropoietic porphyria (CEP). We present experience with HSCT in these rare disorders over two decades.

Patients / Materials & Methods: We performed a retrospective study where case records of children diagnosed with PRCA, CSA, and CEP who underwent HSCT and analyzed data from 2004 till December 2019

Results: We included 16 children, 11 with PRCA, 4 with CSA, 1 with CEP. Donor type was matched related donor in 11, and a matched unrelated donor in 4, haploidentical in one child with CSA. Treosulphan-based myeloablative conditioning was used in 14 children, while two children received busulphan-based conditioning. Engraftment occurred in all but one child who died before engraftment (93%). We documented acute graft versus host disease (GVHD) of grade 1 to 2 in 5 children (31%), one child with grade 3, and one with 4 GVHD. Chronic limited skin and mouth GVHD occurred in 6 children (37%), 3 with PRCA, 2 with CSA, and the child with CEP. Four of these children required prolonged low dose steroids for two years. The overall survival in our cohort is 81% with a lower survival in children with PRCA at 72.7%.

Discussion & Conclusion: PRCA, CSA, and CEP can be cured with a myeloablative conditioning regimen. Follow up for GVHD, immune cytopenia, and chronic steroid related effects help reduce morbidity. Graft rejection rates were low, however, GVHD remains a significant challenge.

Disclosure of Interest: None Declared

Keywords: Congenital sideroblastic anemia, Haematopoietic stem cell transplantation, Pure red cell aplasia

ORAL Submission**HEMOGLOBINOPATHIES, PRIMARY IMMUNE DEFICIENCY DISEASES AND METABOLIC DISORDERS. (ORAL-677)****HEMATOPOIETIC STEM CELL TRANSPLANT FOR ADULT SICKLE CELL DISEASE: EXPERIENCE FROM INDIA**Gaurav Kharya¹, Archana Rauthan¹, Manju Joseph¹, Himshikha Yadav¹, Bharti Sharma¹, Atish Bakane¹¹Center for Bone Marrow Transplant & Cellular Therapy, Indraprastha Apollo Hospital Delhi, Delhi, India, India

Aims & Objectives: Allogeneic HSCT is the only curative option for severe sickle cell disease (SCD). Great success has been achieved in pediatric patients undergoing HSCT for SCD, however, the outcome data on adult patients is limited. With growing age and deteriorating organ functions, there is risk of increased regimen related toxicity with myeloablative conditioning. In the current analysis we share our experience of HSCT in symptomatic adult SCD patients.

Patients / Materials & Methods: Patients >18 years with SCD presenting at our center for bone marrow transplant & cellular therapy between June 2018 till date were enrolled. Conditioning included rATG (SanofiGenzyme) @1.5mg/kg/d (Day-7-5), Thiotepa@10mg/kg (D-7), Fludarabine@30mg/m²/d (Day -7-3), Cyclophosphamide@14.5mg/kg/d (Day-3,-2), total body irradiation@2cGy (Day-1) for haploidentical transplant whereas MSD were conditioned using either Busulfan@3.2mg/kg/day (Day-7-4), Cyclophosphamide@50mg/kg/day (Day-6-3), hATG@30mg/kg/day (Day-9-7) or Fludarabine@30 mg/m²/day (Day-7-2), Thiotepa@10mg/kg (Day-7), Treosulfan@14gm/m²/day (Day-5-3), hATG@30mg/kg/day (Day-7-5). GvHD prophylaxis in haploidentical transplant was with PTCy@50mg/kg/d (Day+3+4), mTOR inhibitor (Sirolimus)@2mg/m²/d starting from day +5 continued till 9 month with gradual tapering, MMF@10mg/kg/dose thrice daily from day +5 till day +35 followed by tapering whereas for MSD it included cyclosporine (CSA) and methotrexate. CSA was continued till 9 months followed by gradual tapering.

Results: Nine patients were enrolled into the study. Five underwent MSD transplant whereas 4 underwent haploidentical transplant. Graft failure was not seen in any of our patients. Median time to neutrophil and platelet engraftment was 12 days (range 10-15 and 8-20) respectively. None of the patient developed grade III-IV aGvHD whereas, two developed cGvHD (1 liver, 1 extensive). CMV reactivation was noticed in 4/9 (44.4%) whereas one had BKV induced hemorrhagic cystitis progressing to BK nephropathy. One patient died 987 days post HSCT due to extensive cGvHD. At a median follow up of 866 days (range 341-1059) 8 patients are alive making an OS and DFS of 88.9%.

Discussion & Conclusion: HSCT for adult SCD remains a challenge. Considering the background organ toxicity, RTC is preferred. The risk of graft failure can be ameliorated using pre-transplant immune suppression.

Disclosure of Interest: None Declared

Keywords: Adult, Hematopoietic stem cell transplant, Organ toxicity, Sickle cell disease

ORAL Submission**LYMPHOMA/MYELOMA (ORAL-678)****FACTORS INFLUENCING STEM CELL MOBILIZATION IN PATIENTS WITH HEMATOLOGIC MALIGNANCIES**

Roshan Vinod¹, Chandran K. Nair¹, Vineetha Raghavan¹, Mohandoss M¹, Soumya Das¹, Lokesh Sharma¹
¹Haematology, Malabar Cancer Centre, Thalassery, India

Aims & Objectives: To find out the factors affecting stem cell mobilization in patients who attempted autologous stem cell transplantation in Malabar cancer center from MARCH 1st, 2014 to August 29, 2019

Patients / Materials & Methods: Data was retrieved from case records. Parameters like -Past history from case records ,age , sex , presenting symptoms, HB, wbc , platelet count , date of starting treatment, Number of cycles of chemotherapy received in the past, response to chemotherapy , history of Radiation in the past. Categorical variables as frequencies and continuous variables as Mean (SD) or Median (IQR) based on distribution. Chi square test and Wilcoxon sign rank was used to study the hematological changes after mobilization. Data was analysed by spss 22 .

Results: In our trial there was no correlation between PBSC yield and the patient's diagnosis, age, or gender. BM involvement does not seem to be an independent factor, with significant adverse influence on PBSC mobilization. Stem cell yield was significantly higher in those patients who received fewer than 6 courses of chemotherapy.

Discussion & Conclusion: Diagnosis, age, sex, and bone marrow involvement does not influence the outcome of stem cell mobilization. Better stem cell yield was seen in patients who received fewer than 6 courses of chemotherapy.

Supporting Document: 64118d6b-15e6-4e6f-a1ff-65a11d36c4f9

III A	2
IIIB	2
III X	2

II A	8
II B	3
II X	1

IV A	5
IV B	1
IV X	0

ISS 1	9
ISS 2	14
ISS 3	16

Stage at Relapse	Frequency	Percent
	67	87.0
II A	1	1.3
ISS I	1	1.3
PRZ	1	1.3
STAGE 2A	1	1.3
Valid Stage 4B	1	1.3
Stage IA	1	1.3
Stage III	1	1.3
Stage IV BE	1	1.3
Stingert CR	1	1.3
VGPR	1	1.3
Total	77	100.0

Stage before salvage chemo	Frequency	Percent
	59	76.6
Valid CR	3	3.9
CR2	1	1.3

Disclosure of Interest: None Declared

Keywords: granulocyte colony stimulating factor, Hematopoietic stem cell transplantation, peripheral blood stem cells

POSTER Submission**GVHD (POSTER-682)****A RETROSPECTIVE STUDY ON GRAFT-VERSUS-HOST-DISEASE IN PATIENTS OF SEVERE APLASTIC ANAEMIA**

Vijay Ramanan¹, Swara S. Pendse^{*1}, Mandavi Garge²
¹Ruby Hall Clinic, ²University of Pune, Pune, India

Aims & Objectives: To study the proportional occurrence of graft-versus-host-disease in patients of severe aplastic anaemia on standard conditioning regimens for bone marrow transplant.

Patients / Materials & Methods: 43 patients of severe aplastic anaemia treated by allogeneic bone marrow transplant, from 2006 to 2019 were included in the study. These were 22 male and 21 female patients from Ruby Hall Clinic, Pune. 39 of these received peripheral blood from identical sibling donors and 4 received bone marrow from matched unrelated donors. During conditioning, 25 received Fludarabine-Cyclophosphamide (Flu-Cy)-regimen A, 11 patients received Fludarabine-Busulphan-Cyclophosphamide (Flu-Bu-Cy) - regimen B and 7 received Fludarabine-Busulphan- Anti thymocyte Globulin (Flu-Bu-ATG)-regimen C.

Results: 48.84% of the total transplanted patients had no GVHD. 22.73% males and 28.57% females suffered from GVHD. 9 patients experienced acute GVHD (aGVHD) and 10 experienced chronic GVHD (cGVHD). No patients on regimen A experienced GVHD. 63.63% patients on regimen B experienced GVHD (27.27% aGVHD & 36.36% cGVHD). Whereas 85.71% on regimen C (14.29% aGVHD and 71.43% cGVHD) experienced GVHD.

Discussion & Conclusion: By applying the age adjusted Chi Square test for significance, we observed that patients with severe aplastic anaemia undergoing bone marrow transplant, on regimen A did significantly better when compared to the other conditioning regimen ($p < 0.0001$).

Disclosure of Interest: None Declared

Keywords: Aplastic anaemia, Conditioning regimen, Graft-versus-host-disease

POSTER Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (POSTER-684)****COMPARATIVE ANALYSIS OF PBSC COLLECTION ASSOCIATED ADVERSE EVENTS IN PEDIATRIC DONORS**

Minal POOJARY¹, Shashank OJHA¹, Sumathi HIREGOUDAR¹, Abhay GUPTA¹, Sachin PUNATAR¹, Anant GOKARN¹, Akansha CHICHRA¹, Lingaraj NAYAK¹, Avinash BONDA¹, Sarika PARAB¹, Pallavi RANE¹, Suryatapa SAHA¹, Sumeet MIRGH¹, Navin KHATTRY¹

¹ACTREC, NAVI MUMBAI, India

Aims & Objectives: Peripheral blood stem cell collection (PBSC) in children is considerably more challenging than adults due to the difference in their physiological hemodynamics because of the smaller size and low total blood volume (TBV). The objective of this study is to determine the incidence rate and potential risk factors associated with adverse events (AE) during PBSC collection in both autologous and allogeneic pediatric donors.

Patients / Materials & Methods: A retrospective study was conducted in 100 pediatric donors with 148 PBSC collections from October 2007 to June 2020 including 47 autologous and 53 allogeneic PBSC donors between 0 to 15 years age group. Adverse events associated with PBSC collections were categorized based on their type and severity. Predictive demographic and technical variables were analyzed contributing to donor safety. Statistical analysis was performed using SPSS 23.0 software. Descriptive statistics and frequencies were used for the data description.

Results: A total of 82 adverse events were observed in total of 61 procedures (41.9%) including citrate reactions (46.34%), technical (17.07%), gastrointestinal (14.63%), venous access related (12.19%), G-CSF related (1.21%) and others (8.53%) with significantly higher incidence found in allogeneic and female pediatric donors. Requirement of blood priming and central venous access was significantly higher in donors weighing less than 20 kg. Allogeneic donors received 4 days of growth factor mobilization and autologous donors received chemo- mobilization as per the diagnosis and treatment protocol with only one G-CSF related AE observed in autologous patient. There was no association observed between the pre-donation serum calcium levels as well as volume of Acid citrate dextrose (ACD) infusion with the citrate related AEs. All the donors have successfully donated and tolerated the PBSC collection procedures without any serious adverse events (SAE).

Discussion & Conclusion: Optimal technical and procedural modifications during apheresis can overcome the PBSC associated potential risks providing donor safety.

Disclosure of Interest: None Declared

Keywords: adverse events and reactions, Paediatric donors, Peripheral blood stem cell collection

ORAL Submission**LEUKEMIAS (ORAL-685)****DECREASED iKIR-HLA C PAIR CONFERS WORSE TRANSPLANT OUTCOMES FOR PATIENTS WITH MYELOID DISEASE**

Yanmin Zhao¹, Fei Gao*¹, Yibo Wu¹, Jimin Shi¹, Yi Luo¹, Yamin Tan¹, Jian Yu¹, Xiaoyu Lai¹, Mingming Zhang¹, Mingming Zhang¹, Mingming Zhang¹, He Huang¹

¹Bone Marrow Transplantation Center, The First Affiliated Hospital of Zhejiang University, Hangzhou, China

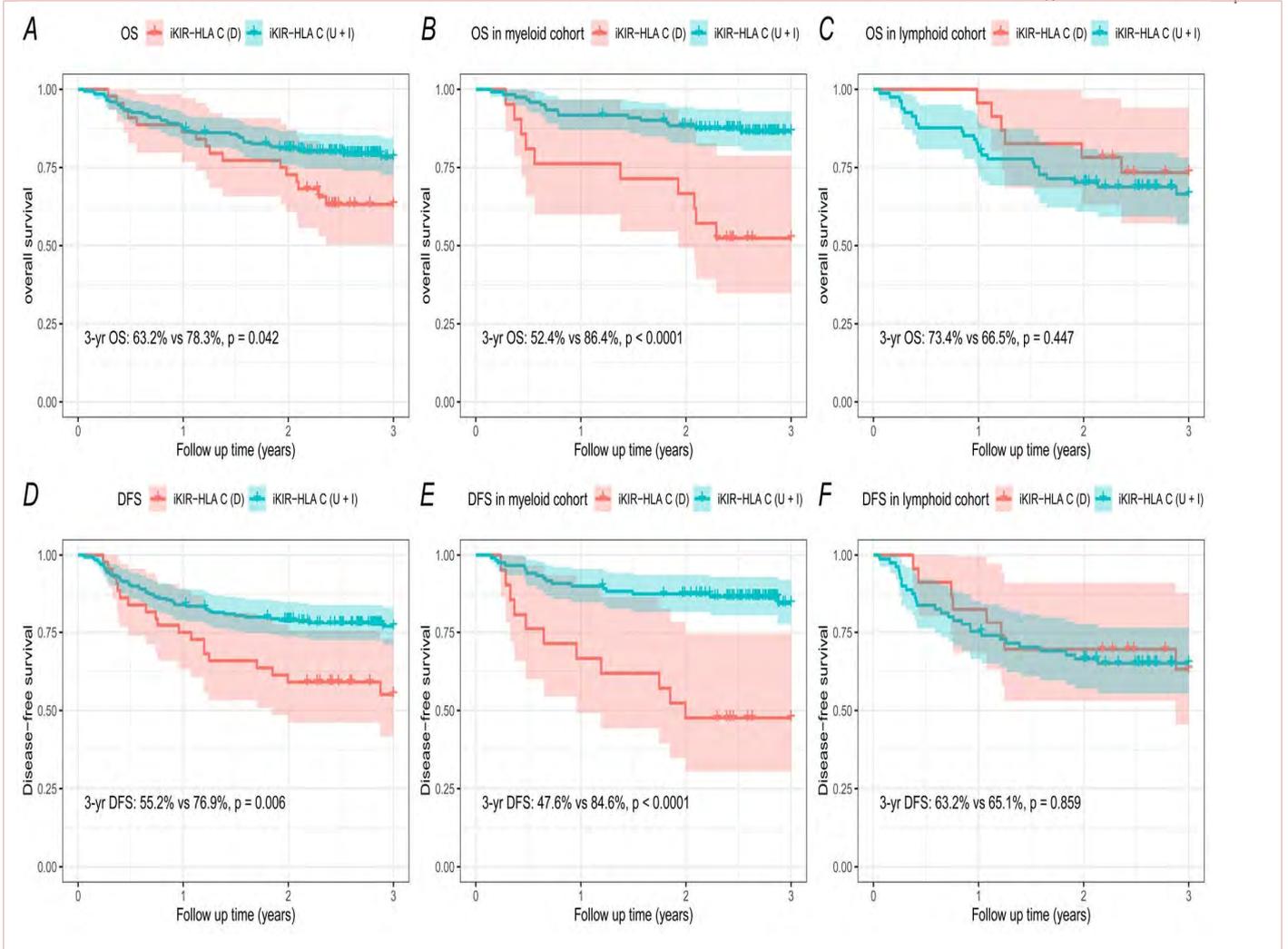
Aims & Objectives: Hematopoietic stem cell transplantation (HSCT) is a curative therapy for patients with malignant hematologic diseases. Killer immunoglobulin-like receptor (KIR) expressed by NK cells is closely associated with the transplant outcomes, and it has been widely explored and debated for a few decades. Recently published investigations have revealed that inhibitory KIRs (iKIRs) are educated by their cognate HLA ligands, and that decreased iKIR-HLA pairs post-transplantation may indicate a reduced NK cell function and impaired control of the primary disease. However, this theory still needs to be validated by additional clinical studies.

Patients / Materials & Methods: Here we conducted a retrospective analysis of 246 patients who received haploidentical (haplo)-HSCT at our treatment center between January 2015 and June 2018.

Results: Our data suggests that decreased iKIR-HLA C pair post-HSCT correlated with a significantly higher risk of relapse (HR=3.54, p=0.006) and reduced overall survival (OS) (HR=4.43, p=0.0002) and disease-free survival (DFS) (HR=4.63, p=0.0001) in patients with myeloid disease.

Discussion & Conclusion: In conclusion, decreased iKIR-HLA C pair should be avoided during anti-thymocyte globulin (ATG)-based haplo-HSCT, especially for patients with myeloid disease.

Supporting Document: e15b054a-dfe8-4d26-b550-cdaba3d00031



Disclosure of Interest: None Declared

Keywords: Hematopoietic stem cell transplantation, iKIR-HLA model, KIR, Relapse, survival

ORAL Submission**INFECTIONS (ORAL-686)****ROLE OF PROPHYLACTIC GRANULOCYTES IN PATIENTS UNDERGOING HSCT -SINGLE CENTER EXPERIENCE FROM INDIA**

Atish Bakane^{*1}, Archana Rauthan¹, Mohit Chowdhry², Manju Joseph¹, Himshikha Yadav¹, Bharati Sharma¹, Gaurav Kharya¹
¹Center for Bone Marrow Transplant & Cellular Therapy, ²Transfusion medicine, Indraprastha Apollo Hospital, Delhi, India

Aims & Objectives: Infection related mortality (IRM) can be very high in neutropenic patients, such as HSCT recipients & malignancies. In resource-limited countries the magnitude of the problem of MDR sepsis and IFI is significant. Although short-term survival is promising after transfusing granulocyte during active infection, the ultimate mortality remains high along with financial implications. Hence we decided to administer prophylactic granulocytes in post transplantation period to keep ANC >500 and thereby prevent severe bacterial and IFI, decrease IRM and improve OS.

Patients / Materials & Methods: All patients undergoing HSCT during the period from 1/08/19 to 1/09/20, at Apollo Hospital (Delhi), who received prophylactic granulocytes to keep ANC >500 were retrospectively analysed. Collated data included demographic variables, diagnosis, blood culture / histopathology results, number of infusions, dose of granulocytes and IRM. All patients were given granulocyte transfusions on 2/3 occasions till engraftment irrespective of any infection along with supportive care. A universal protocol of performing apheresis with Spectra-Optia or Cobes- spectra on a voluntary granulocyte donor 12 hours after administering 8 mg oral dexamethasone along with GCSF (10mcg/kg) was used.

Results: 33 patients (median age 7 years) received 68 granulocyte infusions. Transplant indications included hemoglobinopathies, Leukemia, SAA, PRCA, IBMFS, MS and Multiple Myeloma. HHSCT, MUD, MSD and Autologous HSCT were performed in 22, 5, 4 and 2 patients respectively. Median dose of granulocytes was 4.1×10^{10} /unit. GNB septicaemia developed in 3 patients needing prolonged antibiotics, none required PICU support and became culture negative after granulocytes and antibiotics. 3 patients suffered IFI, one patient died in PICU, 2 patients recovered. Not a single patient developed significant infusional reaction. Few donors reported mild body ache. Infection related day 100 overall mortality was 3%.

