and craniofacial development. Busulfan (Bu) is an alkylating agent that can be combined with cyclophosphamide (Cy) in order to avoid use of TBI in children. The hypothesis to be tested in this study was that children conditioned with Bu/Cy have fewer disturbances in dental development compared to those conditioned with TBI/Cy.

Patients and Methods: The present study included 81 recipients of allogeneic HSCT and grafted between January 1980 and 2001. 57 children were treated with TBI and 24 with Bu/Cy. Panoramic radiographs were examined for aplasia, microdontia (reduction in crown size) and disturbances in root development of permanent teeth.

Results: When excluding third molars 19% (11/57) in the TBI/CY-group and 19% (5/28) in the BU/CY-group exhibited one or more missing teeth ($p = 0.7863$). In both groups there were a statistically significant negative correlation between age at HSCT and the number of missing teeth ($p<0.001$). In the TBI/Cy group 23% (13/57) compared to 52% (12/23) in the Bu/Cy group exhibited microdontia ($p = 0.0119$). Seventy-three percent (41/56) in the TBI/CY-group compared to 87% (20/23) in the BU/CY-group exhibited disturbances in root development. The mean number of teeth exhibiting disturbances in root development was 12.2 ± 9.6 in the TBI/CY-group and 10.3 ± 8.6 in the BU/CY-group ($p = 0.5726$).

Conclusion: The results show that busulfan is as toxic as TBI with regard to causing disturbances in dental development. Long-term survivors need careful dental follow-up to facilitate early diagnosis and planning of dental treatment.

210

EFFECTS OF HEMATOPOIETIC STEM CELL TRANSPLANTATION ON DERMATOLOGY QUALITY OF LIFE

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Background: The onset of cutaneous complications following hematopoietic stem cell transplantation (HSCT) has an impact on the well-being of post-transplant patients. These sequelae include adverse drug reactions, toxic erythema of chemotherapy, viral exanthema, eruption of lymphocyte recovery and graft-versus-host disease (GVHD). Such skin toxicities can have a profound effect on quality of life (QoL). Using a dermatology-specific questionnaire, we investigated the impact of dermatologic events after HSCT.

Methods: Patients completed the Skindex-16, a questionnaire that measures the effects of skin disease on patient QoL with respect to symptoms, emotions, and functional status, based on a 0-6 scale from least to most severe. Correlation of Skindex-16 scores was made to patient gender, age, ethnicity, underlying disease, type of HSCT, conditioning regimen, post-HSCT immunosuppressive medications, and presence/severity of acute and chronic GVHD according to Glucksberg criteria and the 2005 National Institute of Health Consensus Conference respectively.

Results: There was a statistically significant increase in mean scores for patient emotions (49.7) related to skin toxicities following HSCT as compared to both symptom scores (34.5, $p = .044$) and functional status scores (19.8, $p<.001$). There were no significant differences between QoL scores associated with patient gender, age, ethnicity, underlying disease, type of HSCT, conditioning regimen, post-HSCT immunosuppressive medications, and presence/severity of acute and chronic GVHD.

Conclusions: GVHD and other cutaneous sequelae of HSCT adversely impacted patient QoL with respect to emotional state as compared to symptoms or functional derangements related to skin eruptions post-HSCT. These results suggest that patient counseling is an essential component of medical care for patients with GVHD and other skin toxicities that result from transplantation.

211

HEMATOPOEITIC CELL TRANSPLANT (HCT) SURVIVORSHIP: HOW MUCH VARIANCE IN DEPRESSIVE SYMPTOMS CAN BE ACCOUNTED FOR BY BIOMEDICAL VARIABLES?

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HCT recipients are at high risk for psychological distress, particularly depression and anxiety, with reported prevalence rates as high as 40%, but there is a paucity of research evaluating how medical treatment-related variables might contribute to these symptoms. Our study investigated the feasibility of a brief psychological screening in routine outpatient care of 101 adult-HCT survivors. Participants completed the diagnostically-focused Patient Health Questionnaire (PHQ), assessing for depressive disorders, anxiety, and substance abuse. Median time to study participation was 276 days post-HCT (range 20-1821 days). Of the entire cohort (18 autologous, 83 allogeneic HCT), 22% endorsed the 9-item depressive symptoms subscale (PHQ9; range 0-27) in the clinically significant range of at least moderate depression (score ≥ 10); 19.8% scored in the mild range (score 5-9). As mean PHQ9 scores of autologous and allogeneic HCT did not differ significantly, we limited further analysis to allogeneic HCT recipients only. Linear multiple regression analysis with forced entry yielded a model accounting for 22.5% of the variance in depressive symptoms ($F_{(8,74)} = 3.98$; $p < .001$).

Table. Linear Multiple Regression Model with Forced Entry Predicting Depressive Symptoms in Allogeneic Transplant Patients, Controlling for Relapse, Steroid Dose at Time of Study, and Age at HCT

PREDICTORS	BETA	p VALUE
Full Intensity*	0.32	0.004
Steroids for aGVHD prior to study**	0.42	0.001
Unrelated donor HCT***	-0.34	0.002
Any GVHD prior to study****	-0.32	0.009
Days from HCT prior to study	0.27	0.014
Relapse prior to study	0.03	0.743
Steroid dose (mg/kg) at study entry	0.17	0.100
Age at HCT	0.15	0.175

*Full vs reduced intensity conditioning regimen; thus full intensity had more depression

**Steroids for acute GVHD; thus treated with steroids were more depressed

***Unrelated vs related; thus related had more depression

****Any GVHD (acute or chronic) before study; thus those without GVHD had more depression

More depressive symptoms were significantly associated with full intensity conditioning regimen, steroid treatment for acute GVHD, and more days since transplant. Less depression was associated with unrelated HCT compared to related HCT, and any form of GVHD compared to none. Thus, long-term HCT survivors were more likely to be depressed, and patients with GVHD were less depressed. However, patients with acute GVHD treated with steroids were more likely to be depressed. One explanation may be that unrelated graft recipients and those experiencing GVHD had lower expectations of good outcome, or greater social support. To explore how heavily the medical predictors loaded on somatic symptoms associated with depression, we assessed the 5 PHQ cognitive/affective items (i.e., omitting the 4 somatic items) onto the same set of predictor variables, producing a statistically significant model accounting for 19.4% of the variance ($p < .01$), suggesting that medical variables contributed significantly to the variance in cognitive and affective depressive symptoms alone. These data for this hypothesis-generating pilot are now being used to design a future prospective study mapping the trajectory of depression from pre-HCT through various time points post-HCT in relation to biomedical variables.