(allo-HSCT) may increase transplant-related mortality (TRM) and morbidity. Treosulphan (T) is an alkylanting agent that has substituted busulphan in many CRs. Aims of this communication are to report the experience with T in a heterogeneous group of children and to describe extramedullary-toxicity(according to WHO score), acute and chronic Graft-versus-host disease (GvHD), and TRM.
Methods: At G.Gaslini Research Institute in Genoa–Italy between November 2007 and April 2010, 18 children received T (14 g/m^2 at -6,-5,-4), Thiotepa (8 mg/kg at -7), and Fludarabin (40 mg/m^2 at -6,-5,-4,-3) before allo-HSCT (7 pts from related and 11 from unrelated donor). 8 pts had malignancies (5 acute lymphoblastic leukemia, 2 not Hodgkin lymphoma,1 juvenile myelomonocytic leukemia) and 10 pts had not malignant diseases (2 hemophagocytic lymphohistiocytosis, 2 thalassaemia major, 3 mucopolysaccharidosis-1, 1 dyserythropoietic anemia,1 drepanocytosis, 1 congenital immunodeficiency). Source of stem cells was bone marrow in 13, peripheral blood in 3 and cord blood in 2 pts.7 pts received T before 2nd HSCT (4 rejections and 3 relapses). Median follow-up was 15 months.
Results: Median time of engraftment was 19 days (range 10-43) for nucleated cells and 24 days (14-198) for platelets.Oral mucositis occurred in 83% pts (10 pts grade 1, and 5 grade 2). 50% pts developed skin toxicity (5 pts grade 1; 2 grade 2; 2 grade 3). 44% pts developed gastrointestinal toxicity (3 pts grade 1, 4 grade 2, 1 grade 3). None developed veno-occlusive disease and 6 pts had hepatic toxicity (3 pts grade 1, 2 grade 3, 1 grade 4).Hemorrhagic cystitis appeared in 1 pt. Pulmonary toxicity occurred in 1 pt (5%) affected by capillary leak syndrome. 1 developed neurotoxicity represented by stroke-like event probably related to cerebral vasculitis. 9 pts (50%) had acute GvHD (grade ≥2 in 7), and 3 classic chronic GvHD. Among 8 pts with malignancies 4 relapsed (1 in the first 100 days, 3 in the first year), and 3 of them died. None pts died within the first 100 days after HSCT.
Conclusions: In our experience T appears to be a promising chemotherapy given before allo-HSCT in many different diseases and in 2nd HSCT to reduce transplant related toxicity. The low acute extramedullary toxicity of T allows us to use this drug in pts with a poor performance status and/or organ dysfunction who undergo a 2nd HSCT.

P681
Impact of enteral feeding in patients undergoing allogeneic haematopoietic stem cell transplantation
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Background: Allo-HSCT procedure is associated with a frequent and potentially severe malnutrition which could highly participate to the transplant-related morbidity. Optimal nutritional management is still poorly known while both enteral nutrition (EN) and parenteral nutrition (PN) are effective. We propose to evaluate the impact of EN vs PN as nutritional support in allo-HSCT.
Material and methods: We retrospectively analyzed 51 patients who needed a nutritional support after a first allo-HSCT in our center from January 2009 to September 2010. Patients with progressive disease at transplant were excluded. Fifteen patients received a myeloablative conditioning regimen and 35 a reduced intensity one. Datas were compared in a intent to treat analysis according the EN or PN initial nutritional support strategy.
Results: A total of 24 agreed to receive EN via a nasogastric feeding tube and the remaining 27 received PN. In EN group, 10/24 patients needed parenteral supplementation because of intolerance of EN. In the PN group, 3/27 patients needed enteral supplementation. No significant difference in terms of age, conditioning regimens, stem cell source, donor compatibility and CMV risk could be observed between EN and PN groups. Median follow-up was 13 months in the PN group and 6.4 months in the EN group (p=0.026). Median neutropenia and thrombopenia duration and median transfusion requirements were not significantly different. Eleven patients in EN group and 17 in PN group presented a grade 4 oral mucositis (p=NS). Incidence of bacteriemia was also not different. Interestingly, we observed a lower median length of intravenous antifungal use (0 day [0-99] in EN vs 5 days [0-93] in PN; p=0.026) and a lower rate of curative antiviral treatment requirement in the EN group (1/24 in EN vs 7/27 in PN, p=0.081). There was moreover a lower rate of replacement of central veinous catheter in EN group (3/24 in EN vs 9/27 in PN; p=0.08). Grade II-IV GVHD incidence was comparable in both groups (11/24 in EN and 15/27 in PN; p=NS). Finally, we observed a trend for a lower rate of transfer to ICU in the EN group (2/24 in EN vs 8/27 in PN; p=0.12) but early death rate (<100 days) was the same in each group (4/24 vs 4/27, p=NS).
Conclusion: EN does not influence the hematopoietic toxicity but appears to directly decrease the infectious risk in allo-HSCT. Based on these results, we are now conducting a prospective randomized trial to confirm EN benefice in allo-HSCT.