Discussion & Conclusion: Prophylactic granulocyte transfusion during severe neutropenic period while awaiting engraftment following HSCT is safe and can help in reducing infection related morbidity and mortality thereby resulting in improved overall survival.

Disclosure of Interest: None Declared

Keywords: Granulocyte transfusion, Hsct, Prophylactic

ORAL Submission**BASIC SCIENCE (ORAL-692)****EARLY BONE LOSS IN INDIAN PATIENTS UNDERGOING ALLOGENEIC HEMATOPOIETIC CELL TRANSPLANTATION**

Niranjan S. Khaire¹, Arjun Dinesan¹, Anindita Sinha², Sanjay Bhadada³, Pankaj Malhotra¹, Alka Khadwal¹, Gaurav Prakash¹, Arihant Jain¹, Aditya Jandial¹, Deepesh P. Lad¹

¹Internal Medicine, ²Radiodiagnosis, ³Endocrinology, PGIMER, CHANDIGARH, CHANDIGARH, India

Aims & Objectives: To evaluate the changes in BMD and the factors affecting it in Indian patients undergoing allogeneic HCT.

Patients / Materials & Methods: This was a prospective study conducted at a HCT clinic in North India from 2017 to 2019. Patients with age above 12 years, undergoing allogeneic transplantation were included in the study. Detailed data about risk factors for osteoporosis, disease and transplantation were recorded. BMD was measured by DXA pre-HCT, day+100 and day+365 post-HCT.

Results: Amongst the 46 eligible patients from 2016 to 2019, DXA at day+100 was available for 25 patients, a paired day+100 and day+365 DXA was available for 15 patients. Pre-HCT DXA was available for another 20 patients. A total of 11/25 (44 %) patients had Z-scores below the expected range for age by day+100, using the Z-score cut-offs -2.0 as per recently updated ISCD adult official position. The median BMD was lowest at the FN followed by TH and LS (Table 1). Despite use of Zoledronate in patients at high risk of bone loss, the Δ BMD (day+365 - day+100) had a median of -0.8% to -3.7% loss at FN and LS, respectively in the cohort with BMD below the expected for age as compared to -2.3 % to +4.6%, respectively in the other cohort. ($p = 0.6$). Analysis of the data from the 20 patients who had pre HCT DXA, revealed BMD below the expected for age was present in 6/20 (30%) patients. Low BMI was the only statistically significant factor associated with low BMD pre HCT as well as at D+100.

Discussion & Conclusion: Among Indian patients undergoing Allogeneic HCT, BMD loss is present even before HCT. BMD is below the expected range for age as early as day+100 post HCT and BMD loss at day+100 persists at day+365 despite anti-resorptive therapy.

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Table 1. Comparison of factors associated with Z-score below the expected range for age with Z-scores within the expected range for age at D+100 post HCT

Characteristic median (IQR)	Z ≤ -2 @day+100 n = 11 n (%) / median (IQR)	Z > -2 @day+100 n = 14 n (%) / median (IQR)	p value
Age (years)	23.0 (19.0 - 36.0)	30.0 (17.7 - 44.0)	0.3
Gender	6 females (55%) 5 males (45%)	6 females (43%) 8 males (47%)	0.3
BMI (kg/m ²)	18.0 (16.3 - 24.0)	23.0 (20.3 - 28.9)	0.04
Diagnosis			
Acute leukemia	9 (82%)	10 (71%)	0.09
Aplastic anemia	2 (18%)	4 (29%)	
Diagnosis to transplant interval (months)	23.0 (6.0 - 50.0)	7.0 (5.2 - 24.5)	0.2
High dose chemotherapy pre-HCT	8 (73%)	7 (50%)	0.4
Matched sibling donor	7 (64%)	8 (57%)	0.5
Alternative donor (Haploidentical/MUD)	4 (36%)	6 (43%)	
CD34 infused x 10 ⁶ /kg	5.2 (3.1 - 7.1)	5.9 (5.1 - 7.7)	0.2
Conditioning intensity			
MAC	7 (64%)	6 (43%)	0.4
RIC/NMA	4 (36%)	8 (57%)	
Acute GVHD (grade 2-4)	5 (55%)	3 (21%)	0.4
Hypogonadism (@day+100)	8 (72%)	5 (36%)	0.1
Vitamin D deficiency (@day+100)	5 (45%)	10 (71%)	0.2
BMD LS (day+100) (g/cm ²)	0.81 (0.70 - 0.87)	0.96 (0.87 - 1.03)	0.003
BMD FN (day+100) (g/cm ²)	0.60 (0.57 - 0.81)	0.82 (0.76 - 0.85)	0.04
BMD TH (day+100) (g/cm ²)	0.72 (0.62 - 0.89)	0.94 (0.86 - 0.99)	0.01
Z-score LS (day+100)	-2.1 (-2.8 - 1.9)	-0.7 (-1.4 - -0.1)	0.0003
Z-score FN (day+100)	-2.2 (-2.6 - -0.9)	-0.5 (-0.8 - 0.2)	0.005
Z-score TH (day+100)	-1.5 (-2.4 - -0.7)	-0.5 (-0.9 - 0.1)	0.01
Chronic GVHD (moderate - severe)	7 (64%)	5 (35%)	0.2
Zoledronate given between day+100 & +365	9/10 (90%)	3/11 (27%)	0.007
ΔBMD LS (day+365-day+100) %	-3.7 (-14.0 - 9.3)	4.6 (0.7 - 8.3)	0.6
ΔBMD FN (day+365-day+100) %	-0.8 (-8.0 - 1.3)	-2.3 (-5.4 - 1.0)	0.9
ΔBMD TH (day+365-day+100) %	-2.1 (-9.65 - 10.50)	-1.9 (-3.7 - 4.5)	0.9

BMI: Body mass index, MAC: myeloablative conditioning, RIC: reduced intensity conditioning, NMA: non-myceloablative
GVHD: graft versus host disease, BMD: bone mineral density, LS: lumbar spine, FN: femoral neck, TH: total hip

Disclosure of Interest: None Declared

Keywords: Allogeneic hematopoietic stem cell transplantation, bone health, DXA

POSTER Submission**CONDITIONING REGIMENS (POSTER-694)****HAPLO-TRANSPLANTATION WITH MODIFIED PTCY FOR APLASTIC ANEMIA PATIENTS : A MULTICENTER EXPERIENCE**

Yun Li¹, Lin Li¹, Na Wang¹, Jue Wang¹, Jinhuan Xu¹, Liang Zou², Lanlan Wang², Haiyan Wang³, Lifang Huang¹, Yi Xiao¹, Yang Cao¹, Yicheng Zhang¹

¹Hematology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, ²Hematology, Wuhan No.1 Hospital, Wuhan, ³Hematology, The Central People's Hospital of Yichang, Yichang, China

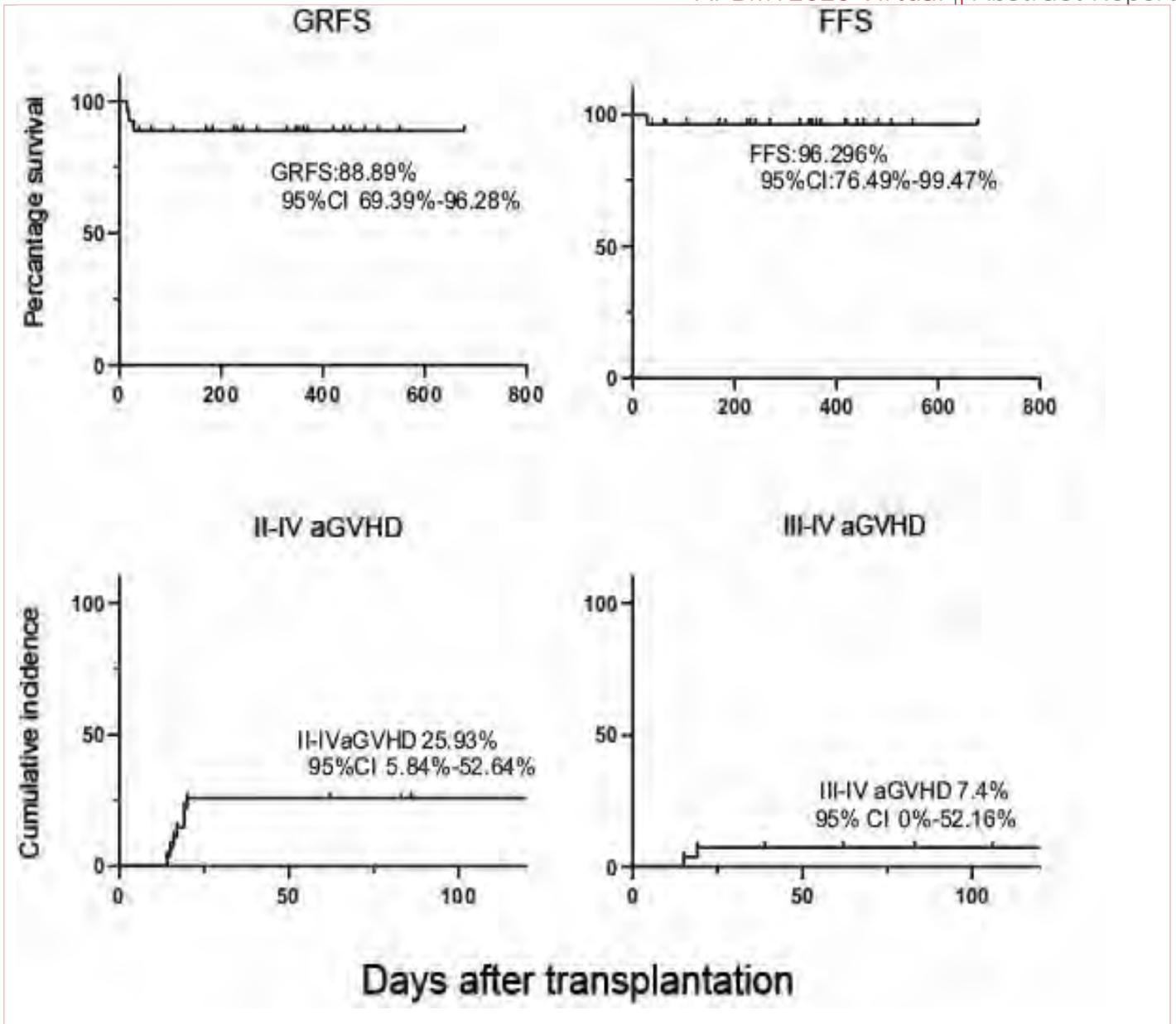
Aims & Objectives: We employed a retrospective study aimed to confirm the feasibility of busulfan (Bu) based modified post-transplantation cyclophosphamide strategy in the Haploidentical hematopoietic stem cell transplantation for Aplastic anemia patients.

Patients / Materials & Methods: Total of 27 patients from three clinical centers underwent haploidentical transplantation between October 2018 to July 2020 were enrolled in this study. The modified condition regimen consists of ATG/ALG, fludarabine, busulfan and low-dose cyclophosphamide, while high-dose cyclophosphamide, MMF and tacrolimus was administered as GVHD prophylaxis after transplantation.

Results: The median follow-up time was 347(range,39-678) days. Except that one patient developed primary graft failure, successful engraftment was observed in 96.29% (95%CI:93.45%>97.91%) patients. The median times for neutrophil and platelet engraftment were 13(range,11-18) days and 13(range,11-28) days. The most common regimen- related toxicity (RRT) was bladder toxicity, following by stomatitis and gastrointestinal toxicity. The cumulative incidence of grades II-IV aGVHD was 25.93%(95%CI:5.84%>52.64%), while the cumulative incidence of grades III-IV aGVHD was 7.4%(95%CI:0%>52.16%) respectively. Chronic GVHD was observed in 19.26% patients by the end of follow-up. All 27 patients are alive, with the failure-free survival rate of 96.30%(95%CI:6.49%>99.47%) and GVHD- relapsed-free survival rate of 88.89%(95%CI:69.39%>96.28%). Virus reactivation was comparable with 53.54% of CMV reactivation and 41.57% for EBV, but the CMV diseases and PTLD were rare.

Discussion & Conclusion: Our study using haploidentical transplantation with modified post-transplantation cyclophosphamide demonstrated an encouraging result with prolonged survival and reduced complications for aplastic anemia patients. Further prospective trials are still necessary to expand its application.

Supporting Document: 6fd30d0f-e00d-48fb-97ed-41e37052a8c5



Disclosure of Interest: None Declared

Keywords: Aplastic Anemia, GVHD prophylaxis, Haploidentical Transplantation, Post-Transplantation Cyclophosphamide

POSTER Submission**LEUKEMIAS (POSTER-697)****SECOND HAPLOIDENTICAL TRANSPLANT FOLLOWED BY DONOR LYMPHOCYTE INFUSION FOR LEUKEMIA RELAPSE**

Panpan Zhu¹, Jimin Shi¹, Yamin Tan¹, Yanmin Zhao¹, Luxin Yang¹, He Huang¹, Yi Luo¹

¹Bone Marrow Transplantation Center, the First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China

Aims & Objectives: Although hematopoietic stem cell transplantation (HSCT) is the most effective antileukemic treatment option, relapse remains the major cause of treatment failure. Second haploidentical stem cell transplantation (Haplo- HSCT) followed by donor lymphocyte infusion (DLI) might be one of effective salvage therapies for relapsed, efficacy of such approach has not been well clarified yet.

Patients / Materials & Methods: To evaluate the role of second transplantation from an alternative haploidentical donor (HID) coupled with prophylactic DLI after HSCT, we retrospectively reported the outcomes of 5 patients with acute leukemia who underwent a second anti-T-lymphocyte globulin-based myeloablative transplant from a different HID and received an early prophylactic infusion of cryopreserved GCSF-primed donor lymphocyte after HSCT.

Results: The median follow-up was 20.1 (range, 7.6-75.6) months. The overall survival (OS) and leukemia-free survival (LFS) at 2 years were 40% each. The cumulative incidence of relapse and non-relapse mortality (NRM) was 20% and 40%, respectively.

Discussion & Conclusion: These results showed that a second haplo-HSCT followed by early prophylactic DLI might attain long-term survival in relapsed patients after allogeneic transplantation.

Disclosure of Interest: None Declared

Keywords: HLA-haploidentical, prophylactic donor lymphocyte infusion, relapse, second stem cell transplantation

ORAL Submission**INFECTIONS (ORAL-700)****INITIAL 103 HSCT IN NON-HEPA FILTER UNIT WITH OUTCOME ANALYSIS OF INFECTIONS AT D+30**

Sanjeevan Sharma¹, Satyaranjan Das², Amul Kapoor³, Rajan Kapoor⁴, Deepak Mulajker⁵

¹Hematology, afmc / command hospital, Pune, ²hematology, afmc / command hospital, ³Oncology, commmand hospital, pune india,

⁴Hematology, Command Hospital, Kolkotta, ⁵Oncology, Command Hospital, Pune, India

Aims & Objectives: To analyse infectious complications in 103 consecutive HSCTs performed in a newly established unit without a Hepa Filter AHU at D+30.

Patients / Materials & Methods: 101 patients underwent 103 consecutive transplants for both malignant and non malignant disorders between Jan2016 to une 2020 in a newly started 3 bedded unit. The HSCT unit had no Hepa Filter AHU due to logistical reasons. Transplants included both autologos and allogeneic donors, using both myeloablative or non myeloablative conditioning as indicated. Allogeneic transplants included matched related, matched unrelated as well as haploidentical donors. Stem cell source was PBSC in all cases. Antiviral and antifungal prophylaxis was used in all patients, though antibacterial prophylaxis was not given. All patients were nursed using double reverse barrier nursing. All infectious and non infectious complications were recorded till D++30.

Results: All patients except 2 had a stable engraftment till D+30. There were 5 deaths till D+30 including 2 from MDRO sepsis, and 1 each from VOD, engraftment syndrome and mucositis. There were 7 episodes of severe non fatal infections - 6 bacterial sepsis and 1 viral pneumonia. There was not a single episode of fungal pnemonia or other invasive fungal infection. Overall survival at D+30, D+100, and D+365 was 96.8%, 92.5% and 86.1% respectively.

Discussion & Conclusion: HSCTs including those using myeloablative conditioning and allogeneic related and unrelated donors, can be carried out in non Hepa filtered units with similar / comparable outcomes to those having such AHUs. Strict barrier nursing and antifungal prophylaxis can mitigate most infectious complications during the initial neutropenic phase of HSCT. This is specially relevant in resource limited settings

Disclosure of Interest: None Declared

Keywords: Fungal pneumonia, HEPA filter, , infections

POSTER Submission**PEDIATRIC TRANSPLANTATION (POSTER-703)****THE 2ND PEDIATRIC CASE OF MULTIPLE SCLEROSIS-LIKE CENTRAL NERVOUS SYSTEM GVHD WITH LITERATURE REVIEW**

Bo Ram Kim¹, Hee Jo Baek¹, Yun Young Lee², Kyung-Hwa Lee³, Hoon Kook¹

¹Department of Pediatrics, ²Department of Radiology, ³Department of Pathology, Chonnam National University Hwasun Hospital, Chonnam National University Medical School, Gwangju, Korea, South

Aims & Objectives: GVHD involving the central nervous system (CNS) after HSCT can be manifested as cerebrovascular, demyelinating disease or immune-mediated encephalitis. Multiple sclerosis (MS)-like GVHD has rarely been reported in the literature, especially only 1 in children.

Patients / Materials & Methods: We report the extremely rare case of CNS GVHD with MS-like presentation in a child, along with the literature review.

Results: A 14-year-old male was diagnosed with AML and underwent a matched unrelated allogeneic HSCT in 1st remission. Having experienced acute skin GVHD 50 days after SCT, he continued to take low doses of steroid and cyclosporine due to chronic liver and pulmonary GVHD. At 22 months after transplantation, he presented with gait disturbance, with unstable tandem gaits. Brain MRI showed multifocal incomplete ring enhancing lesions in both cerebral periventricular/subcortical white matters, compatible with the finding of tumefactive MS. MR spectroscopy showed no malignant tumoral spectra. A small intramedullary enhancing lesion was observed at thoracic spine. Cerebrospinal fluid IgG index and myelin basic protein level were elevated, suggesting demyelinating disease. Oligoclonal band was not detected. There was no evidence of malignancy or infection, including toxoplasma, tuberculosis, aspergillus and BK/JC virus. Brain biopsy showed myelin loss with axonal preservation and perivascular lymphocytes infiltration, positive for CD3, CD4, CD8 and granzyme B. Bone marrow had complete donor chimerism. We diagnosed the case as chronic CNS GVHD in light of concomitant systemic GVHD. Methylprednisolone pulse therapy (1 g/day for 5 days), followed by oral prednisolone resulted in significant improvement of MRI findings as well as neurologic symptoms 3 months after treatment.

Discussion & Conclusion: Only one pediatric case of MS-like CNS GVHD was reported in 15-year-old boy with AML (Dong, 2016). We report herewith another pathologically proven case who showed response to immunosuppressive treatment. CNS GVHD should be carefully considered among many perplexing causes in patients presenting with neurologic symptoms after HSCT.

Disclosure of Interest: None Declared

Keywords: CNS GVHD, Multiple sclerosis, Pediatrics

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-706)****INFLUENCE OF ABO COMPATIBILITY ON HAPLOIDENTICAL HEMATOPOIETIC STEM CELL TRANSPLANTATION**

Pooja Mehta*¹, Rajesh Sawant¹, Santanu Sen², Deepali Naker¹

¹HISTOCOMPATIBILITY & IMMUNOGENETICS, ²Paediatric hemato-oncology, KOKILABEN DHIRUBHAI AMBANI HOSPITAL AND MEDICAL RESEARCH INSTITUTE, MUMBAI, India

Aims & Objectives: To study the effect of ABO incompatibility on outcome of Haploidentical HSCT

Patients / Materials & Methods: Retrospective analysis of patients who underwent haploidentical HSCT was done. The cohort was classified into 2 arms ABO identical & ABO non-identical haploidentical HSCT. ABO non-identical was categorised as major, minor & bidirectional mismatch. The average follow up period was 6 months post Tx. The following parameters were studied a. Engraftment Kinetics, b. Graft rejection, c. Overall graft survival, d. GVHD, e. Clinical variation - PBSC/BMH as source of stem cells.

