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Congress Abstract

Nutritional Disorders, Mucositis, and Sepsis after Autologous and Allogeneic Hematopoietic Stem Cell Transplantation

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Introduction: Nutritional deficiency is a significant clinical problem in patients who have undergone hematopoietic stem cell transplantation (HSCT). The development of mucositis, systemic inflammatory response, and infectious complications is accompanied by reduced oral intake, increased catabolic processes, and body weight loss. At the same time, specialized nutritional support in real-world clinical practice is often initiated only after severe complications have already developed, which determines the need to shift from a reactive to an early differentiated strategy of nutritional support.

Objective: To compare nutritional status and clinical complications after autologous and allogeneic HSCT, to assess the associations of severe mucositis, sepsis, and specialized nutritional support with laboratory parameters and length of hospitalization, and to substantiate the need for an algorithm of early differentiated nutritional support.

Materials and Methods: A single-center retrospective study was conducted on 70 patients who underwent HSCT: 35 after autologous and 35 after allogeneic transplantation. Body weight dynamics, total protein and albumin levels, maximum C-reactive protein levels, presence and grade of mucositis, frequency of sepsis and thromboses, microbiological profile of infectious complications, use of specialized nutritional support, and length of hospitalization were analyzed. Comparative analysis was performed taking into account the type of HSCT, presence of severe mucositis, sepsis, and use of nutritional support. Fisher's exact test was used for comparison of categorical variables. Differences were considered statistically significant at $p < 0.05$.

Results: A body weight loss of more than 5% was statistically significantly more frequent after allogeneic HSCT compared to autologous: 100% vs. 77.1%, respectively ($p = 0.005$). Sepsis was recorded in 62.9% of patients after allogeneic and 45.7% after autologous HSCT; the difference did not reach statistical significance ($p = 0.229$). Among cases with identified pathogens, gram-positive microorganisms accounted for 51.4% ($n = 19$) and gram-negative for 48.6% ($n = 18$). Resistant or clinically problematic microorganisms were identified in 22 cases of sepsis (57.9%); Klebsiella pneumoniaeand Escherichia coli predominated among the pathogens.

In patients with sepsis, minimum albumin values were lower compared to patients without sepsis: 30.1 vs. 32.5 g/L ($p = 0.001$), as were minimum total protein values: 50.9 vs. 54.1 g/L ($p = 0.033$). Maximum C-reactive protein levels were substantially higher:

163.5 vs. 78.0 mg/L ($p < 0.001$). Sepsis was also associated with a longer length of hospitalization: 36.9 vs. 34.5 days ($p = 0.010$).

Thrombotic complications were more frequently recorded after allogeneic HSCT: 34.3% vs. 11.4% after autologous HSCT ($p = 0.044$). With grade III–IV mucositis, specialized nutritional support was received by 39 of 41 patients (95.1%), whereas among patients without severe mucositis – 4 of 29 (13.8%; $p < 0.001$). Initiation of specialized nutritional support within the first 48 hours was noted in only 4 of 70 patients (5.7%).

After autologous HSCT, the length of hospitalization in patients receiving specialized nutritional support was 36.0 ± 5.7 days vs. 32.2 ± 2.9 days in patients without it ($p = 0.03$). After allogeneic HSCT, the corresponding values were 37.8 ± 3.2 and 36.3 ± 2.7 days ($p > 0.05$).

Conclusions: Nutritional disorders are a frequent complication of both autologous and allogeneic HSCT; however, the most pronounced body weight loss is observed after allogeneic transplantation. Sepsis is associated with a more pronounced decrease in albumin and total protein levels, an increase in C-reactive protein, and a longer length of hospitalization. Specialized nutritional support was prescribed predominantly to patients with already developed severe mucositis, whereas its early initiation within the first 48 hours was used only in isolated cases. The obtained data indicate the predominantly reactive nature of the existing nutritional support strategy and substantiate the need for its earlier individualization.

Based on the study results, an algorithm of early differentiated nutritional support for patients after HSCT was developed. Currently, a prospective phase of the study is being conducted with daily monitoring of actual energy and protein intake, volume of nutritional support, and clinical and laboratory dynamics in patients after allogeneic HSCT. The prospective observation is aimed at evaluating the applicability of the developed approach and its subsequent association with nutritional and clinical outcomes.

Keywords: Hematopoietic Stem Cell Transplantation; Nutritional Status; Nutritional Support; Mucositis; Sepsis