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722.ALLOGENEIC TRANSPLANTATION: ACUTE AND CHRONIC GVHD, IMMUNE RECONSTITUTION

Influence and Role of the Body Mass Index and Its Development on the Course of Pediatric HSCT - a Retrospective Analysis

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T Stetter and M Döring contributed equally to this work. Background
Children and adolescents are at increased risk of malnutrition during the course of hematopoietic stem cell transplantation (HSCT). Increased endocrine activity, a catabolic metabolic state and inflammatory processes increase the energy metabolism and therapy-associated side effects impair nutritional intake. Studies have shown that the nutritional status before HSCT in adults has a decisive influence on the time afterwards. The role of nutritional status in children and adolescents before, during, and after HSCT remains poorly understood. Patients and Methods
In this monocentric, retrospective study, data from patients who underwent autologous or allogeneic HSCT at the University Children's Hospital Tübingen between November 2012 and November 2021, were analyzed. Exclusion criteria were known gastrointestinal malformations, permanent enteral/parenteral nutrition, and known chronic inflammatory bowel disease before HSCT. On three observation days (baseline: day of in-patient admission, day +30, and day +200 after HSCT) data on age-adjusted BMI percentiles, incidence of transplant-associated adverse events (TRAE; e.g., graft-versus-host disease (GvHD), veno-occlusive disease (VOD), mucositis, infection), and survival (up to 10 years after HSCT; last note in file). were collected. Patients were categorized into alloHSCT and autoHSCT Patients as well as BMI-percentile groups depending on baseline BMI percentile: <3rd percentile, 3rd-<10th percentile, 10th-<25th percentile, 25th-<50th percentile, 50th-<75th percentile, 75th-97th percentile, and >97th percentile. Results
A total of 365 patients with a median age of 9 years (0-23 years), 56% of whom were female, were studied. Of these, 307 (84%) underwent allogeneic and 58 (16%) autologous HSCT. The underlying disease was malignant in 262 cases (72%) and non-malignant in 103 cases (28%). The proportions of patients fell into the corresponding BMI percentile groups at the respective observation days (see Table). During the course of time until day +200 after HSCT, the BMI percentile category remained the same in 28% of the cases, in 17%, 10%, and 3% of cases, respectively, patients moved up one, two, and >2 categories, respectively; in 20%, 12%, and 9% of cases, patients dropped one, two, and >2 categories, respectively, compared to baseline. However, comparing the alloHSCT and autoHSCT patients, a different distribution in the development until day +200 is noticeable. Overall, 27% of the alloHSCT and 44% of autoHSCT patients ascend one or more percentile groups, whereas 46% of the alloHSCT and 22% of the autoHSCT patients descend one or more BMI percentile categories. Higher-grade intestinal GvHD stage 3-4 occurred statistically more frequently in the percentile group >75th-97th (p=0.0028), but when all grades were considered together, no significant clustering in any group was observed. A significant accumulation (p=0.0413) of VOD, BKV cystitis (p=0.0021), and Viremia (p=0.0081) was found in the group >75th-97th percentile. A total of 115 patients (32%) died during the observation period. In the alloHSCT group, 35 deaths (12% of alloHSCT patients) fell under TRM. Here, of the 35 deceased, 12 (34% of deceased, 4% of total alloHSCT patients) were ascribed to the >75th-97th percentile group; the median proportion of deceased patients was 9% (1% of alloHSCT group) in the other percentile groups. In the autoHSCT group, a total of 23 patients (41%) died; of these, all were due to progression or recurrence of the underlying disease. The <3rd percentile and >25th-50th percentile groups each recorded the most deaths, with 26% of those who died and 11% of patients in the autoHSCT group, respectively. Conclusions
Contrary to the expectation that particularly underweight pediatric HSCT patients might be more affected by complications, this data collection showed statistically clustered complications and TRM in the group of patients between the 75th-97th BMI percentiles. Although this is only a status description of body weight and length during follow-up, and not a specific survey of nutritional status, the data analysis suggests that HSCT patients in the overweight range should be focused on more closely.

A prospective survey of differential nutritional status in pediatric HSCT patients is currently being conducted at our study center.

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All patients	**Baseline**	**Day +30**	**Day +200**
BMI percentile category	% of patients	% of patients	% of patients
≤3rd	9	13	14
3rd-10th	13	15	16
>10th-25th	16	16	13
>25th-50th	22	23	15
>50th-75th	16	13	21
>75th-97th	19	14	15
>97th	4	6	5
AlloHSCT	**Baseline**	**Day +30**	**Day +200**
BMI percentile category	% of patients	% of patients	% of patients
≤3rd	9	13	15
3rd-10th	14	14	18
>10th-25th	16	17	14
>25th-50th	22	21	15
>50th-75th	14	12	18
>75th-97th	20	15	15
>97th	5	7	5
AutoHSCT	**Baseline**	**Day +30**	**Day +200**
BMI percentile category	% of patients	% of patients	% of patients
≤3rd	10	14	6
3rd-10th	11	18	8
>10th-25th	16	8	11
>25th-50th	25	35	17
>50th-75th	21	14	39
>75th-97th	13	8	17
>97th	2	2	3

Figure 1

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