Results: Total 39 patients underwent haploidentical HSCT during the study period. Our cohort consisted of 23 ABO- identical & 17 ABO non-identical patients. Out of 17, 6 were major incompatible, 11 were minor incompatible & none were bidirectional. The average days to WBC & platelet engraftment in these groups were as follows: Major- 12 & 18 days, compatible - 9 & 17 days, minor -10 & 17 days respectively. Graft failure was observed in 20% (8/39) patients, of which 4 had undergone ABO identical & 4 had undergone minor ABO non-identical Tx. We observed, major ABO incompatibility had severe risk of GVHD (17%) then compatible (39%) & minor (27%) mismatch. Overall survival rate in 6 month was 70% in both arms.

Discussion & Conclusion: The initial observations in haploidentical HSCT showed considerable risk, developing donor-recipient compatibility is important. Mehta et al [2002] suggested that there is a higher rate of overall survival in minor ABO mismatch which is also seen in our study. The platelet engraftment was delayed in major ABO mismatch Tx in our study which was also reported by Seebach et al [2005]. Haploidentical transplants done in patients with ABO incompatible donors had outcomes comparable to ABO compatible group.

Disclosure of Interest: None Declared

Keywords: ABO COMPATIBILITY, BMT, HAPLOIDENTICAL, HSCT

POSTER Submission**HEMOGLOBINOPATHIES, PRIMARY IMMUNE DEFICIENCY DISEASES AND METABOLIC DISORDERS. (POSTER-708)****OUTCOME OF ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION IN GAUCHER DISEASE**

Fouzia N. Aboobacker¹, Uday P. Kulkarni¹, Anu Korula¹, Anup J. Devasia¹, Eunice Sindhuvi¹, Alok Srivastava¹, Vikram Mathews¹, Biju George¹, Aby Abraham¹

¹Christian Medical College, Vellore, Vellore, India

Aims & Objectives: Allogeneic haematopoietic stem cell transplantation (HSCT) is the treatment of choice for Gaucher disease (GD). We retrospectively analysed the outcome of patients with GD who underwent HSCT in our institution.

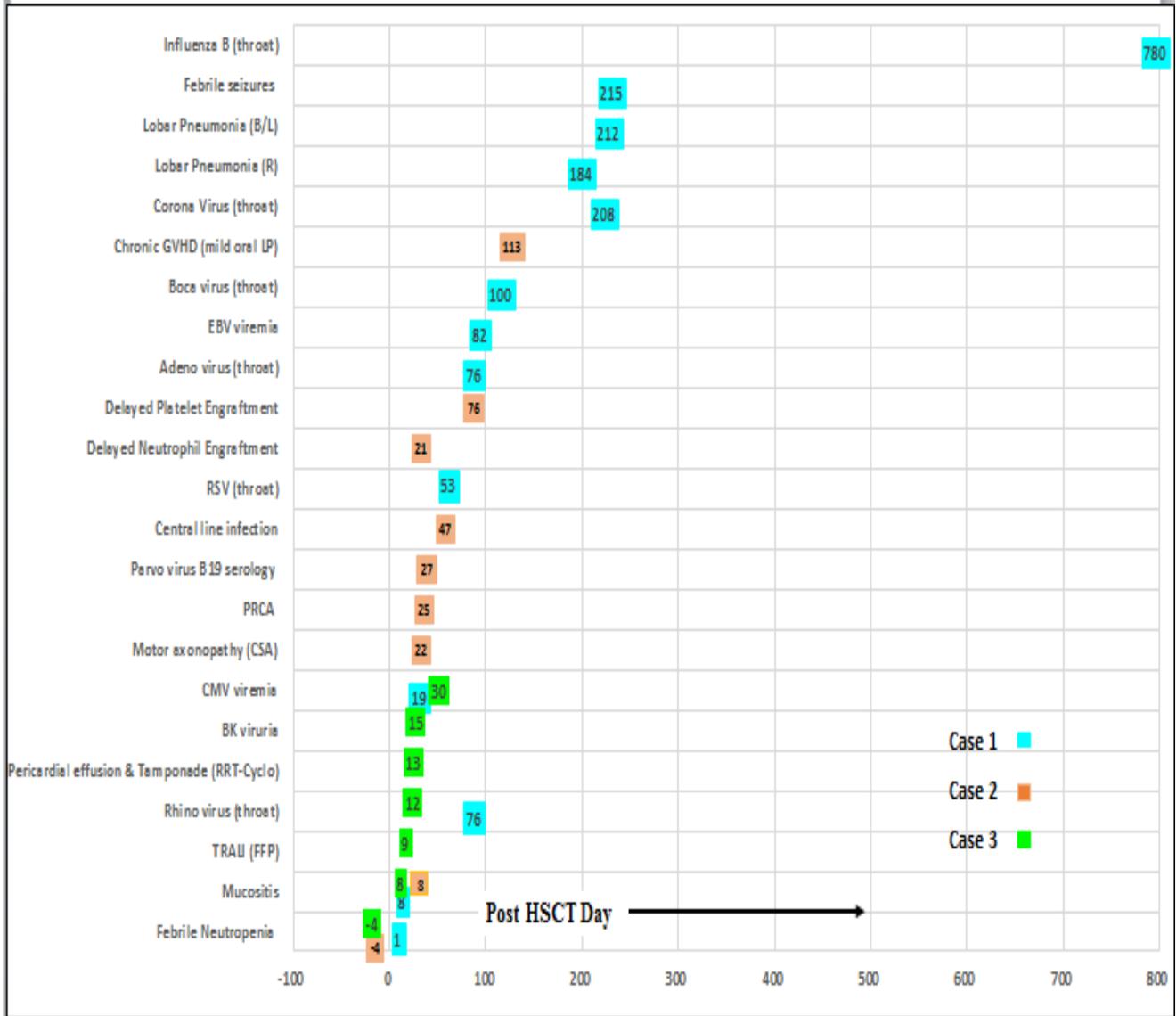
Patients / Materials & Methods: Among the 60 patients diagnosed to have GD over 15 years (2004 to 2019), only 3 children underwent HSCT between January-2017 to November-2017 and were included in this study.

Results: Two boys and one girl received HSCT at 3yrs, 7yrs and 10 yrs of age respectively. Cases1 and 3 received haplo-HSCT while case2 received HLA identical related donor transplant. CD 34 cell dose was 5x10⁶/Kg, 10x10⁶/Kg and 9.5x10⁶/Kg respectively. Neutrophil and platelet engraftment were on days +14 & +15, +21 & +76 and +16 and +21 respectively for the 3 cases, and all had 100% donor chimerism. None developed acute or significant chronic GVHD. All had febrile episodes with negative blood culture and grade 2-3 mucositis during the neutropenic period. Major post-HSCT complications (figure1) included EBV-viremia (responded to Rituximab) and recurrent lobar pneumonia in case 1, delayed engraftment and prolonged PRCA (responded to steroid) in case 2 and pericardial effusion with tamponade in case3. Case1 had 8 hospitalisations for post-HSCT infective episodes while case2 was admitted once with central line-associated infection. On last follow up (37months (range:34-44) post HSCT) all children were stable with, improved growth, and completed immunisation. Case1 who is post-splenectomy is on penicillin prophylaxis. Organomegaly resolved in all except in case2. The overall cost of treatment in these three cases were \$21422.71, \$23038.96 and \$26378.62 respectively, which amounts to 10.7% > 13% of the yearly cost for ERT.

Discussion & Conclusion: In a resource limited setting like India, ERT is a financial burden and not a sustainable option. With improved outcome, haplo-HSCT is now a possible option for almost every patient even if no HLA-identical donor is identified.

Supporting Document: [be7289ac-7cba-49c7-ad0c-fb497087eae7](https://doi.org/10.1182/ashconf-2020-708)

Figure 1 : Day of occurrence of post-HSCT complications



Disclosure of Interest: None Declared

Keywords: Gaucher disease (GD), haplo-identical stem cell transplantation, hematopoietic stem cell transplantation (HSCT)

POSTER Submission**LEUKEMIAS (POSTER-710)****HAPLOIDENTICAL STEM CELL TRANSPLANTATION IN LEUKEMIA'S: EXPERIENCE FROM A CANCER CENTRE IN INDIA.**

Ankit Batra¹, Venkatraman Radhakrishnan¹, Jayachandran P. K.¹, Krishnarathinam Kannan¹, Manikandan Dhanushkodi¹, Nikita MEHRA¹, Parathan Karunakaran¹, Gangothi Selvarajan¹, Sivasree Kesana¹, Tenali G Sagar¹, Trivadi S Ganesan¹

¹MEDICALONCOLOGY, CANCER INSTITUTE, CHENNAI, India

Aims & Objectives: There has been a surge in haplo-identical hematopoietic stem cell transplantation (HSCT) in India recently. However, there is a paucity of data on haplo-identical HSCT from India. The report is an analysis of data of haplo-identical HSCT performed at our center.

Patients / Materials & Methods: Analysis of patients with acute leukemia or chronic myeloid leukemia (CML) who underwent haplo-identical HSCT during 2013-2019 was performed. The graft versus host disease (GVHD) prophylaxis was post-transplant Cyclophosphamide with Mycophenolate mofetil and Cyclosporine. All patients were transfused peripheral blood stem cells from donors. Overall survival was calculated using the Kaplan-Meier method.

Results: Twenty-one patients underwent haplo-identical HSCT. Fourteen patients were males. The median age of patients was 15 years. The primary diagnosis was acute myeloid leukemia in 10, acute lymphoblastic leukemia in 8, and chronic myeloid leukemia in 3 patients. Fludarabine with total body irradiation was the most common conditioning regimen (n= 15, 71%). The median CD34 expressing cells that were transfused was 6 x 10⁶ cells/kg. The median duration for neutrophil and platelet engraftment was 14 days. Cumulative incidence of acute and chronic GVHD was 19%, and 38% respectively. The median follow-up was 26 months and the two-year overall survival was 37.1%. Twelve (57%) patients died during the study period, eight patients died from transplant- related mortality (TRM), and four from relapse of disease. Sepsis was the cause of death in six of the eight TRM. Nine out of 21 patients (42.8%) are leukemia-free on follow-up.

Discussion & Conclusion: Haplo-identical HSCT is a promising modality of treatment in patients with acute leukemia who have no suitable matched donors. Though the TRM remains high, good disease control was achieved in 42.8% of patients. Multi-drug resistant bacterial infection remains a challenge in performing haplo-identical HSCT in developing countries.

Disclosure of Interest: None Declared

Keywords: BMT, Haploidentical, Leukemia, Stem cell transplantation

POSTER Submission**CONDITIONING REGIMENS (POSTER-711)****HAPLOIDENTICAL TRANSPLANTATION USING PTCY AT THE HCMC BLOOD TRANSFUSION HEMATOLOGY HOSPITAL**

Quang T. Nguyen^{*1}, Phu D. V. Huynh², Nam D. Hoang², Man V. Huynh², Dung C. Phu²
¹Stem Cell Transplantation, ²Blood Transfusion Hematology Hospital, Ho Chi Minh, Vietnam

Aims & Objectives: Haploidentical transplant is a potential alternative therapy for patients who urgently need transplantation without HLA-matched donors. This study aimed to depict the initial results of haploidentical peripheral blood stem cell transplantation (haplo-PBSCT) using post-transplant cyclophosphamide (PTCy) at the HCMC Blood Transfusion Hematology (BTH) hospital.

Patients / Materials & Methods: We conducted a retrospective case series study of 21 haplo-PBSCT PTCy patients at the HCMC BTH hospital between January 2014 and May 2020. The refined Disease Risk Index (DRI) was used to stratify outcomes. We evaluated engraftment rate, graft-versus-host disease (GVHD) and complications during haploidentical transplantation. In addition, overall survival (OS) and disease-free survival (DFS) were assessed.

Results: The majority of the patients in our study were diagnosed with acute myeloid leukemia. All patients received reduced intensity conditioning regimens. The engraftment rate was 85.7%. The median time to neutrophil and platelet engraftment was 17 days and 30.5 days, respectively. Interestingly, there was no record of severe acute GVHD (Grade III - IV aGVHD). Only two patients (9.5%) had grade I-II aGVHD. Three subjects (14.2%) had limited chronic GVHD of skin requiring topical steroids. The most common complication was bloodstream infection (61.9%). Multidrug-resistant (MDR) *Pseudomonas aeruginosa* was the cause of death prior to engraftment in 3 patients. CMV reactivation occurred in 71.4%. Four cases (19%) developed hemorrhagic cystitis. The 1-year probabilities of relapse, NRM, OS, and DFS were 18.52%, 20%, 62.2%, and 65.19%, respectively. High/Intermediate DRI may have contributed to the decrease in DFS after haplo-PBSCT ($p = 0.037$).

Discussion & Conclusion: Haploidentical transplant using PTCy is a feasible therapy for patients without suitable donors in Vietnam. More effective strategies should be made available to control MDR infection during transplant.

Disclosure of Interest: None Declared

Keywords: cyclophosphamide, Haploidentical Transplantation, PTCy

POSTER Submission**CONDITIONING REGIMENS (POSTER-713)****EXCELLENT OUTCOMES IN CNS LYMPHOMA POST CONDITIONING REGIMEN WITH AUTOLOGOUS STEM CELL TRANSPLANT**

Shona Philip¹, Adrienne Fulford², Selay Lam³, Chai Phua¹, Joy Mangel¹, Kang Howson-Jan¹, Brandon Dorland¹, Karen Atkinson¹, Anagyros Xenocostas¹, Uday Deotare¹

¹University of Western Ontario and London Health Sciences Center, London, Canada, ²Department of Hematology, University of Western Ontario and London Health Sciences Center, ³University of Western Ontario, London Health Sciences Center, London, Canada

Aims & Objectives: Historically, CNS lymphomas have been associated with a very poor prognosis. We hypothesized that the use of R-BuMeITt (rituximab, busulfan, melphalan, thiotepa) conditioning regimen with ASCT regimen will be effective for both patients with PCNSL and SCNSL as used in previously reported promising data by Oh et al 2016 for patients with SCNSL with higher remission and survival rates.

Patients / Materials & Methods: A retrospective analysis was performed of 6 consecutive patients who had undergone R-BuMeITt conditioning regimen with ASCT for 3 patients with PCNSL and 3 patients with SCNSL from December 2017 to March 2020. The median age of this patient population was 62 years at the time of ASCT. The induction chemotherapy regimen used for patients with SCNSL was R-CHOMP except one patient who received DHAP, and for patients with PCNSL MATRix regimen was used. The median duration of chemotherapy cycles was 4, and all of them had achieved remission prior to transplant based on PET/CT scan/MRI scan. All patients were planned to undergo ASCT using the Conditioning Regimen of Rituximab 375 mg/m² on Day-7, Thiotepa 250 mg/m² on Day-6,-5, Busulfan 3.2 mg/kg on Day-4,-3,-2 and Melphalan 100 mg/m² on Day-1. Supportive care measures were given at treating physician's discretion.

Results: Patients received a median cell dose of 4.4x10⁶ CD34+cells/kg (range: 2.5-5.7), had neutrophil engraftment at 11.5 days (range:9-13), platelet recovery was achieved on days 11,15 and 16 for three patients but was delayed at 27, 46, 89 days for 3 patients. Infectious complications were common with documented bacteremia in 3 out of 6 patients, 2 patients with c. difficile infection and with significant platelet support due to thrombocytopenia. At a median follow up of 24.5 months (range: 6-30 months), 5 out of 6 patients had complete metabolic response on radiological imaging with PET/CT in conjunction with MRI head. One of the patients with SCNSL died after transplant due to CNS relapse 223 days post ASCT giving an overall survival of 66.6%. Amongst the 2 patients with SCNSL that survived there was no relapse after 30 month follow-up. None of the patients with PCNSL died or relapsed during or after transplant therefore having a 100% overall survival. Although this is a small retrospective series, our results are comparable to current literature. Toxicities included nausea/vomiting, diarrhea, mucositis with 5/6 patients requiring TPN. Also busulfan PK levels were not done.

Discussion & Conclusion: R-BuMeITt regimen can be used successfully as conditioning regimen for ASCT for patients with PCNSL and SCNSL, however with increased hematological toxicity, most notably delayed platelet engraftment. The rate of progression free and overall survival is promising with short median follow up of 24 months.

Disclosure of Interest: None Declared

Keywords: Autologous haematopoietic stem cell transplantation, autologous stem cell transplantation, cns lymphoma, Conditioning regimen

POSTER Submission**INFECTIONS (POSTER-714)****EFFICACY OF ORAL RIBAVIRIN IN RSV INFECTION IN HEMATOPOIETIC STEM CELL TRANSPLANT PATIENTS.**

Shona Philip¹, Adrienne Fulford², Krista Biederman¹, Brandon Dorland¹, Anagyros Xenocostas¹, Uday Deotare¹

¹University of Western Ontario and London Health Sciences Center, London, Canada, ²Department of Hematology, University of Western Ontario and London Health Sciences Center, London, Canada

Aims & Objectives: Respiratory syncytial virus (RSV) is one of the most commonly encountered respiratory viruses among patients who have been diagnosed with a hematological malignancy or a hematopoietic stem cell transplantation (HSCT) leading to increased morbidity and mortality. Little is known about the best management strategy in this immunocompromised group and strategies to manage RSV is challenging. There is very little data on oral ribavirin treatment but the retrospective data so far has been promising.

Patients / Materials & Methods: Eighteen HSCT patients with RSV were analyzed retrospectively. In 2012, there were 5 patients treated with supportive care alone. After 2012, there were 13 patients treated with oral ribavirin. RSV diagnosis was established by polymerase chain reaction assay via nasopharyngeal swabs. Oral ribavirin was initiated at 15 mg/kg/day in three divided doses for 7-10 days with possibility of extension in persistently symptomatic patients. An immunodeficiency scoring index (ISI) was used to classify patients as low, moderate, or high risk for progression to lower respiratory infection (LRI) or death.

Results: An outbreak of RSV occurred in our oncology unit in early 2012 where 5 HSCT patients ((3 autologous HSCT and 2 allogeneic HSCT patients) contracted RSV infection as well. No definitive treatment options were available during this period and patients were managed with supportive care alone. 4/5 HSCT patients died of RSV infection leading into an 80% mortality rate. This experience led to the development of a protocol for the HSCT patients focusing on prevention of nosocomial transmission, early PCR testing and treatment with oral ribavirin for those confirmed with RSV infection and signs of pneumonia or LRI. Since 2012, 13 HSCT patients (4 autologous HSCT patients and 9 allogeneic HSCT patients) were diagnosed with RSV infection and promptly treated with oral ribavirin. The median treatment duration was 10 days (range: 7-12). All patients treated with oral ribavirin survived the infection. Oral ribavirin was well tolerated with minor adverse effects.

Discussion & Conclusion: We found that the HSCT patients can be successfully managed by use of prevention strategies and oral ribavirin. Although, our experience reflects a small sample size, the protocol was associated with decreased mortality compared to patients who received supportive care alone. Our experience supports the use of oral ribavirin and may be an alternative to aerosolized ribavirin. Ongoing review of our experience is necessary including large prospective studies to determine the optimal therapy in this patient group.