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Nutritional status deteriorates during allogeneic haematopoetic cell transplantation
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Malnutrition is a negative predictor for more complications, unfavourable outcome and extended length of hospital stay. We therefore performed a prospective study to answer the question: Does the alloHCT procedure deteriorate the nutritional status of the patients till day +100?
One-hundred-seven consecutive pts., median age 56 y, with mainly myeloid malignancies (82%) and advanced disease (67%) were transplanted after RIC (92%) in 77% from an URD. Body weight (BW), body mass index (BMI, kg/m²); subjective global assessment (SGA, a score for malnutrion) and the body composition (Bio Impedance Analysis, BIA) were measured before alloHCT, day +30 and day +100. BIA includes the fat mass (FM), the lean body mass (LBM) and the phase angle (PA), an important measure for malnutrition. All pts. received regularly nutrition consulting and in case of decreased calorie intake oral supplements or parenteral nutrition (65%).
Results: At admission only 26% of the pts. were moderately or severely malnourished (SGA B&C); this deteriorated extreme till day +30 (74% SGA B&C) and improved slightly until day +100 (54% SGA B&C). In all pts. BW/BMI decreased significantly from admission over day +30 to day +100 ($p < 0.0001$); but more important is the difference between the significant loss of lean body mass/m² ($p< 0.0001$) compared to fat mass/m² ($p=0.023$) in this time period. The decreased muscle mass is further documented in the significant worsening of the phase angle between admission and +30/ +100 ($p < 0.0001$). The main changes in body composition occurred between start conditioning and day +30.
Conclusion: Especially in the aplastic phase of alloHCT the nutritional status of the patients is dramatically worsening and leading to reduced muscle mass. Individual intensive nutritional support with high protein supplementation and physical exercise may stop and reverse this development. HCT outcome data (GVHD / infection / survival incidence) compared to the nutritional status will be presented.

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Assessment of symptom burden in patients undergoing autologous stem cell transplantation
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Patients who undergo autologous peripheral blood stem cell (PBSC) transplantation experience multiple symptoms that

affect quality of life. We assessed symptoms during the first 30 days during and after autologous PBSC transplantation to determine the severity of individual symptoms and to determine overall symptom profiles in 120 patients with lymphoid malignancies that underwent autologous transplantation in our center. Eligible patients were at least 18 years of age, spoke maternal language, and could see and hear well enough to complete the assessment measures. The assessment of symptoms was measured according to the MD Anderson recommendations of 14 symptom profiling, as well as correlated with the patient's laboratory findings, ECOG score and the profile of mood states (POMS). We retrospectively evaluated if hematopoietic cell transplantation comorbidity index (HCT-CI), karnofsky performance status (PS) and other readily available pretransplant variables concerning pretransplant mobilization strategies that can also predict the outcome of autologous recipients in our transplant center. HCT-CI risk was low in 10 (12%), intermediate in 22 (27%) high in 45 (55%) and undetermined in 5 (6%). Two year OS was 45% (95%CI: 24-64%), 55% (95%CI: 40-68%) and 42% (95%CI: 24-64%) in the low, intermediate and high-risk HCT-CI groups respectively. The repeated measures ANOVA for symptom severity scores (P<0.001) and symptom interference scores (P<0.001) showed only a main effect for time. None of the potential covariates (demographics, mood, quality of life, cancer diagnosis, treatment-related variables and laboratory measures) were significant. Fatigue severity revealed a significant time-by-cancer-diagnosis interaction (P=0.048), as well as pain severity (P=0.008). Sleep disturbance and lack of appetite revealed a significant time interaction (P=0.02). The symptom patterns over time demonstrated by patients with non-Hodgkin's lymphoma differed from those shown by patients with multiple myeloma. Future research can also identify differing clusters of symptoms in subgroups of patients who undergo stem cell transplantation.