Disclosure of Interest: None Declared

Keywords: hematopoietic stem cell transplantation (HSCT), Respiratory Syncytial Virus , ribavirin, viral infection

POSTER Submission**LEUKEMIAS (POSTER-717)****ROLE OF STEM CELL TRANSPLANTATION IN ADULT PH+ ALL DURING TKI ERA: SYSTEMATIC REVIEW AND META-ANALYSIS**

Ben Ponvilawan¹, Smith Kungwankiatichai², Nipith Charoenngam³, Weerapat Owattanapanich²

¹Department of Pharmacology, ²Department of Medicine, Division of Hematology, ³Department of Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand, Bangkok, Thailand

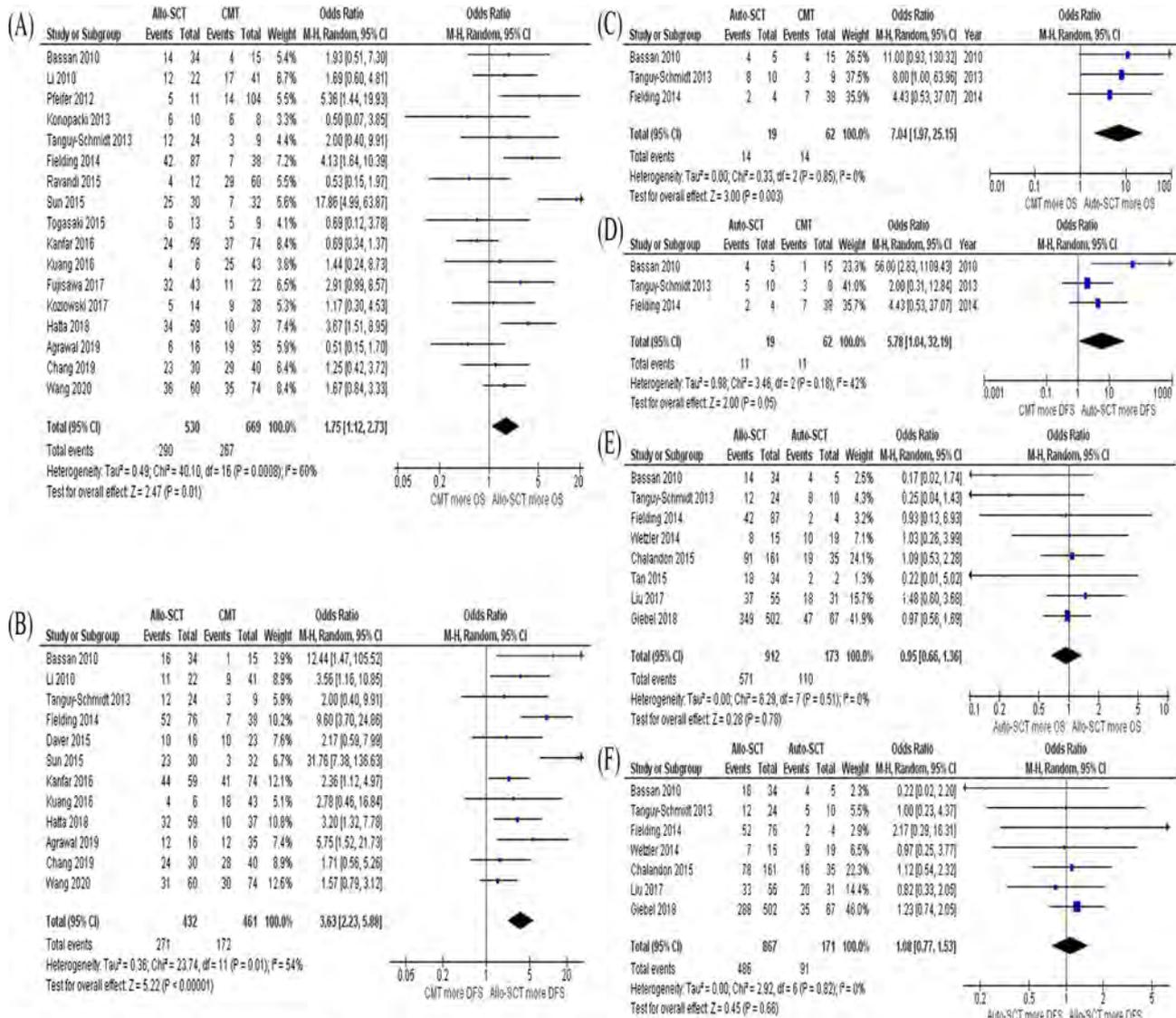
Aims & Objectives: Hematopoietic stem cell transplantation (HSCT) is the current mainstay of Philadelphia chromosome- positive acute lymphoblastic leukemia (Ph+ ALL). However, tyrosine kinase inhibitors (TKI) also play a significant role in the treatment of this group of patients. We conducted this systematic review and meta-analysis to compare the efficacy of allogenic HSCT, autologous HSCT, and chemotherapy alone, combining with TKIs in adult Ph+ ALL patients.

Patients / Materials & Methods: The systematic review identified studies from EMBASE and MEDLINE databases from inception to April 2020 using search terms related to "ALL" and "HSCT". Eligible studies could be randomized controlled trials or cohort studies with adult Ph+ ALL patients who received a TKI and either of allogenic HSCT, autologous HSCT, or chemotherapy alone, and report the number of patients in each group for each of our primary outcome of interest: overall survival (OS) or disease-free survival (DFS). Point estimates and associated 95% confidence interval (CI) from each study were combined using the Hantel-Maenszel method.

Results: After two rounds of review, 23 cohort studies were eligible for the meta-analysis. Adult Ph+ ALL patients who received HSCT had better survival outcomes than those who did not received any HSCT (pooled odds ratio (OR) of OS 1.75 (95%CI, 1.12-2.73; I²=60%) and DFS 3.63 (95%CI, 2.23-5.88; I²=54%) for allogenic HSCT, and pooled OR of OS 7.04 (95%CI, 1.97-25.15; I²=0%) and DFS 5.78 (95%CI, 1.04-32.19; I²=42%) for autologous HSCT). However, allogenic HSCT recipients had comparable OS and DFS but lower relapse rate to autologous HSCT recipients. Funnel plot generally demonstrated no presence of publication bias.

Discussion & Conclusion: This systematic review and meta-analysis exhibited superior results of HSCT in Ph+ ALL patients compared to chemotherapy alone. Moreover, autologous HSCT could be implemented with comparable survival outcomes to allogenic HSCT in patients who had no available donor. However, more randomized controlled studies are still required to confirm the comparable efficacy of autologous HSCT and allogenic HSCT.

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Abbreviations: Allo-SCT Allogeneic stem cell transplantation, Auto-SCT Autologous stem cell transplantation, CMT Chemotherapy only, DFS Disease-free survival, OS Overall survival

Disclosure of Interest: None Declared

Keywords: Acute Lymphoblastic Leukemia (ALL), hematopoietic stem cell transplantation (HSCT), meta-analysis, Philadelphia-chromosome positive ALL, Stem cell transplantation

POSTER Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (POSTER-719)****ESTABLISHING EFFECTIVE CLOSED CIRCUIT STEM CELL CRYOPRESERVATION IN A NEW STEM CELL TRANSPLANT UNIT**

Rajesh Kumar¹, Suvir Singh², Gurkiran Kaur¹, Priya Prasad¹, Sonia Gupta¹, Bableen Kaur¹, Vikram Narang³, Amarjit Kaur¹, Rajesh Bijalwan⁴

¹Transfusion Medicine, ²Clinical Hematology and Stem Cell Transplantation, ³Pathology, ⁴Transfusion Medicine (Behalf of Span Healthcare Pvt Ltd), Dayanand Medical College, Ludhiana, India

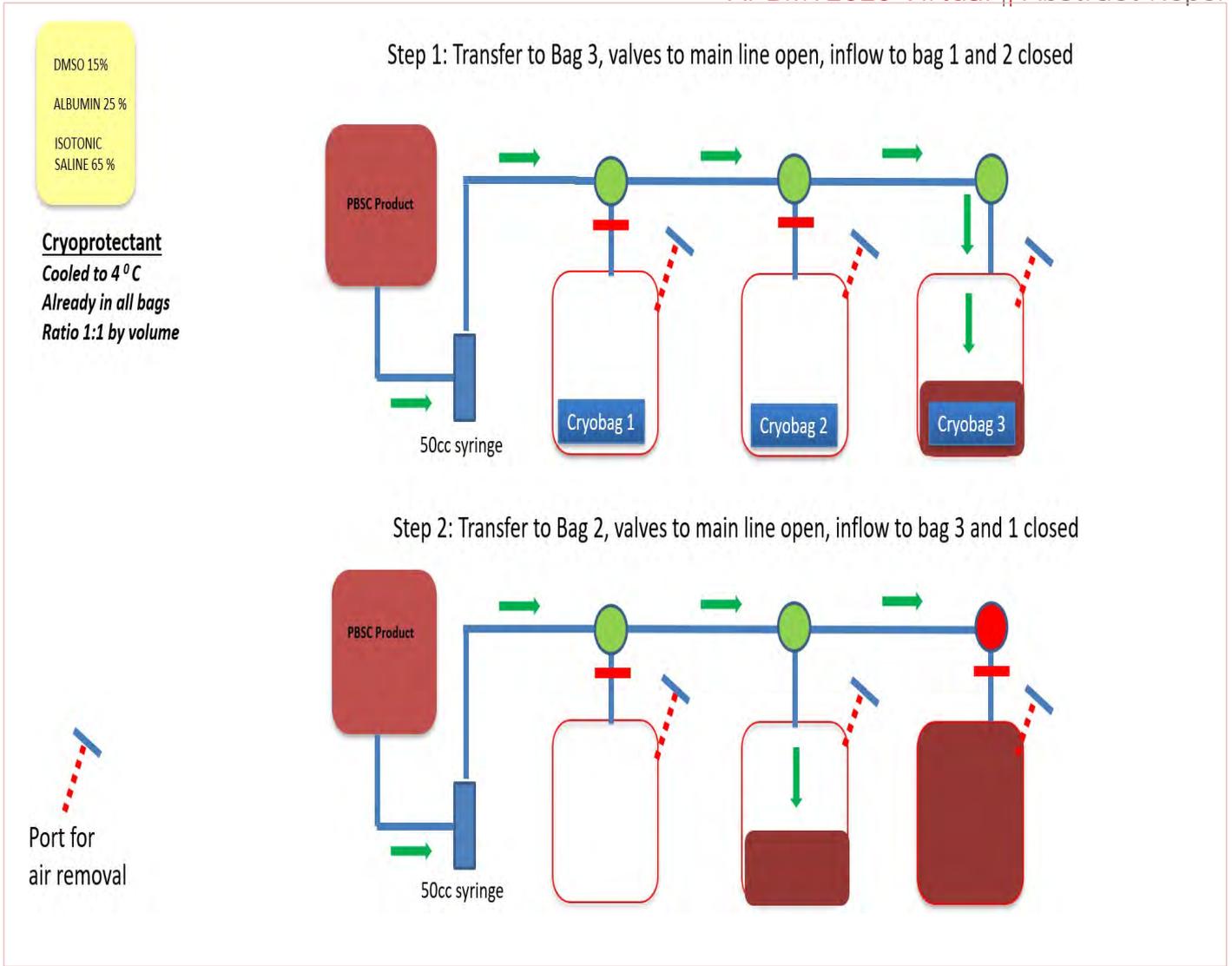
Aims & Objectives: To establish a contemporary and safe stem cell cryopreservation service in a new stem cell transplantation center

Patients / Materials & Methods: All patients requiring stem cell cryopreservation were included in the analysis over a 12- month period. After PBSC apheresis, cryopreservation was performed as soon as the CD34 enumeration report was available. A completely closed circuit under a laminar hood was used for all product manipulation. (Fig 1). A mix of DMSO, Albumin and saline was used to make cryoprotectant in a 1:1 ratio to the PBSC product.

Results: After evaluation for completeness of data, a total of eight patients were included in the analysis, comprising 5 males and 3 females with a median age of 30.5 years (Range, 7 to 60). Six PBSC products were collected in our institution and two were from unrelated donors. The median PBSC product CD34 concentration after apheresis was 548 cells/ul (range, 54 to 1735) with a median pre-cryopreservation CD34 viability of 90.2 % (Range, 71 to 98.4). Two patients required a two day harvest. The median duration between end of apheresis and PBSC cryopreservation was 14 hours (range, 1.5 to 72). Out of eight patients, transplant was deferred for two patients due to progressive disease and withdrawal of consent, respectively. Thawing was done in a 37 deg C water bath after a median interval of 7.5 days (range, 6 to 15) from cryopreservation. Engraftment was observed in 100% recipients with a median time to neutrophil engraftment of 11 days (range, 8 to 13) and platelet engraftment 13 days (range, 11 to 15). Two patients had DMSO related hypertension controlled with intravenous Labetalol, and there were no instances of hemolysis or transfusion transmitted infections. The median cost of consumables (Cryo bags, Connectors, DMSO, albumin and disposables) per procedure was approximately Rs 58000/- (US\$ 780)

Discussion & Conclusion: The closed series system described above is a safe and effective method for stem cell cryopreservation and is associated with dependable post thaw viability and engraftment kinetics. Cost of equipment and materials was a small proportion of total costs. This is an easily adaptable system for cryopreservation at -80 degrees C in newly developing centers.

Supporting Document: 7db9c86f-7aa4-45c9-8074-5dae132e37bf



Disclosure of Interest: None Declared

Keywords: conditioning regime, cryopreservation, Stem cell transplantation

ORAL Submission**INFECTIONS (ORAL-720)****CASE SERIES OF FATAL GEOTRICHUM CLAVATUM BLOOD STREAM INFECTION IN STEM CELL TRANSPLANT RECIPIENTS**

Vasu B. Goli¹, Lingaraj Nayak¹, Anant Gokarn¹, Sachin Punatar¹, Akanksha Chichra¹, Avinash Bonda¹, Sumeet Mirgh¹, Vivek Bhat¹, Navin Khattry¹

¹Tata Memorial Centre, ACTREC, Mumbai, India

Aims & Objectives: To assess the clinical course and outcomes of invasive *Geotrichum clavatum* infections in stem cell transplant recipients.

Patients / Materials & Methods: This is a retrospective study of patients diagnosed with proven *Geotrichum clavatum* blood stream infections in Bone marrow transplant unit, Tata Memorial Centre, ACTREC, Mumbai between October 2016 to August 2020.

Results: Here we report the clinical history of 3 patients (1 female and 2 male) who developed *Geotrichum clavatum* infection during this period, out of the 99 patients who underwent allogeneic stem cell transplant in the same period. All 3 patients were profoundly neutropenic and had a central venous catheter during the infection. Two out of three patients were on voriconazole anti-fungal prophylaxis (Table 1 for clinical details). The diagnosis was based on positive blood culture in all patients and confirmed by 18S RNA sequencing. All patients died despite treatment with liposomal amphotericin-B and voriconazole.

Discussion & Conclusion: Invasive fungal infections are a major cause of morbidity and mortality in patients undergoing hematopoietic stem cell transplantation with most common being *Candida* and *Aspergillus*. *Geotrichum* are ubiquitous yeast-like fungi which are part of flora of human digestive tract. Voriconazole monotherapy is not effective treatment strategy as 2 out of 3 patients developed fungemia on voriconazole prophylaxis. Although very rare this is a highly fatal infection, and in our case series the case fatality rate was 100%. All our 3 patients got this highly fatal fungal infection when they were heavily immunosuppressed which probably lead to a fatality rate of 100%. High index of suspicion with prompt species identification by 18S RNA sequencing and susceptibility testing in patients with sepsis, along with early initiation of treatment may help in improving outcomes of this otherwise fatal infection.

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Variable	Case 1	Case 2	Case 3
Age	36	56	40
Sex	Female	Male	Male
Diagnosis	CML	Relapsed PTCL	AML
Type of Transplant	Haplo-identical	MSD	Haplo-identical
Conditioning regimen	Fludarabine Melphalan	Fludarabine Treosulfan TBI	Fludarabine Treosulfan TBI
Antifungal prophylaxis	Nil	Voriconazole	Voriconazole
Site of infection	Blood-stream, Stool	Blood stream, Lung	Blood stream
Immunosuppression during infection	Tacrolimus MMF	Cyclosporine MMF, Steroids Etanercept	Tacrolimus MMF
Day post-transplant when G.clavatum infection occurred	Day+14	Day+84	Day+12
Duration of neutropenia at the time of 1st positive culture	11 days	14 days	11 days
Positive microbiological Finding	Peripheral-blood and Central venous catheter	Peripheral-blood and Central venous catheter	Peripheral-blood and Central venous catheter
Anti-bacterial drugs at the time of Fungal growth	Ceftriaxone/ Disodiumedetate/ Sulbactam Colistin Imipinem Tigecycline	Ceftriaxone/ Disodiumedetate/ Sulbactam Colistin Fosfomycin Tigecycline	Ceftriaxone/ Disodiumedetate/ Sulbactam Colistin Tigecycline
CNS Dissemination	Yes	No	Yes
Antifungal treatment	Liposomal amphotericin-B Voriconazole	Liposomal amphotericin-B Voriconazole	Liposomal amphotericin-B Voriconazole
Outcome	Died	Died	Died
Clearance of fungemia prior to death	No	No	No
Time from fungemia to death	42 days	3 days	18 days

Disclosure of Interest: None Declared

Keywords: Geotrichum clavatum, Sepsis, Stem cell transplantation

ORAL Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (ORAL-721)****PREDICTORS OF CD34+ YIELD IN PBSCCOLLECTION IN AUTOLOGOUS BMT PATIENTS**Dibyajyoti Sahoo^{*1}¹TRANSFUSION MEDICINE, JIPMER HOSPITAL, PONDYCHERRY, India

Aims & Objectives: This study aims to find various factors that may affect the yield of (Peripheral Blood Hematopoietic Progenitor Stem Cell) PBSC mobilized from autologous bone marrow transplant patients in a tertiary care hospital of South India.

Patients / Materials & Methods: A total of 50 (25 Multiple myeloma, 8 Hodgkins lymphoma, 5 DLBCL, 1 ALCL, 12 NHL) patients who underwent PBSC harvesting for autologous stem cell transplantation in JIPMER hospital within last 2 years were included in this retrospective analysis. For PBSC mobilization, G-CSF was administered subcutaneously at a dose of 10 µg/kg of donor's body weight daily for 5 days. Prelixafor was administered when mobilization was inadequate after 4 days of GCSF. Patient's demographic factors, disease status, bone marrow, pre procedure CD34 count were evaluated. Total CD34+ yield of >5 X 10⁶/Kg were consider to be adequate. All data were analyzed statistically.

Results: Mobilization was adequate (CD34+ yield of >5 X 10⁶/Kg) in 72% [n = 36] patients. GCSF was adequate alone for mobilization in 9 patients (18%). Rest all required Prelixafor. Only 2 patients had failure (CD34+ yield of <2 X 10⁶/Kg). Twelve patients had CD34+ yield of <5 X 10⁶/Kg but >2 X 10⁶/Kg. pre-apheresis PBCD34+cell count, bone marrow cellularity, pre procedure platelet count were found to be significant factors responsible for low yield. Technical interruption during procedure was seen in 3 cases in which lesser number of CD34 obtained.

Discussion & Conclusion: Our data suggest that pre-apheresis CD34+cell count, bone marrow cellularity, pre procedure platelet count, technical interruption during procedure are the factors that influence mobilization of PBSC yield in autologous transplantation.

Disclosure of Interest: None Declared

Keywords: CD34+ hematopoietic stem cell, Peripheral blood hematopoietic stem cell collection, poor mobilizer

POSTER Submission**LYMPHOMA/MYELOMA (POSTER-722)****EARLY VS DELAYED AUTOLOGOUS STEM CELL TRANSPLANT IN MULTIPLE MYELOMA: A SINGLE CENTER EXPERIENCE**

Ketan Modak¹, Poojitha Byreddy², Subjot Bnamath¹, Rakhi .¹, Ashwin Philips³, M Joseph John¹, Sangeetha Samuel⁴

¹Department of Clinical Haematology, Haemato-oncology and bone marrow (stem cell) transplantation, ²Clinical Haematology, Haematooncology and bone marrow (stem cell) transplantation, ³Department of medical Oncology, Christian Medical College, ⁴ clinical haematology, haematooncology and bone marrow (stem cell) transplantation, cmc, Ludhiana, India

Aims & Objectives: There are only few publications from India on the impact of timing of transplant on overall survival (OS) and progression free survival (PFS) among transplant eligible patients with multiple myeloma. This is a single center analysis of early (< 1 year to transplant from diagnosis) versus delayed (> 1year) to autologous stem cell transplant (ASCT) in Multiple Myeloma (MM)

Patients / Materials & Methods: This is a retrospective analysis of 25 patients with multiple myeloma (MM) who underwent ASCT at our centre from June 2008 till November 2019. All patients received Melphalan conditioning between 140 to 200 mg / m². GCSF was started between day +3 to + 5 and continued till neutrophil engraftment. OS and PFS among both early ASCT (< 12 months from diagnosis) (n =17) and delayed ASCT (> 12 months from diagnosis) (n=8) was compared

Results: Out of 25 patients, 16 were males and 9 were females with median age at ASCT being 55 years. Most of the patients were in partial remission (PR) pre-ASCT. Mobilisation was done using G-CSF except one who received cyclophosphamide with GCSF. Plerixafor was required in 12 patients. Median CD34 cell dose was 4.4 x 10⁶ cells/kg (r, 1.54 - 22.8 x 10⁶ cells/Kg). Median stay in BMT unit was 28 days (r, 15 - 37 days). The overall median OS and PFS was 58 and 35 months respectively. The OS and PFS of the early and late ASCT groups were 52, 42.4 months and 27, 22 months respectively. There was statistically no significant difference in PFS or OS between early ASCT and delayed ASCT.

Discussion & Conclusion: Although there was trending of better OS and PFS in the early ASCT group, both were statistically comparable. The lesser number of patients in both the groups and retrospective nature of the study are the major limitations

Disclosure of Interest: None Declared

Keywords: autologous stem cell transplantation, MELPHALAN, Multiple Myeloma

POSTER Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (POSTER-723)****CORRELATION OF CD34 AND CD3 PERCENTAGE IN STEM CELL PRODUCT**

Markas Masih¹, Ruth S. Toppo¹, Ritesh Goswami¹, Ashish Kumar¹, Vandana Bhatti², Himani Khatter³, Ketan Modak¹, M J. John¹
¹Department of Clinical Haematology and BMT, ²Department of Pathology, ³Department of Neurology, Christian Medical College & Hospital, Ludhiana, India

Aims & Objectives: To find out any correlation between CD3 and CD34 percentage.

Patients / Materials & Methods: It is known that high CD34 count leads to increased chance of GVHD. CD3 cells are causative agent for GVHD. Hence, we did retrospective data review of all the stem cell product and checked for correlation between CD3 and CD34 percentage.

Results: Total 39 stem cell product were analysed from 30 patients (9 patients underwent stem cell apheresis twice). Median CD3 percentage was 59.5% (r, 29.4% - 88.5%) and median CD34 percentage was 0.45% (r, 0.09% - 1.56%). Kolmogorov Smirnov formula was applied to check normality of the data. Correlation coefficient was obtained using Spearman Correlation coefficient where r was 0.024 and p value was 0.885.

Discussion & Conclusion: No correlation was found between CD3 and CD34 percentage. "No conflict of interest to disclose"

Supporting Document: 39d5726c-51e0-4a50-9de1-4df87165e8d0

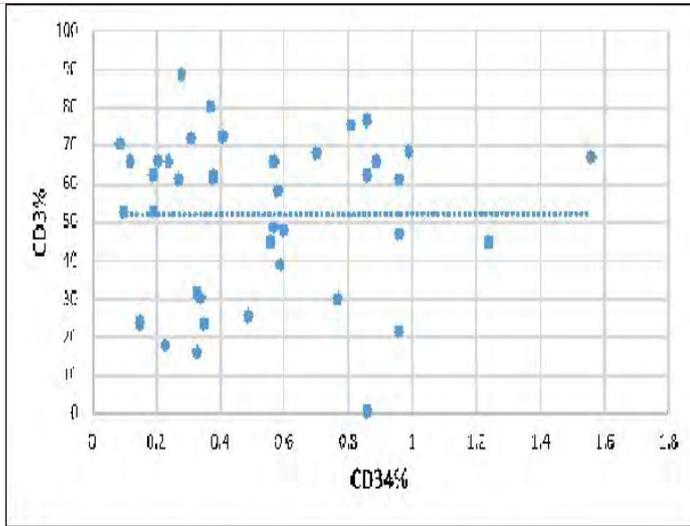


Figure 1. Correlation between CD34% and CD3% (n=39)

Disclosure of Interest: None Declared

Keywords: CD3, CD34+ hematopoietic stem cell, Stem cell transplantation

ORAL Submission**GVHD (ORAL-724)****GASTROINTESTINAL GVHD FOLLOWING HEMATOPOIETIC STEM CELL TRANSPLANTATION: SPECTRUM AND OUTCOME**

Himanshu Walia¹, Saurabh Donald¹, Ketan Modak², Nalini Calton¹, Roma Isaacs¹, M J. John², Preethi Paul¹

¹Department of Pathology, ²Department of Clinical Hemat and hemat oncology, CMC Ludhiana, Ludhiana, India

Aims & Objectives: 1. To study the clinicopathological spectrum of gastrointestinal graft vs host disease (GI-GVHD) on rectosigmoid biopsies following Hematopoietic Stem Cell Transplant (HSCT).
2. To correlate histopathological grade of GI-GVHD with outcomes.

Patients / Materials & Methods: Retrospectively, the data was reviewed at a tertiary care centre over a period of 12 years 9 months (January 2008 - September 2020).

Inclusion criteria:

1. All rectosigmoid biopsies diagnosed as GI-GVHD following HSCT.

Exclusion criteria:

1. Cases where histopathology slides clinical data were not available
2. Cases with drug-induced diarrhoea

Grading for GI-GVHD was done according to the modified Lerner grading scheme (grades 1 to 4). Clinical details and follow up were obtained from patient record files. Statistical analysis was done using Chi-square test and Kaplan-Meier curves for overall survival on SPSS, version 21.0. Armonk, NY: IBM corp.

Results: During the study period, total 186 HSCTs were done, out of which 25 patients were diagnosed as GI-GVHD on 39 rectosigmoid biopsies. Underlying disease was β Thalassemia major (10/25), myelodysplastic syndrome (3/25), aplastic anemia (3/25), B-acute lymphoblastic leukemia (2/25), multiple myeloma (2/25), acute myeloid leukemia (2/25) and one case each of chronic myelogenous leukemia, anemia of unclassified lineage and Fanconi anemia. Patients' age range was 4-62 years (median 18 years). Twenty two patients (88%) presented with loose stools at <100 days post HSCT, while three (12%) presented >100 days post HSCT. Histopathological grade of GI-GVHD was grade 1 in 3 cases (12%), grade 2 in 8 cases (32%) and grade 3 in 14 cases (56%). Grade 3 cases were associated with higher mortality (57.14%) as compared to grade 2 and grade 1 cases combined (27.27%).

Discussion & Conclusion: 1) Integration of histopathological grade for GI-GVHD with clinical information is essential for accurate diagnosis of GVHD.

2) Higher histopathological grade of GI-GVHD correlates with poor survival.

Disclosure of Interest: None Declared

Keywords: GI-GVHD, HSCT, Modified Lerner grading scheme

ORAL Submission**PEDIATRIC TRANSPLANTATION (ORAL-725)****HAPLOIDENTICAL HSCT IN PAEDIATRIC PATIENT POPULATION WITH POSITIVE LYSATE XM- A CASE SERIES**

Deepali Naker¹, Rajesh Sawant¹, Santanu Sen², Pooja Mehta¹

¹Histocompatibility & Immunogenetics Dept., ²paediatric haemato-oncology, KOKILABEN DHIRUBHAI AMBANI HOSPITAL AND MEDICAL RESEARCH INSTITUTE, MUMBAI, India

Aims & Objectives: The outcomes of allogenic HSCT with Haplomatch related donors have recently improved due to improved desensitization protocol like Therapeutic plasma exchange (TPE), Plasmapheresis and adsorption technique to reduce preformed anti HLA antibodies in recipient. So the aim of this study was to look at the outcome of Haploidentical HSCT with positive lysate cross match after desensitization protocol in a paediatric patient population.

Patients / Materials & Methods: A retrospective analysis of haploidentical HSCT (n=35) was done. High resolution HLA A, B, C, DRB1, DQB1 typing, HLA Lysate XM and HLA antibody screening was performed in the pre transplant period. Out of 35 patients, 6 patients showed presence of anti HLA antibodies and were further treated with desensitization. Desensitization protocol included TPE and Bortezomib which was done in 3/6 patients in pre and early post transplant period. The average follow up period was twelve months post transplant. The parameters studied were engraftment, transfusion support, GVHD, graft failure and overall survival.

Results: The median age group of patients with positive Lysate XM (n=6) was 3 years (3-17 years). Out of 6 positive Lysate XM patients, 3 were ABO compatible, 2 were major ABO incompatible and 1 was minor ABO incompatible. 83% (5/6) of the total transplant were parents to offspring. The source of stem cells was PBSC. Out of the 6, 3 patients showed class I positivity (MFI=1000-4050) and 3 had class II positivity (MFI=1000-1428). As a part of desensitisation protocol, TPE (2-5 sessions) along with Bortezomib was initiated, which showed 50% reduction in MFI values. Engraftment of WBCs and Platelets occurred at 17 days and 23 days respectively. Transfusion support required for these patients were 2-5 PRBC and 2-8 SDP. The median CD34 dose was 8.6. 1 patient showed grade III GVHD but with disease free survival and there was 1 death due to sepsis. Primary Graft Failure was observed in 1 patient. The overall survival rate in this case series (n=6) was 83% (5/6).

Discussion & Conclusion: A Lysate XM was found to be useful screening tool for pre transplant monitoring for Haploidentical HSCT. Patients with positive lysate XM could be managed efficiently with desensitization protocol including TPE. This strategy was equally effective in ABO compatible as well as ABO incompatible group.

Disclosure of Interest: None Declared

Keywords: DESENSITIZATION, DSA, Haploidentical, HSCT, Paediatric patient

POSTER Submission**GVHD (POSTER-726)****VEDOLIZUMAB IN STEROID REFRACTORY ACUTE GVHD**

Ketan Modak¹, Abhishek Kumar¹, Poojitha Byreddy¹, Sohan Singh¹, Ekta Sahotra¹, Sangeetha Samuel¹, Ashwin Philips², M Joseph John¹

¹Department of Clinical Haematology, Haemato-oncology and bone marrow (stem cell) transplantation, ²Department of Medical Oncology, Christian Medical College, Ludhiana, India

Aims & Objectives: Haploidentical stem cell transplant (SCT) in aplastic anemia has 3-year overall survival between 60%>80%. Peripheral blood is associated with high rates of acute GVHD but faster engraftment and fewer chances of rejection. Despite the introduction of PTCY, the risk of developing severe acute GVHD persists. We present a case where Vedolizumab was used for post haploidentical stem cell transplant steroid refractory (SR) acute gut GVHD.

Patients / Materials & Methods: A 13-year-old male child diagnosed to have severe aplastic anemia with negative stress cytogenetics and negative for PNH clone. He underwent a major mismatch haploidentical stem cell transplant with father as donor. Fludarabine, Cyclophosphamide, Melphalan, ATG conditioning was given followed by the donor stem cell infusion of 5.1 x 10⁶ cells /Kg. He was given PTCy with MMF and Tacrolimus as GVHD prophylaxis. Neutrophil and platelet engraftment occurred on Day+17.

Results: Day+18 post SCT: developed nausea, vomiting, and watery diarrhea (1450ml). The rectal biopsy confirmed grade III-IV gut GVHD. Methylprednisolone, Budesonide started.

D+21: In view of progressive GVHD, Ruxolitinib 10mg bid was added

D+31: Stage III gut GVHD. Tocilizumab 800mg IV given and repeated on D+53 D+38: Stage III-IV gut GVHD persistent. MMF stopped in view of cytopenias.

D+46: Stage II-III gut GVHD. Methylprednisolone, Tacrolimus and Ruxolitinib continued.

D+56: Persistent stage III-IV gut GVHD, Methylprednisolone was tapered because of steroid refractory nature of GVHD and new onset fever.

D+64: Stage III-IV gut GVHD injection Vedolizumab 300mg given.

D+79: Stage 0-I gut GVHD. 2nd dose of Vedolizumab given. Tacrolimus and low dose Ruxolitinib continued.

Discussion & Conclusion: Steroid refractory acute GVHD is very difficult to treat with mortality rates as high as 80%. There is no definitive 2nd line agent for acute GVHD. Vedolizumab is a viable therapeutic option in isolated SR acute gut GVHD. The risk of infections associated with it should be taken into account

Disclosure of Interest: None Declared

Keywords: Aplastic Anemia, Steroid refractory aGVHD, vedolizumab

POSTER Submission**LEUKEMIAS (POSTER-728)****OUTCOME OF ALLOGENEIC STEM CELL TRANSPLANT IN CML BLAST CRISIS**

Arnab Bhattacharjee¹, Smita Kayal¹, Prasanth Ganesan¹, Biswajit Dubashi¹, Yadav NISHA¹

¹Medical Oncology, JIPMER, Puducherry, India

Aims & Objectives: CML Blast crisis (BC) either develops as denovo or transforms from previous CML-CP (chronic phase). Currently allogeneic stem cell transplant (ASCT) is the treatment of choice in CML BC after achieving remission with 2nd generation of tyrosine kinase inhibitors with or without chemotherapy. We hereby present the outcome of ASCT in patients with CML-BC from our center.

Patients / Materials & Methods: Data was collected retrospectively in a predesigned proforma from the medical records of patients who underwent ASCT for CML BC (either denovo or transformed) in the department of Medical Oncology, JIPMER from January 2018 to July 2019. Patients were followed up till August 31st, 2020.

Results: We had six patients with CML-BC, median age 36 years (range, 9- 52). Four patients were male, 3 patients had denovo CML-BC & four patients were myeloid BC. Five patients were in CCyR (Cytogenetic complete response) & 1 patient was in MMR (Major molecular remission) before transplant. All patients received myeloablative conditioning with Fludarabine-Busulfan. Mean stem cell dose was $(7.87 \pm 0.83) \times 10^6/\text{kg}$. Median engraftment period was 14.5(10- 20) days for neutrophil & 16.5(10-22) days for platelet. All patients had febrile neutropenia pre engraftment, one patient had CMV reactivation on day 62. Pre transplant donor characteristics and post-transplant course for all patients are described in table 1. At last follow up, two patients had died (both haplo transplants), one patient is alive with disease and 3 patients are alive in CR. Median follow up duration was 16 months (12- 19.8). Median DFS was 16 months, median OS was not reached and 1 year DFS & OS both were 66.7%.

Discussion & Conclusion: For CML-BC, an aggressive malignancy, we have observed a relatively good short term outcome post ASCT in patients with sibling donors. However, outcome with haplo transplant were poor and may need a longer learning curve

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Table No. 1: Pre transplant features and post-transplant course for all patients (n= 6)

	Month/ year of ASCT	Age/ gender	Donor (type/ Gender)	GVHD Prophylaxis	Graft failure	VOD	RRT	Acute GVHD	Relapse	Post- transplant TKI (day of start/drug)	Survival status at LFU
Patient1	Jan,2018	9/Male	Haplo, Male	PTCY+Tac+ MMF	Yes (d84)*	No	CNS (PRES)	Yes*	No	No	Died (d174)
Patient2	Jan,2019	49/Male	MSD, Male	CSA+MTX	No	No	Renal (grade 2)	Yes (Grade 2-skin & gut)	No	d47/Dasatinib	Alive (d605)
Patient3	Feb,2019	40/ Female	MSD, Male	CSA+MTX	No	No	No	No	Yes (CNS- d494)	d49/Dasatinib	Alive (d557)
Patient4	May,2019	52/Male	MSD, Male	CSA+MTX	No	No	Renal (grade 2)	No	No	d51/Dasatinib	Alive (d479)
Patient5	June,2019	26/ Female	MMSD, Male	PTCY+Tac+ MMF	No	Yes (mild)	No	No	No	d60/Dasatinib	Alive (d446)
Patient6	July,2019	31/Male	Haplo, Male	PTCY+Tac+ MMF	Yes# (d24)	No	No	No	Yes# (d45)	No	Died(d65)

*d84 had poor graft function which was followed by stem cell (CD34) boost on d102 – this was followed by acute grade 4 GVHD and death on d72 of stem cell boost

#patient had primary graft failure followed by molecular relapse (d45) & hematological relapse (d52); however, second ASCT could not be done due to logistic issues

Abbreviations: VOD=Venoocclusive disease, GVHD= Graft versus host disease, MSD=Matched Sibling Donor, MMSD=Mismatched Sibling Donor, RRT=Regimen related Toxicity, PTCY=Posttransplant Cyclophosphamide, Tac=Tacrolimus, MMF=Mycophenolate Mofetil, CSA=Cyclosporine, MTX=Methotrexate, PRES=Posterior Reversible Encephalopathy Syndrome

Disclosure of Interest: None Declared

Keywords: CML Blast Crisis, Outcome, Transplant

POSTER Submission**INFECTIONS (POSTER-734)****INCIDENCE AND RISK FACTORS ASSOCIATED WITH INFECTION AFTER CAR-T THERAPY FOR ALL**

Feng Zhu¹, Guoqing Wei², Wenjun Wu², Luxin Yang², He Huang², Yongxian Hu²

¹Hematology, Zhoushan hospital, Zhoushan, ²Bone Marrow Transplantation Center, The First Affiliated Hospital, School of Medicine, Zhejiang University, Hangzhou, China

Aims & Objectives: Chimeric antigen receptor T cells (CAR-Ts) constitutes a novel therapeutic strategy for relapsed/refractory B cell malignancies. Since CAR-T therapy has been extensively applied in the clinical setting, CAR- T-associated toxicities have been increasingly identified. However, limited information is available regarding associated infections. This study aimed to evaluate the incidence of infection during CAR-T therapy and identify potential risk factors.

Patients / Materials & Methods: All patients received a single cycle of lymphodepletion chemotherapy, followed by CTI at doses of 1.0×10^6 - 10.0×10^6 cells/kg. Patients with a body temperature of $\geq 38^\circ$ C and neutropenia were immediately treated with 1 gram of meropenem/imipenem every 8 h, blood cultures were carried out for patients with body temperatures of $\geq 38^\circ$ C and repeated if necessary. Patients with respiratory symptoms were subjected to lung computerized tomographic (CT) scanning, sputum culture, and respiratory viral PCR.

Results: Twelve cases of infection (predominantly bacterial) were observed within 28 days of CAR-T therapy, with an infection density of 0.5 infections for every 100 days-at-risk. Age ($P=0.024$), a state of neutropenia before CAR-T therapy ($P=0.027$) and treatment with corticosteroids during cytokine release syndrome ($P=0.021$) were 3 independent

risk factors associated with infection within 28 days after CAR-T therapy. Moreover, patients with infections displayed a significantly shorter survival duration than without infections ($P=0.021$).

Discussion & Conclusion: The present results suggest that initial bacterial infections and subsequent viral infections should be considered. For patients at a high risk of infection, effective anti-infection therapies may improve their prognosis.