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Life satisfaction in survivors of childhood malignant and non-malignant diseases ten years after haematopoietic stem cell transplantation does not show significant impairment compared to healthy controls: a case-matched study

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Introduction: Patients undergoing HSCT should be investigated for late physical deterioration and psychological stress which could impair quality of life. This study focused on life satisfaction (LS) in long-term survivors at least 10 years after HSCT.
Materials and methods: From March to December 2008, 55 pts (39 males, median age 25 yrs), who underwent to allogeneic (49) or autologous (6) HSCT for childhood malignant (52) and non-malignant (3) diseases at least 10 years before the study, were consecutively enrolled. A control group of 98 young adults (59 males, median age 24 yrs) was considered. A questionnaire including a modified Satisfaction with Life Domain Scale for HSCT was administered both to the pts and to the controls, after obtaining an informed consent.
Five domains (education, employment, leisure time, social relationship and perception of physical status), each containing 2 to 10 items for a total of 30 questions, were assessed. To investigate the association between the domains and the probability of LS, we performed the logistic procedure by the method of maximum likelihood. Predictive factors of LS adjusted for age and type of HSCT (as continuous variable) were evaluated.
Results: In the univariate analysis the only significant difference between the case and the control groups was the level of education (p<0.001), but the difference is probably due the fact that some patients are still on secondary school and didn't get yet the appropriate certificate. Multivariate analysis showed that the level of LS was neither significantly correlated to socio-demographic factors (including level of education, work problems, family relationship, leisure time) nor to the HSCT status. A trend in favour of control group was represented by own body perception (p=0.062).
Conclusions: The results of the current study indicate that the pts who underwent HSCT during childhood have not a significant different LS compared to healthy controls.

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Perceived quality of life measures in haematopoietic stem cell transplantation clinical practice: results of prospective evaluation in 142 patients

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Object: Perceived quality of life (QoL) affects patients' evaluation of treatment outcome and their compliance to demanding therapies like Haematopoietic Stem Cell Transplantation (HSCT) whose related complications can greatly affect daily life for a long period.
Aim of this study was to evaluate factors regarding both patients' clinical status and psychological well-being potentially related to Qol perceived by patients during HSCT: a better understanding of the patient's evaluation process of his QoL can help to translate QoL measures in clinical practice planning specific intervention to promote patients' QoL, improving their satisfaction to medical treatment.
Methods: From January 2008 to October 2010, 142 patients undergoing HSCT completed questionnaires measuring level of anxiety and depression (Hospital Anxiety and Depression Scale), distress (Perception of Distress Index), quality of life (Medical Outcomes Study Short form-36) and patient's style to cope with the disease (Mental Adjustment to Cancer Scale) controlling for sex, age, stage of HSCT (pre-infusion, within 1 week, 1 month, 3 months, over 3 months), diagnosis, type of transplant, disease stage, sorror comorbity index (C.I.), blood counts and fever measured the same day the patient filled the questionnaires.
These data were analyzed by the statistical software SPSS.
Results: The results show a significant negative correlation between:
- mental and physical QoL and level of anxiety, depression, distress and helplessness coping style: the best QoL is associated with the lowest level of anxiety, depression, distress and with the lowest perception of lack of psychological resources to face with the disease;
- physical QoL and C.I. and fever: the best physical Qol is associated with the lowest level of fever and C.I. score.

No correlation between QoL and other clinical measurable variables of the disease and its treatment (type of transplant, stage of HSCT, diagnosis, disease stage) was found.
Conclusions: HSCT programs should include an assessment of both physical and psychological factors affecting perceived QoL: this intervention can help the clinician to understand how patients evaluate their conditions in order to plan shared treatment goals and undertake proper preventive and therapeutical measures. This would help patients to face with all the variables (depression, anxiety, coping style, distress) that affecting QoL can interfere with willingness to adhere to the HSCT program.

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Natriuretic peptides as markers of acute cardiotoxicity in children undergoing haematopoietic stem cell transplantation

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Natriuretic peptides are potentially useful for early detection of cardiotoxicity (CT). Atrial Natriuretic Peptide (ANP) is secreted