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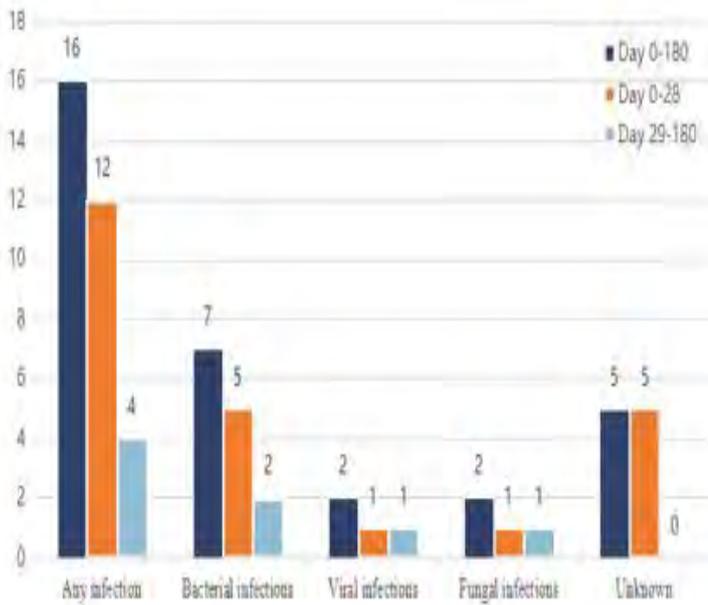


Figure 1. Incidence of infections after chimeric antigen receptor T cell (CAR-T) infusion within 180 d

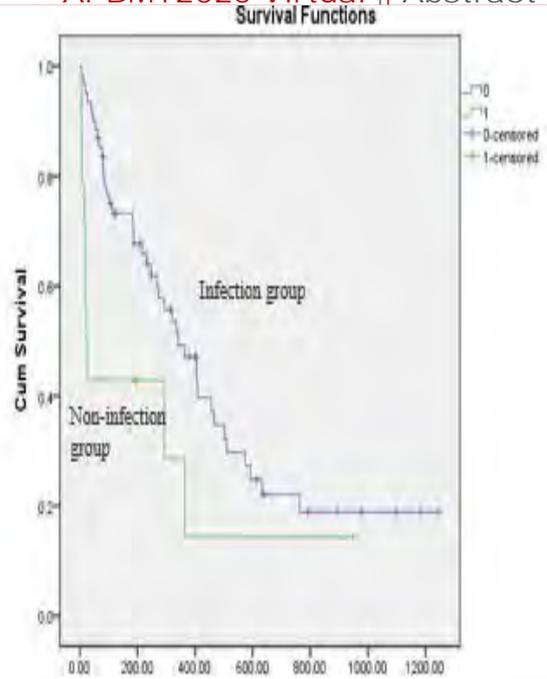


Figure 2. Survival curve of patients receiving CTI (p=0.021)

Disclosure of Interest: None Declared

Keywords: chimeric antigen receptor T cell therapy, infections, prognosis, risk

ORAL Submission**CONDITIONING REGIMENS (ORAL-736)****HAPLO-IDENTICAL HAEMATOPOIETIC STEM CELL TRANSPLANTATION - OUTCOMES FROM QUEEN MARY HOSPITAL**Yuey Zhun Ng¹, Pui Yin Joycelyn Sim¹, Yok Lam Kwong¹¹Medicine, Queen Mary Hospital, Hong Kong, Hong Kong, China

Aims & Objectives: Queen Mary Hospital is the only centre in Hong Kong that provides allogeneic HSCT service for adult patients. We started our Haplo-HSCT service in 2014. It is offered to patients with high risk disease, but lack matched related/unrelated donors. This study reports the outcomes of our Haplo-identical transplants.

Patients / Materials & Methods: Clinical data from consecutive patients undergoing Haplo-HSCT and had at least 6-months post-transplant follow-up at data cut-off were included in this retrospective review.

Results: Thirty-eight patients underwent Haplo-HSCT from Dec-2014 to Feb- 2020. The median follow-up was 427 days (193-1475) among surviving patients. Median age at transplant was 46 years (range 20-62). Fifteen patients were male. Twenty-one patients suffered from myeloid malignancies (including AML=14, CMML=2, MDS-EB2=1, CML- AP=1, MDS/MPN =3) and seventeen lymphoid malignancies (ALL=15, NHL=2). Nineteen patients received myeloablative conditioning. The first four patients used ATG-based modified BuCy as per Beijing protocol, the remaining PTCY-based conditioning. PBSC grafts were used in 35 patients (92%). Only 14 patients (37%) were in CR1 at time of transplant. One patient received a second Haplo-HSCT from his mother, one year after the first Haplo- HSCT from his father. Thirty-six (95%) patients achieved neutrophil engraftment with a median of 17 days. Seven patients developed grade II-IV acute GVHD and none had grade III-IV acute GVHD. Nine (24%) patients developed chronic GVHD. Relapse occurred in 15 (39%) patients. The overall survival and progression free survival was 78.9% and 53% at 1-year respectively. There were 9 mortalities, six due to relapse, including one from severe aGVHD after therapeutic donor lymphocyte infusion for post-transplant relapse, and three from non-relapse related mortalities.

Discussion & Conclusion: The review demonstrated that Haplo-HSCT is effective and safe with good tolerability in high risk patients with advanced stage disease but lack matched donors. Incidence of severe aGVHD and cGVHD was low despite PBSC grafts.

Disclosure of Interest: None Declared

Keywords: haploidentical bone marrow transplantation, HSCT, Outcome

POSTER Submission**HEMOGLOBINOPATHIES, PRIMARY IMMUNE DEFICIENCY DISEASES AND METABOLIC DISORDERS. (POSTER-737)****PRE-LIVER BIOPSY SCREENING PT/APTT AMONG THALASSAEMIA PATIENTS UNDERGOING STEM CELL TRANSPLANTATION**

Sohan Singh^{*1}, Poojitha byreddy¹, Ketan Modak¹, Tanuja .¹, Jasprit singh¹, Rachel .¹, Inderjit Singh¹, M Joseph John¹

¹Department of Clinical Haematology, Haemato-Oncology & Bone Marrow (Stem Cell) Transplantation, Christian Medical College & Hospital, Ludhiana, Punjab, Ludhiana, India

Aims & Objectives: To analyze the coagulation profile of Thalassaemia patients as a part of pre-BMT workup before liver biopsy

Patients / Materials & Methods: PT, APTT tests are done for all patients undergoing liver biopsy for grading of hemosiderosis and fibrosis on the liver tissue in thalassemia patients. Mixing studies were performed in case of PT/ APTT prolongation. These patients were observed for periprocedural bleeding or component transfusions

Results: A total of 73 thalassemia patients underwent liver biopsy at our center. These included 26 females and 47 males. Among these patients, the coagulation profile was abnormal in 55 patients. Isolated PT prolongation was noted in 26 patients. Isolated APTT prolongation was noted in 10 patients. Both PT, APTT prolongation was noted in 19 patients. Among all those with a deranged coagulation profile, 32 patients had mild hepatomegaly of <3cm and 23 had moderate hepatomegaly of >3cm. Liver function abnormality was detected in 52 patients. Mixing studies were done in only 13 patients upon which there was correction in the derangement of coagulation parameters. Though many patients had deranged parameters before the liver biopsy procedure, only 7 patients received fresh frozen plasma transfusion. Major bleeding events did not take place in any of the study population. Multiple causes including altered liver function tests, mild asymptomatic factor deficiency or acute sepsis all might have a role to play in these findings. However further confirmatory tests like factor assays and robust data capturing is required to find out the exact etiology of the changes noted which is a limitation of this observational study

Discussion & Conclusion: We recommend meticulous screening for any coagulation abnormalities which can reduce unwarranted blood component transfusions

Disclosure of Interest: None Declared

Keywords: Coagulation workup, Liver Biopsy ,Thalassemia

ORAL Submission**HEMOGLOBINOPATHIES, PRIMARY IMMUNE DEFICIENCY DISEASES AND METABOLIC DISORDERS. (ORAL-739)****PRE-TRANSPLANT ASSESSMENT OF LIVER BIOPSY IN THALASSEMIA PATIENTS AND CORRELATION WITH OUTCOME**

Prerna Walia¹, Poojitha Byreddy², Ketan Modak², M J. John², Nalini Calton¹, Roma Isaac¹, Preethi Paul¹

¹Department of pathology, ²Department of clinical hematology, hemato-oncology and bone marrow (stem cell) transplantation, CMC Ludhiana, Ludhiana, India

Aims & Objectives: 1. To assess the pre-transplant grade of hepatic hemosiderosis in patients with thalassemia and to correlate with pre-transplant serum ferritin levels.

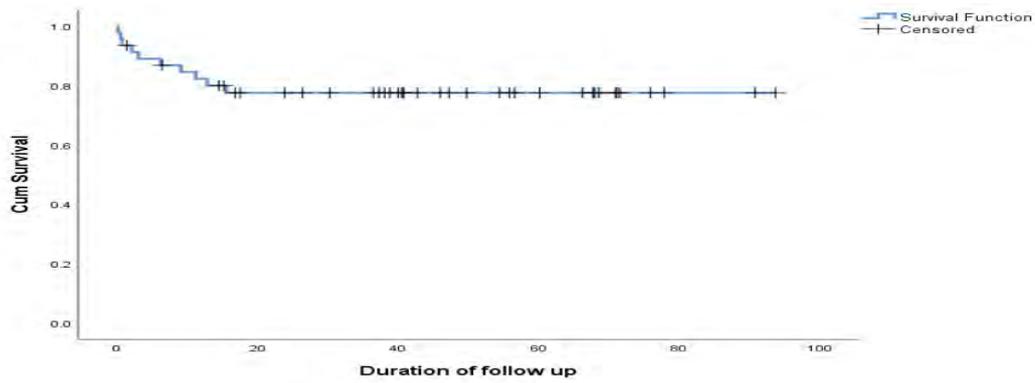
2. To correlate grade of hemosiderosis with outcome.

Patients / Materials & Methods: A retrospective study was carried out in the department of Pathology of a Tertiary Care Institute over 10 years (2011 to 2020). All thalassemia patients that underwent liver biopsy as part of pre-transplant workup were included in the study. Semi-quantitative assessment of hemosiderosis was done on liver biopsies (grades 0 to 4+) using Perl's Prussian blue stain. Pre-transplant serum ferritin and grade of hemosiderosis were compared. Fibrosis was assessed on pre-transplant liver biopsies using reticulin and Masson trichrome stains and compared with outcomes. Statistical analysis was done using Kaplan-Meier curves for overall survival (OS).

Results: During the study period, total 52 pre-transplant liver biopsies were performed; 46 were included in the study. Age range was 2-17 years (median 7.5 years). M:F ratio was 1:1.9. Hepatic hemosiderosis was grade 1+ in 5/46 (10.9%), grade 2+ in 14/46 (30.4%), grade 3+ in 9/46 (19.6%) and grade 4+ in 18/46 (39.1%). Pre-transplant serum ferritin range was 1,122-8,602ng/ml (median 2901.5ng/ml). Mean ferritin (4,277.1ng/ml) was higher in grade 4+ hemosiderosis as compared to other grades combined (2,396.3ng/ml). The overall survival at 7 years of all the patients was 77.5%. There was no statistically significant difference in the survival between different grades of hemosiderosis.

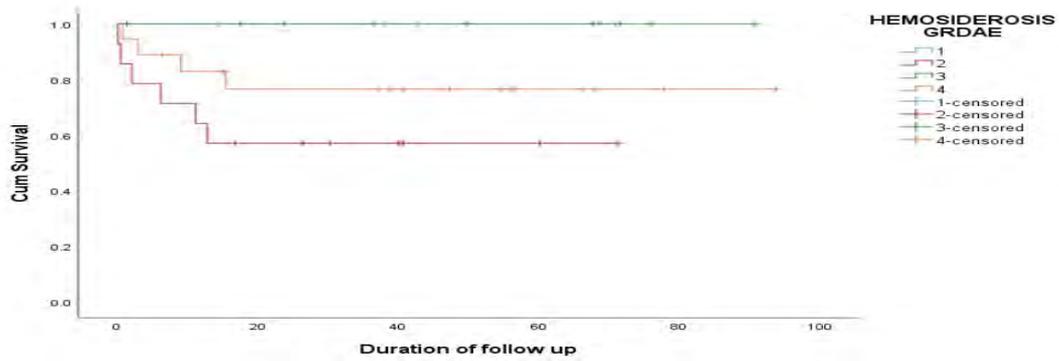
Discussion & Conclusion: 1. Higher grade of hepatic hemosiderosis shows higher mean serum ferritin levels in pre-transplant patients. 2. Hemosiderosis grading does not correlate with survival. No conflict of interest to disclose

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Median survival not reached

7yr OS = 77.5%



Hemosiderosis grade and overall survival $p = 0.064$ (NS)

Disclosure of Interest: None Declared

Keywords: Hemosiderosis, Liver biopsy, Thalassemia

POSTER Submission**LYMPHOMA/MYELOMA (POSTER-743)****AUTOLOGOUS STEM CELL TRANSPLANTATION IN PRIMARY CNS LYMPHOMA-A SINGLE CENTER EXPERIENCE.**

Shreya Gattani¹, Fahad Afzal¹, Ganapathi Bhat^{1,1}, Samir Shah¹, Suresh Advani¹, Reetu Jain¹

¹Medical Oncology, Jaslok Hospital and Research Centre, Mumbai, India

Aims & Objectives: Primary central nervous lymphoma (PCNSL) is an aggressive variant of non-Hodgkin diffuse large B- cell lymphoma. There has been an overall improvement owing to the usage of high-dose Methotrexate as first-line induction chemotherapy. Other drugs which have been useful in treatment either in conjunction with high-dose Methotrexate or alone are temozolamide, rituximab and cytarabine. For better long term results, earlier whole-brain radiation therapy (WBRT) was used to achieve consolidation in PCNSL following induction therapy. However, high dose chemotherapy along with autologous stem-cell transplantation (ASCT) is increasingly being considered in treatment of PCNSL.

Patients / Materials & Methods: We report our experience of three patients of Primary CNS Lymphoma who underwent high dose chemotherapy with autologous stem cell transplantation (ASCT).

Results: Patient MB, 58-year-old female diagnosed in Jan 2018, received one cycle of High dose methotrexate and five cycles of R-MPV till 12/5/18, achieved complete remission (CR1) , underwent autologous ASCT on 9/07/2018 with LACE regimen .Remained disease free till July 2020. (DFI 2 years) .She relapsed in July 2020, non -responder to Rituximab and Temozolomide, Currently planned for WBRT. Patient VS, 55-year-old female diagnosed in April 2019, received 6 cycles of Rituximab + Methotrexate, achieved complete remission (CR1) underwent ASCT with LACE Regimen on 26/9/2019. She continues to be in remission till date.

Patient NN, 40-year-old male diagnosed in 16/8/2016, received 6 cycles of Rituximab + High Dose Methotrexate, followed by WBRT, had relapse in May 2019. He received 5 cycles of chemotherapy with Rituximab + High Dose Methotrexate, achieved CR2, underwent ASCT in Dec 2019 with LACE Regimen. Patient relapsed in April 2020, succumbed in May 2020.

Discussion & Conclusion: Despite considerable management improvement, cure is still underway, and debatable in patients with PCNSL. Relapse remains a problem that emphasizes the need to improve post-transplant strategies to reduce the risk of recurrence.

Disclosure of Interest: None Declared

Keywords: Autologous haematopoietic stem cell transplantation, Experience, Primary CNS Lymphoma

POSTER Submission**INFECTIONS (POSTER-744)****CLINICAL COURSE AND OUTCOMES OF PATIENTS WITH CMV INFECTION POST ALLOGENEIC STEM CELL TRANSPLANT**

Narendran Krishnamoorthi¹, Biswajit Dubashi¹, Prasanth Ganesan¹, Thejeswar N¹, Divya Bala Thumaty¹, Preetha chakarapani¹, Malliha Ram¹, Smita Kayal¹

¹Medical Oncology, JIPMER, Pondicherry, India

Aims & Objectives: Cytomegalovirus (CMV) infection is one of the major cause of morbidity and mortality after allogeneic stem cell transplant (ASCT). We hereby present the clinical profile and course of CMV infection from our center.

Patients / Materials & Methods: Data was collected retrospectively from medical records of all consecutive patients who underwent ASCT from Jan 2014 to March 2020. CMV reactivation was defined as > 1000 copies of CMV DNA by polymerase chain reaction anytime during the course of monitoring post ASCT and/or start of preemptive CMV therapy, whichever was earlier. Outcome of the CMV episodes and its association with other pre & peri transplant factors were analyzed and presented.

Results: ASCT was done for 33 patients for various indications (high risk acute leukemias in CR1 or beyond, chronic myeloid leukemia in blast crisis, aplastic anemia); median age was 28 years (9 - 52), male: female ratio was 3:1. All patients underwent myeloablative conditioning and peripheral blood stem cell graft. Of the total, 16 patients (49%) developed 27 episodes of CMV reactivation at any time point post ASCT. Median time to onset of first episode was 37 days (range 16-180). Gancyclovir or valgancyclovir was the first line treatment used in 74% (n= 20) of episodes while second line treatment was indicated in 8 episodes. Course of CMV infection and outcomes are summarized in Table 1. Significant association of CMV reactivation was observed with type of transplant (Haplo transplant, p=0.017), Conditioning regimen (FLU-BU, p=0.04), GVHD prophylaxis (PTCY-TAC-MMF, p=0.002). Active CMV contributed to the cause of death in 2 patients

Discussion & Conclusion: Regular monitoring and preemptive treatment of CMV reactivation results in favorable outcomes with respect to prevention /control of CMV disease. Artesunate is a reasonably efficacious alternative treatment option as first or second line in resource limited settings.

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Table 1 Clinical course and outcome of CMV reactivation post allogeneic stem cell transplant

Of total 33 allogeneic HSCT, 27 episodes were documented in 16 patients	
Features	Result, n (%)
CMV Seropositive Status Pre Transplant (n= 33)	
D+/R+	31(93.9%)
D+/R-	1(3%)
D-/R+	1(3%)
D-/R-	0
CMV reactivation	
Yes	16 (49%)
No	17 (51%)
CMV episodes (n= 16 patients)	
One	9
Two	4
> 2	3
Median CMV Episode Per Person	2 (0-4)
Median time to onset of CMV (first episode)	37.5 days (range 16 – 180 days)
Time To Onset Of CMV Episode (n= 27)	
D0 – D30	4(15%)
D31– D100	12(44%)
> D101	11(41%)
Clinical Manifestation [7 patients had clinical manifestations among patients with cmv reactivation]	Diarhea-5 Pneumonia-1 Liver dysfunction-1
Concurrent GVHD (Graft Vs Host Disease)	
Yes	14(52%)
No	13(48%)
First Line Treatment (N= 27 episodes)	
Gancyclovir / Valgancyclovir	20 (74%)
Artesunate	7(26 %)
Second Line Treatment (n = 8 episodes)	
Artesunate	3
Gancyclovir	4
Leflunomide	1
Median Time To Response in Days (CMV copies < 250/ml)	27.5 days (range 8-65)
All-cause mortality	
0-100 days	10
>100 days	13
Primary Cause of death (n= 23)	
Infection	8 (35%)
Disease relapse/ progression	11(48%)
GVHD	3 (13%)
VOD (Veno-occlusive disease)	1(4%)
CMV contributing to primary cause of death (active or refractory CMV at the time of death)	2
Outcome in patients with CMV reactivation (n= 16)	
Death	12(75%)
Alive	4(25%)

Disclosure of Interest: None Declared

Keywords: Artesunate, CMV infection, Post Allogenic Stem cell transplant

POSTER Submission**PEDIATRIC TRANSPLANTATION (POSTER-745)****TREOSULFAN BASED CONDITIONING FOR ALLOGENIC HEMATOPOETIC STEM CELL TRANSPLANT IN HURLER SYNDROME**

Lokesh Sharma¹, Vineetha Raghavan², Soumya Das¹, Mohandoss Murugesan³, Praveen K. Shenoy⁴, Manuprasad Avaronnan⁴, Jithin T. Kozhikhodanveetil⁴, Gopakumar K. Gopinathan⁴, Chandran Nair¹

¹Department of Clinical Hematology and Medical Oncology, Malabar Cancer Centre, thalassery, ²Department of Clinical Hematology and Medical Oncology, Malabar Cancer Centre, Kannur, Kerala, ³Department of Transfusion medicine, ⁴Department of Clinical Hematology and Medical Oncology, MCC-39, thalassery, India

Aims & Objectives: To report the case of a child with Hurler syndrome who was successfully treated with matched sibling allogeneic hematopoietic stem cell transplantation (HSCT) with treosulfan based conditioning.

Patients / Materials & Methods: After getting informed consent from parents, case file of the patient was reviewed and baseline details as well as details of allogeneic hematopoietic stem cell transplantation were collected. Data was also collected from the hospital information system.

Results: Two year old girl with Hurler syndrome was referred to our bone marrow transplant unit. Her pre-transplant L- iduronidase enzyme activity level was 0.18 nmol/hr/ml (normal = 2.4 to 12) . She was positive for mutation in IDUA gene exon 2 , c[223 G>A [223G>A] p[Ala 75 Thr]; [Ala 75 Thr]. She was advised allogeneic HSCT , source of stem cells being 10/10 HLA matched sibling who was heterozygous for the IDUA gene mutation. Pre-transplant ERT with Aldurozyme was given (8 doses). After myeloablative conditioning chemotherapy (Thiotepa-Fludarabine-Treosulfan) 5.7 million/kg body weight of CD34+peripheral blood stem cells were transfused. Post transplant period was uneventful except for a single episode of febrile neutropenia. Neutrophils engrafted on day 24 and platelets engrafted on day 22. Day 28 and day 100 chimerism were 95 % and 100% of donor status respectively and her enzyme levels increased to 1.55 nmol/hr/ml on day 100. Post transplant there was improvement in cognitive function, decrease in respiratory secretions and improvement in hearing.

Discussion & Conclusion: Treosulfan based conditioning in allogeneic HSCT is a recent advance in paediatric hematopoietic stem cell transplantation. Reports of its use in mucopolysaccharidosis patients is rare. We report that Treosulfan based allogeneic HSCT was safe and effective in our child with severe MPS type 1-Hurler syndrome.

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Treosulfan based conditioning for Allogeneic Hematopoietic Stem Cell Transplant in Hurler syndrome

Lokesh Sharma¹, Vineetha Raghavan¹, Soumya Das¹, Mohandoss Murugesan², Praveen Kumar Shenoy¹, Manuprasad Avaronnan¹, Jithin Thippilikkattu Kozhikhodanveetil¹, Gopakumar Kaduveetil Gopinathan¹, Chandran Nair¹

1-Department of Clinical Hematology and Medical Oncology , Malabar Cancer Centre, Kannur, Kerala, India

2-Division of Transfusion Medicine, Malabar Cancer Centre, Kannur, Kerala, India

Aim : To report the case of a child with Hurler syndrome who was successfully treated with matched sibling allogeneic hematopoietic stem cell transplantation (HSCT) with treosulfan based conditioning.

Methods: After getting informed consent from parents, case file of the patient was reviewed and baseline details as well as details of allogeneic hematopoietic stem cell transplantation were collected. Data was also collected from the hospital information system.

Results: Two year old girl with Hurler syndrome was referred to our bone marrow transplant unit. Her pre-transplant L-iduronidase enzyme activity level was 0.18 nmol/hr/ml (normal = 2.4 to 12) . She was positive for mutation in IDUA gene exon 2 , c[223 G>A];[223 G>A] p[Ala 75 Thr]; [Ala 75 Thr]. She was advised allogeneic HSCT , source of stem cells being 10/10 HLA matched sibling who was heterozygous for the IDUA gene mutation. Pre-transplant ERT with Aldurozyme was given (8 doses).. After myeloablative conditioning chemotherapy (Thiotepa-Fludarabine-Treosulfan) 5.7 million/kg body weight of CD34+ peripheral blood stem cells were transfused. Post transplant period was uneventful except for a single episode of febrile neutropenia. Neutrophils engrafted on day 24 and platelets engrafted on day 22. Day 28 and day 100 chimerism were 95 % and 100% of donor status respectively and her enzyme levels increased to 1.55 nmol/hr/ml on day 100. Post transplant there was improvement in cognitive function, decrease in respiratory secretions and improvement in hearing.

Discussion and conclusion- Treosulfan based conditioning in allogeneic HSCT is a recent advance in paediatric hematopoietic stem cell transplantation. Reports of its use in mucopolysaccharidosis patients is rare. We report that Treosulfan based allogeneic HSCT was safe and effective in our child with severe MPS type 1-Hurler syndrome.

No conflicts of interests to disclose

Disclosure of Interest: None Declared

Keywords: allogeneic transplant, Hurler syndrome, treosulfan

POSTER Submission**GVHD (POSTER-746)****CLINICAL SPECTRUM OF CUTANEOUS GRAFT VERSUS HOST DISEASE IN A TERTIARY CARE HOSPITAL IN NORTH INDIA**

Abhilasha Williams*¹, M Joseph John², Emy A. Thomas¹
¹Dermatology, ²Clinical Haematology, CMC, LUDHIANA, India

Aims & Objectives: To study the patterns of muco-cutaneous manifestations and risk factors associated with development of cutaneous GVHD.

Patients / Materials & Methods: This is a retrospective analysis of prospectively collected data of 88 patients over 11 years between October 2008 to May 2015 in a single institution in North India. The medical records of all the patients who underwent Hematopoietic stem cell transplantation (HSCT) as a treatment option were evaluated. Of these, the skin findings of all the patients who developed cutaneous GVHD following HSCT during the hospital stay or on follow up were reviewed. Based on the dermatological findings, the varied clinical spectrum of cutaneous GVHD was evaluated for all the patients who had developed either acute and or chronic cutaneous GVHD. The risk factors for cutaneous GVHD were also analyzed.

Results: Total patients= 88 (MRD= 36)(MUD=5)(Haploidentical=2).The mean age was 14 years (2-62).There were 24 males (82.2%). Mean donor age was 27 years (3-63). Indication for ABMT was Thalassemia Major in 14, Acute Myeloid Leukemia in 5, Chronic Myeloid Leukemia in 3 and Wiskott Aldrich Syndrome in 2 patients. The stem cell source was PBSC in 86.2% and BM in13.8% patients. The skin GVHD presentation was noted as follows: Acute GVHD alone=5 (5.7), Chronic GVHD alone=14 (15.9), Acute and Chronic GVHD=10 (11.4).The incidence of Acute GVHD with maculo-papular rash was noted in14.7% patients. Classic Acute was seen in 10.2% and Persistent type in 4.5% patients. The incidence of Chronic GVHD was 27.2 %. The Classic Chronic type was seen in 21 patients while Overlap syndrome was seen in 3 patients. The diagnostic lesions noted were Lichen planus type in 65.5%, Sclerotic type in 24.1%, Lichen sclerosis like features in 3.4% patients. The distinctive lesion noted was depigmented macules in 27.6% patients.The common sites of involvement were Skin, Mouth, Eye, Nails, Scalp and Genitalia.Fasciitis/Joint stiffness was seen in 27.5% patients.

Discussion & Conclusion: This is an attempt to study the various patterns of acute and chronic GVHD noted in our center. As the cutaneous presentations are very common yet variable, both the dermatologist and the hematologist should be familiar with the clinical spectrum of presentation to provide the most appropriate treatment of GVHD at the earliest.

Disclosure of Interest: None Declared

Keywords: Bone Marrow Transplant, Cutaneous GVHD, Leukemia

POSTER Submission**INFECTIONS (POSTER-751)****ANALYSIS OF A PRAGMATIC SCREENING STRATEGY IN STEM CELL TRANSPLANTATION IN COVID CRISIS.**

Byreddy Poojitha¹, Ketan Modak¹, M Joseph John¹, Ashwin Philips², Sheeba Bhatti³, Ekta Sahotra¹, Minakshi Daliya², Arun Arora²
¹Department of Clinical Haematology, Haemato-oncology & Bone marrow stem cell transplantation, ²Department of Medical Oncology, ³Christian Medical College, Ludhiana, Ludhiana, India

Aims & Objectives: To analyze the screening strategies of Bone Marrow Transplant programs in our Institute and to further improve on them so as to provide better care to patients and to the staff taking care of them.

Patients / Materials & Methods: This is a prospective descriptive study done on the Patients who underwent Bone Marrow Transplantation at our Institute, during this COVID pandemic. A total 6 patients underwent transplant, of which 3 were autologous transplants, two are haploidentical sibling transplant and one was a matched related allogeneic transplantation. At our centre, we followed the policy of screening every patient baseline at the time of admission, followed by repeat testing of the patients, 2 days prior to the shifting to the Bone Marrow Transplant Unit, since the turn around time of our centre for RT PCR testing is one day. For donors, we follow the strategy of screening them two days prior to the date of starting the mobilization with injection granulocyte colony-stimulating factor.

Results: Using this strategy, 6 patients were screened, each twice, of which all were negative. All Donors also tested negative for COVID infection. Median duration of stay inside the BMT unit was 30 days. During their stay in the BMT Unit, no patient turned out to be positive. However, one patient developed encephalopathy and was intubated. He was later shifted to our ICU facility.

During his stay in the ICU, he developed increasing infiltrates in both the lobes of the lung. He showed neutrophil engraftment on day+13 and platelet engraftment was not achieved. He was retested for COVID on day+20 and tested positive. His further management was done in COVID ICU. He expired secondary to HLH and severe metabolic acidosis. The Patient's attendants were repeat tested and were found negative.

Discussion & Conclusion: Following strict screening strategies would certainly help in curtailing the incidence of COVID pandemic in transplant programs. However, asymptomatic carriers can be a source of infection. Proper screening of the health care personnel along with the provision of personal protective equipment will help in reducing the incidence.

Disclosure of Interest: None Declared

Keywords: covid19, screening, transplantation

ORAL Submission**HEMOGLOBINOPATHIES, PRIMARY IMMUNE DEFICIENCY DISEASES AND METABOLIC DISORDERS. (ORAL-752)****THALASSEMIA TREOSULFAN-THIOTEPA-FLUDARABINE CONDITIONING FOR ALLOGENEIC BONE MARROW TRANSPLANT IN THALASSEMIA**

Giri Punja M¹, Ashish Dixit¹, Mallikarjun Kalashetty¹, Amit Rauthan², Poonam Patil², Nitin Y. Murthy²
¹Hematology, ²Medical Oncology, Manipal Hospital, Bangalore, India

Aims & Objectives: Allogeneic Bone Marrow Transplant (BMT) is the only curative treatment for patients with Thalassemia major which is an inherited hemoglobinopathy resulting in ineffective hematopoiesis resulting in transfusion dependent anemia. It is a major public health burden and the most common inherited genetic disorder in India.

Patients / Materials & Methods: A retrospective analysis of all Thalassemia Major patients who underwent Allogeneic BMT from January 2008 till December 2019 at our center was carried out. Safety and efficacy of treosulfan-thiotepa-fludarabine (Treo-TT-Flu) based conditioning regimen was compared with patients with busulfan-cyclophosphamide-ATG (Bu-Cy-ATG).

Results: A total of 46 patients who underwent Allogeneic BMT for Thalassemia major were analysed. Patients were multiply transfused with irregular chelation. 17 cases were Class III and 12 in Class IIIHR. A Treo-TT-Flu conditioning regimen was used in 36 patients with Thalassemia major. In Treo-TT-Flu group, median age was 12.5 years (range 1-24 years). Graft source was marrow in 15 patients and PBSC in 23 patients. Median follow up was 930 days. Only 1 patient had graft rejection. Acute GVHD developed in 12 patients, out of them 2 had grade III/IV GVHD. Chronic GVHD developed in 2 patients. Day 100 transplant related mortality (TRM) was 13.1%. Overall survival was 81.6% and EFS was 77.0% at 2 years. The results were compared with older data of 8 patients with Thalassemia major who underwent Allogeneic BMT with Bu-Cy-ATG based conditioning regimen. In Bu-Cy-ATG group median age was 6.5 years (range 2-13 years). Median follow up was 1990 days. Graft rejection was seen in 2 patients. Acute GVHD developed in 3 patients, none had grade III/IV GVHD. Chronic GVHD developed in 1 patient. Overall survival was 64.3% and EFS was 56.3% at 2 years.

Discussion & Conclusion: Treo-TT-Flu based conditioning achieved better graft function, overall survival and Thalassemia free survival in Thalassemia Major.

Disclosure of Interest: None Declared

Keywords: Bone Marrow Transplant, Conditioning regimen, Thalassemia

POSTER Submission**BASIC SCIENCE (POSTER-755)****COELIAC DISEASE SCREENING AMONG STEM CELL TRANSPLANT PATIENTS AND DONORS IN CMC LUDHIANA**

Byreddy Poojitha¹, Rachel Thaper¹, Ketan Modak¹, M Joseph John¹, Ashwin Philips², Prateek Kumar¹

¹Department of Clinical Haematology, Haemato-oncology & Bone marrow stem cell transplantation, ²Department of Medical Oncology, Christian Medical College, Ludhiana, Ludhiana, India

Aims & Objectives: To emphasize the role of screening for coeliac disease with Anti Tissue Transglutaminase antibodies and correlate with post transplant GI tract graft versus host disease.

Patients / Materials & Methods: Retrospective analysis of the 143 allogeneic stem cell transplantation patients was done from our centre which were done during the period from 2008 to 2020. All these patients underwent non T cell depleted allogeneic bone marrow transplant. Out of these 46 patients were screened as a part of Pre BMT workup with anti TTg antibodies. Patients have been followed up in the post transplant period for any episodes of diarrhoea and development of GVHD.

Results: Among the 46 patients and donors screened for Anti TTg antibodies, only 4 (8.6%) donors were positive for antibodies (Anti TTg level of >20 U/ml). All the 4 recipients of these donors were negative for this test with values of 8.9 v, 1 U/ml, 12.2U/ml, 14.2 U/ml. One of the recipients among these patients developed significant anti TTG antibodies post transplant with a level of 28.8 U/ml. She also developed a significant GI tract GVHD of grade III in severity. Retrospective analysis of the HLA typing of the donor also showed positivity for HLA DQ 02:01:01G which is the most common subtype of the HLA in coeliac patients.

Discussion & Conclusion: Allogeneic bone marrow transplantation (BMT) replaces the hematopoietic and immune systems of the recipient with those of the donor. Immune associated processes can be reversed by allogeneic BMT as well as some immune mediated diseases can be transmitted with this procedure. Coeliac disease is an T cell mediated disease which can be transmitted and can initiate the disease process to gluten replete diet in the recipient which can lead to diarrhea and GI tract GVHD. Proper screening for this disease in endemic areas and as a routine pre transplant workup can help the clinician to omit such donors if feasible and also can help in counselling the patient family regarding the diet modification.

Disclosure of Interest: None Declared

Keywords: Coeliac disease, GVHD, HLA typing

POSTER Submission**ALLIED (NURSING, TECHNICAL ASPECTS SUCH AS GRAFT PROCESSING, CRYOPRESERVATION, ETC) (POSTER-756)****MONONUCLEAR CELL AND CD34 PERCENTAGE A CORRELATIVE STUDY IN DONOR HARVEST SAMPLES**

Ritesh Goswami¹, Byreddy Poojitha¹, Markas Masih¹, Ketan Modak¹, M Joseph John¹, Ashish Kumar¹, Ruth S. Toppo², Vandana Bhatti³, Himani Khatter²

¹Department of Clinical Haematology, Haemato-oncology & Bone marrow stem cell transplantation, ²Christian Medical College, Ludhiana, Ludhiana, India, ³Department of Pathology, Christian Medical College, Ludhiana, Ludhiana, India

Aims & Objectives: To study the correlation between Mononuclear cell count Percentage and CD34 cell count in peripheral blood stem cell harvest samples.

Patients / Materials & Methods: Mononuclear cell count percentage and CD34 cell count by flow cytometry was done on 90 PBSC samples. Statistical analysis was performed to correlate the harvest CD34+ cell count and the MNC cell yield.

Results: A total of 184 transplants were conducted at our institute. In 90 harvest samples, both MNC count and CD34 count was done. Among them, 51 were autologous transplants and 39 were allogeneic transplants. The median MNC count among these patients was the MNC count ranged between 13-80 %. The median value was 36. CD34 cell percentage ranged between 0.06% to 3.3 % with a median of 0.47%. CD34 count ranged between 60 to 4440 with a median of 980. Correlation between the MNC and CD34 count was tested applying statistical analysis. The normality of the data was checked using Kolmogorov Smirnov and Q-Q plots. There was a significant positive correlation between MNC dose and CD34%, $r=0.534$ using the Spearman correlation coefficient with a P-value of <0.001 . The results show that historic analysis of harvest samples based on only MNC count was a reasonably good strategy for deciding the sample yield in the harvest samples. This method can also be used in resource-constrained settings for evaluating the proper volume of the harvest bag.

Discussion & Conclusion: The engraftment of transplanted PBSCs is predicted by the enumeration of CD34+ cells, which is carried out multiple times before, during, and after the PBSC harvest procedure. The high cost associated with the Peripheral Blood Stem Cell (PBSC) transplants still remains a major concern and any possible measure to mitigate the financial burden can be encouraged in resource-constrained settings. The findings of this study suggest that obtaining the MNC count can be employed as a useful and cost-effective method of predicting the yield during the mid-cycle of the PBSC harvest procedure.

Supporting Document: 899dee0f-b1a9-4222-bd34-c5a82f9c2e79

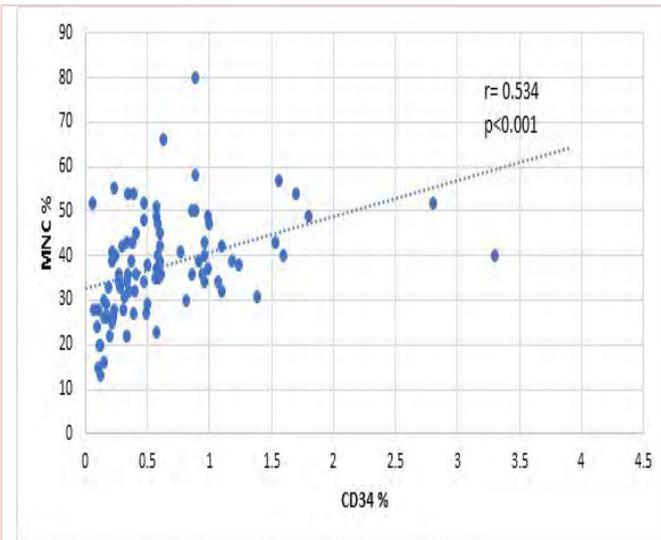


Figure 1: Correlation between MNC% and CD34% (N=90)

The normality of the data was checked using Kolmogorov Smirnov and Q-Q plots. There was a significant positive correlation between MNC% and CD34%, $r=0.534$ using Spearman correlation coefficient.

Disclosure of Interest: None Declared

Keywords: CD34+ hematopoietic stem cell, Harvest yeild, Mononuclear cells

POSTER Submission**BASIC SCIENCE (POSTER-757)****RELATIONSHIP OF CD34 HAEMATOPOIETIC STEM CELL COUNT WITH NEUTROPHIL AND PLATELET ENGRAFTMENT**

Ketan Modak¹, Poojitha Byreddy¹, Rajan Yunus¹, Abhishek Kumar¹, Ashwin Philips², M Joseph John¹

¹Department of Clinical Haematology, Haemato-oncology and bone marrow (stem cell) transplantation, ²Department of medical oncology, Christian Medical College, Ludhiana, India

Aims & Objectives: To find out relationship between CD34+ hematopoietic stem cell dose in stem cell donor product and neutrophil and platelet engraftment of the patient

Patients / Materials & Methods: Retrospective chart review of 186 patients was done using excel 2013 and SPSS. The data on conditioning regimen, source of donor stem cells, stem cell dose, day of neutrophil and platelet engraftment was analyzed

Results: The data was analyzed for 186 patients, of which 43 underwent autologous stem cell transplant whereas 141 underwent allogenic stem cell transplantation (105 matched related SCT, 26 MUD and 10 haplo-identical SCT). Myeloablative conditioning was given in 97 patients whereas 89 received reduced intensity conditioning. Median CD34+ cell dose in autologous SCT was 4.18×10^6 (r, $0.36 - 22.8 \times 10^6$) cells/Kg and in allogenic SCT was 6.16×10^6 (r, $2.5 - 10.2 \times 10^6$) cells/Kg. Source of donor stem cells was bone marrow (BM) in 13 patients, peripheral blood stem cells (PBSC) in 124 patients and 4 patients received both BM and PBSC. The CD34+ cell dose was divided in 4 groups of <2, 2-5, 5-10 and >10 $\times 10^6$ cells/Kg and relationship with median days of neutrophil and platelet engraftment was observed

Discussion & Conclusion: In this study, the relationship between CD34+ cell dose with neutrophil and platelet engraftment was not statistically significant. Limitations of the study were retrospective nature and limited number of patients

Disclosure of Interest: None Declared

Keywords: CD34+ hematopoietic stem cell, Engraftment, Stem cell transplantation

ORAL Submission**CONDITIONING REGIMENS (ORAL-758)****FLUDARABINE-TREOSULFAN-THIOTEPA (FTT) VS. BUSULFAN-CYCLOPHOSPHAMIDE-ATG IN THALASSEMIA MAJOR BMT**Santanu Sen¹, Sameer Tulpule¹, Gunjan Loney¹¹Department of Bone Marrow Transplantation, Kokilaben Dhirubhai Ambani Hospital, Mumbai, India

Aims & Objectives: Thalassemia major is one of the prevalent hemoglobin related genetic disorder with an increasing trend worldwide. This study evaluated the comparative clinical outcomes of treosulfan and busulfan-based regimen in pediatric patients with thalassemia major.

Patients / Materials & Methods: This was a retrospective, single center study conducted at Kokilaben Dhirubhai Ambani Hospital and Medical Research Institute, Mumbai, India. All the pediatric patients with thalassemia major who received either treosulfan-thiotepa-fludarabine (FTT) or busulfan-cyclophosphamide-anti thymocyte globulin (Bu/Cy/ATG) based conditioning between January 2014 and December 2019 were included in the study. The primary endpoints were overall survival (OS) and thalassemia-free survival (TFS). The secondary endpoints included acute and chronic GVHD.

Results: A total of 30 patients with thalassemia major who underwent allogeneic stem cell transplantation were evaluated retrospectively with a comparable mean age in both the groups. 12 patients were conditioned with a Bu/Cy/ATG regimen and 18 with a FTT regimen. The overall survival was 90.0% and 100.0% and TFS was 80.0% and 94.5% in Bu/Cy/ATG and FTT regimen, respectively. Bu/Cy/ATG group showed less infection during first month than the FTT group. None of the patients showed chronic graft versus host disease. Graft failure in the Bu/Cy/ATG group was 20%, while it was 5.5% in FTT group. There were no significant differences in the incidence of acute graft versus host disease between both the regimens, but incidence of secondary graft failure was higher in the Bu/Cy/ATG group.

Discussion & Conclusion: The results suggests superior clinical outcomes with the FTT regimen in terms of overall and thalassemia-free survival.

Disclosure of Interest: None Declared

Keywords: Bu Cy ATG, FTT, GRAFT REJECTION, survival, Thalassemia

ORAL Submission**CONDITIONING REGIMENS (ORAL-759)****TOTAL BODY IRRADIATION: A PRELIMINARY EXPERIENCE FROM A TERTIARY CARE CENTRE**

Santanu Sen*¹, Pranav Chaddha^{2,3}, Sameer Tulpule³, Varsha Mandoloi², Mayuresh Virkar², Amrita Shrivastava², Ajay Sharma², Kaustav Talapatra²

¹Department of Stem Cell Transplantation, ²Dept of Radiation Medicine, ³Department of Bone Marrow Transplantation, Kokilaben Dhirubhai Ambani Hospital, Mumbai, India

Aims & Objectives: Total Body Irradiation (TBI) is an integral component of many bone marrow transplantation-conditioning regimens. However many transplant units do not have access to onsite facilities for TBI. Understanding the necessity of TBI modality for a BMT unit, we set up a dedicated TBI unit for our transplant services. This modality including the fabrication of Body stand, dosimetry and quality assurances were completed in July 2016 and the therapy became clinical from October 2016 for the first patient and since then a total of 51 patients have been performed till date (50+ 1 re-irradiation case).

Patients / Materials & Methods: 51 patients with different indications were enrolled for the TBI (table) with different dose - fractionation schemes. The median age was 13.02 years (2-32 years) with a male: female ratio of 35:16. Single fraction TBI (s-TBI) was conducted with 2 Gy/1fx and 4 Gy/1fx for 20 and 2 patients (Total 22/51) respectively. Multifraction TBI (mf-TBI) 12 Gy/8 fx/4 days and 14.4 Gy/8 fx/4 days, with lung blocks after 4 fractions were employed for 27 patients and 2 patients (Total 29/51) respectively. An extended distance (SSD) technique was employed for 45 patients for TBI session(s) using 6MV photon energy Linear accelerator along with Plexiglass barrier shield. The remaining 5 patients in view of young age were treated under short sedation on the treatment couch employing isocentric (SAD) technique.

Results: The dose distributions for the aforementioned cohort were within +/-5% of the intended dose. The acute toxicity profile was graded as per CTC (v.4.02) with no adverse effects in s-TBI group whereas in mf-TBI group G-I/II Gastrointestinal 17 % (5/29) and G-I fatigue in 34.4% (10/29) of patients was observed. There were no treatment delays and for 1 patient with re-TBI, there were no serious adverse events.

Discussion & Conclusion: TBI as a component was readily accepted and integrated in the transplant conditioning regimen in our patient cohort with minimal toxicity, resulting in completion of the regimen in all the patients.

Supporting Document: f1fbbfa6-5024-4525-a9c1-f091c2e92c49

Diagnosis	Number of patients
Pre B Cell ALL	17/51 (16+1 re-TBI case)
Relapsed ALL	8/51
Relapsed AML	6/51
Aplastic Anemia	6/51
AML	4/51
T cell ALL	2/51
T cell Lymphoma	2/51
CML	2/51
Thalassemia	2/51
Fanconi Anemia	1/51
Sickle Cell Anemia	1/51

Disclosure of Interest: None Declared

Keywords: Allogeneic hematopoietic stem cell transplantation, Leukemia, TBI based conditioning

POSTER Submission**BASIC SCIENCE (POSTER-760)****POST TRANSPLANT HLH AND OUTCOMES OF PATIENTS UNDERGOING BONE MARROW TRANSPLANT**

Byreddy Poojitha^{1,1,1}, Ketan Modak¹, Rachel Thaper¹, M Joseph John¹, Ashwin Philips², Sheeba Bhatti³, Prateek Kumar¹

¹Department of Clinical Haematology, Haemato-oncology & Bone marrow stem cell transplantation, ²Department of Medical Oncology, ³Christian Medical College, Ludhiana, Ludhiana, India

Aims & Objectives: To study the patient profile and risk factors for the development of HLH in Post BMT patients at our centre.

Patients / Materials & Methods: Retrospective analysis was done in our transplant patients. A total of 184 patients underwent a transplant at our institute. Patients who presented with febrile episodes and persistent cytopenias were analyzed with biochemical parameters and bone marrow studies in feasible cases and the diagnosis was made on the basis of HLH 1994 criteria. Patient data were analyzed for complications and possible risk factors.

Results: Out of the 184 patients who underwent transplant at our centre, 9 (4.89%) patients developed possible HLH. Among these 9 patients, 3 (1.6%) patients underwent autologous transplant, 3 (1.6%) underwent allogeneic matched related transplant, 2 (1%) underwent matched unrelated transplant and 1(0.5%) patient underwent haploidentical transplant. Median age of the patients was 17 years. 3 (1.6%) patients were from the pediatric age group. Graft source was PBSC among 8 patients and bone marrow harvest in one patient. Myeloablative conditioning was used in 8 patients and reduced-intensity conditioning in one patient. GVHD prophylaxis was given with the CSA/Mtx regimen in five patients, TAC/MMF/Cyclophosphamide in one patient, and data was not available in 3 patients. The disease spectrum included AML with HLH with t(8;21) in one patient, Beta-thalassemia Major in 4 patients, Multiple Myeloma in 2 patients, Hodgkin's Lymphoma in one patient, and CML in one patient. The patient with AML with t(8;21) has also had a genetic mutation of the Perforin gene (PRF1 gene). The median time for diagnosis of HLH after HSCT was 18 days (ranged between 10days to 8 months). Therapy given to these patients was steroids in four, steroids with etoposide in one, and steroids with CSA in one patient. Mortality was noted in 8 out of these 9 patients (88.8%). Only one patient recovered from this episode of HLH and is alive to date.

Discussion & Conclusion: HLH occurring after HSCT is a relatively rare disease. Many conditions may mimic or trigger HLH in the post-HSCT period. A low threshold for suspicion and meticulous workup can help in making the diagnosis and improved patient care.

Disclosure of Interest: None Declared

Keywords: hemophagocytosis, Outcome, post transplant

POSTER Submission**PEDIATRIC TRANSPLANTATION (POSTER-762)****POSTERIOR REVERSIBLE ENCEPHALOPATHY (PRES) IN PEDIATRIC HEMATOPOIETIC STEM CELL TRANSPLANT (HSCT)**

Ruchira Misra¹, Hiren Panwala², Sujata Mushrif¹, Priya Gupta¹, Kaustubh Prabhudesai³, Sunil Bhat⁴, Purna Kurkure¹

¹Department of Pediatric Hematology Oncology and BMT, SRCC Children's Hospital, managed by Narayana Health, ²Department of Radiology, SRCC Children's Hospital managed by Narayana Health,, ³Department of Intensive Care, SRCC Children's Hospital, managed by Narayana Health, MUMBAI, ⁴Department of Pediatric Hematology and BMT, Majumdar Shaw Cancer Centre, Narayana Health City, Bangalore, India

Aims & Objectives: PRES is a neurotoxic condition known to occur with HSCT. Recognised to be associated with calcineurin inhibitors and hypertension, PRES has a unique pattern of brain vasogenic oedema predominantly in the parietal and the occipital regions. The aim of this study was to study the incidence of PRES and identify confounding factors, if any.

Patients / Materials & Methods: A retrospective analysis of 47 patients who underwent HSCT between 19th August 2018 to 31st August 2020 at our centre was carried out to capture the incidence of PRES and any associated factors.

Results: The results are depicted in Table 1.

Only one patient had seizures beyond 1st 100 days post-transplant. The seizures were generalised in 5 patients and focal in 2. All ventilated children could be extubated. No patient died due to PRES though 1st 100-day mortality was 43%.

Discussion & Conclusion: The incidence of PRES in our cohort was 14.9% which is higher than other studies. We failed to find a correlation with Cyclosporin levels. Haploidentical transplants had a higher risk of developing PRES as has also been shown in a recent study. The radiological features could not be correlated with the severity of clinical symptoms. Incidentally, 6 non HSCT patients developed PRES in the same duration at our hospital, thus proving that PRES may have a multifactorial pathogenesis.

Supporting Document: 899daed1-33cf-4e07-84a8-8346094a2cb5

Table 1:

S.no	Age	Sex	Diagnosis	Type of Transplant	High level of Cyclosporin	Previous history of seizures	Need for ventilation	Repeat seizures	Outcome
1.	7 yr	M	Primary red cell aplasia	MSD	no	Yes; Dexamet hasone related	Yes	Yes	Alive
2	9 yr	F	Thalassemia major (TM)	MSD	no	no	no	no	Alive
3	15 yr	M	Perforin 1 deficiency	Haploidentical	No	Yes; Dexamet hasone related	Yes	Yes	Died (infection)
4	14 yr	M	ALL in CR2	Haploidentical	Yes	no	no	no	Died (primary Graft failure)
5	9 yr	M	TM	Haploidentical	yes	no	no	no	Alive
6	5 yr	M	TM	9 on 10 MSD	no	no	yes	yes	Died (infection)
7	4 yr	M	Wiskott Aldrich syndrome	Haploidentical	yes	no	yes	no	Alive

Disclosure of Interest: None Declared

Keywords: Pediatrics, posterior reversible encephalopathy syndrome (PRES), seizures

POSTER Submission**CONDITIONING REGIMENS (POSTER-763)****DESCRIPTIVE ANALYSIS OF MUCOSITIS AMONG MAC VS RIC CONDITIONING REGIMENS**

Ketan Modak¹, Poojitha Byreddy¹, Deepshikha Gupta¹, Shaveta Sharma¹, Sandeep Kaur¹, Soumya Ojha¹, Ashwin Philips², M Joseph John¹

¹Department of Clinical Haematology, Haemato-oncology and bone marrow (stem cell) transplantation, ²Department of Medical Oncology, Christian Medical College, Ludhiana, India

Aims & Objectives: Patients undergoing stem cell transplantation encounter mucositis as a frequent complication. This single study was done to observe pattern of mucositis in relation to conditioning regimen

Patients / Materials & Methods: Retrospective chart review of total 72 patients who underwent stem cell transplant patients at our centre between years 2016 to 2020. Data was analysed using excel 2013.

Results: Of the total patients, 45 were males and 27 were females. Myeloablative conditioning (MAC) was given in 44 patients and reduced intensity conditioning (RIC) in 28 patients. Indication for SCT was leukemia, lymphoma, myeloma in 41 patients and aplastic anemia, thalassemia in 31 patients. The median age of patients was 19 years (r, 2-66 years). Mucositis was documented in 40 cases whereas there was no mucositis in 32. More than 3/4th patients with mucositis received MAC (n=33). Most of the cases not developing mucositis had received Thiotepa/ Treosulfan/ Fludarabine conditioning regimen. Median duration of mucositis was 10 days (r, 2-32 days). Grade I-II mucositis in 15 patients and grade III-IV in 25 patients. Inj Fentanyl continuous infusion was agent of choice for pain management in most of the cases. Half patients required fentanyl infusion and remaining were managed with paracetamol and non- opioid analgesics. Median duration of fentanyl required was 8 days (r, 4-20 days). Total parenteral nutrition was required in patients received TPN. TPN days median 7 (r, 5-50).

Discussion & Conclusion: Mucositis is well known complication of stem cell transplant commonly occurring with MAC than RIC regimen. Pain secondary to mucositis can be managed with adequate analgesia. Proper nutritional supplement during mucositis must be considered.

Disclosure of Interest: None Declared

Keywords: mucositis, Myeloablative conditioning, Reduced intensity conditioning

ORAL Submission**GVHD (ORAL-764)****CLINICAL PROFILE AND OUTCOMES OF ACUTE GVHD IN PERIPHERAL BLOOD HSCT FOR HEMATOLOGICAL MALIGNANCIES**Lakshmi S. Singuluri¹, Smita Kayal¹, Prasanth Ganesan¹, Biswajit Dubashi¹¹Medical oncology, JIPMER, Pondicherry, India

Aims & Objectives: To understand the clinical characteristics, course and outcomes of acute graft vs host disease (aGVHD) among patients undergoing peripheral blood hematopoietic stem cell transplantation.

Patients / Materials & Methods: Data was collected from prospectively maintained medical records of all consecutive patients who underwent Allogeneic stem cell transplant (ASCT) from Jan 2014 to March 2020. aGVHD was defined within 100 days from date of transplant. All patients received myeloablative conditioning and GVHD prophylaxis was given depending on the type of transplant, MSD (CSA/MTX) and MMSD, Haplo, MUD (PTCy/TAC/MMF)

Results: 33 patients underwent ASCT, median age was 28 years (9 - 52), with Female to Male ratio of 1:3. Majority of the transplants were done in high risk AML, ALL, CML, MPAL at first remission (22 patients). Transplant at second or subsequent remission was done in 7 patients and 4 were aplastic anaemia. All the patients were HCT-CI low risk (n=33) and had an EBMT risk score of < 3 (n=23) and > 3 (n=10). Majority of transplants were MSD (n=24), MMSD, Haplo, MUD was done in 3, 6 and 1 patient respectively. Median CD34 count was 6.8 x 10⁶/Kg (2.29 to 13.9x10⁶). The median time to neutrophil engraftment was 13 days (9 - 20) and platelet engraftment was 14 days (7 - 95). aGVHD was seen in 16 patients (48.5%) among which 2 had GVHD post DLI. Most common organ involved was gut (n=12), followed by skin (n=10). Grade 1/2 GVHD was seen in 9 and 3/4 was seen in 7 patients. Course of aGVHD, treatment, pattern of response and outcome is described in the table1. Steroid refractoriness was seen in 6 patients (37.5%) and 4 patients had aGVHD associated mortality

Discussion & Conclusion: Acute GVHD contributes significantly to transplant related morbidity and mortality. Steroid refractory patients, about one third in our cohort had poor outcomes.

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Table 1. Clinical Course and Outcomes of acute GVHD in 33 allogeneic stem cell transplant

Features	N (%)
Acute GVHD	N=16 (2 post DLI) (48%)
Post DLI (Donor Lymphocyte Infusion) associated GVHD	2 (out of 4 patients who got DLI)
Organ involvement	
Skin	10
Gut	12
Liver	5
Biopsy proven	10 (62.5%)
Grade	
1 / 2	9 (56.2%)
3 / 4	7 (43.7%)
Ongoing Immunosuppressants (at onset of aGVHD)	
Off	3
CSA (Cyclosporine) / TAC (Tacrolimus)	12
Median time to onset of aGVHD	32 days (range 5 to 92 days)
Treatment (first line)	
Steroids (systemic)	15
Topical steroid	1
Steroid response	
Responsive	10 (62.5%)
Refractory*	6 (37.5%)
Median time to steroid response	4 days (2 – 5days)
Steroid taper	
Fast (<10days)	9
Slow (> 10 days)	6
Treatment (second line)	6 (3 Ruxolitinib and 3 MMF)
Treatment (third line & subsequent line)	5 (Etanercept, Ruxolitinib, ATG, sirolimus)
Overall response (At D30 of onset of aGVHD)	
Complete [#]	7 (43.7%)
Partial ^{##}	5 (31.2%)
No response	4 (25%)
Recurrence of acute GVHD**	3
Acute GVHD associated mortality	4 (all steroid refractory)
All-cause mortality (until last assessment)	
0-100 days	10
>100 days	13
Primary Cause of death (n= 23)	
Infection	7 (30%)
Disease relapse/ progression	11(48%)
GVHD	4 (17%)
VOD (Veno-occlusive disease)	1(4%)
*Steroid refractory GVHD: worsening of signs of GVHD in any organ over 3 days or no response in skin within 5 days	
** Recurrence of acute GVHD defining signs at any time point (Including beyond 100 days from date of transplant) after initial complete response to steroids.	
# complete response to GVHD defined as absence of signs of GVHD at D30 from onset of GVHD	
## Partial response defined as complete skin response and partial response of other involved organs with no evidence of any flare	

Disclosure of Interest: None Declared

Keywords: Acute Graft vs Host Disease, hematological malignancies, stem cell transplantation

