Haematological Malignancies

Impact of Body Mass Index on Outcomes After Autologous Hematopoietic Stem Cell Transplantation

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Aim: Obesity is an increasingly prevalent problem worldwide, even in patients undergoing hematopoietic stem cell transplantation (HSCT). In the setting of HSCT, obesity may contribute to poorer outcomes due to excess inflammation, comorbidities, and lack of standard chemotherapy dosing resulting in more toxicity or decreased curative outcomes. We aimed to investigate the association of Body Mass Index (BMI) to overall survival and treatment-related complications in autologous HSCT recipients.

Methods: We retrospectively analyzed outcomes of 130 recipients of autologous HSCT for multiple myeloma (n = 126) and amyloidosis (n = 4) in our institution from 2006 to 2012. We categorized patients by BMI as normal (<25), overweight (25 ≤ BMI < 30) or obese (BMI ≥ 30). Depending on the properties of the outcome variable, an appropriate model was constructed by multiple linear regression, logistic regression, or Cox proportional hazards regression.

Results: For conditioning regimen, 122 patients received melphalan (mel) 200 mg/m², 5 received mel 140 mg/m², 1 received mel 100 mg/m² and 2 received busulfan/cyclophosphamide. 32 (25%) patients had a BMI of <25, 56 (43%) were overweight and 42 (32%) obese. Compared to those with BMI < 25, the overweight had a 1.62-fold greater expected geometric mean maximum stool volume in ml per day (p = 0.02). We see similar results for the obese, but not statistically significant at the 0.05 level. Compared to those with BMI < 25, the obese had a 6.57-fold greater odds of acute kidney injury (AKI) (p < 0.01). No correlation was found between BMI and duration of hospitalization, time to platelet and neutrophil engraftment, and occurrence of infections. No statistically significant differences in overall survival were observed between overweight and obese as compared to those with BMI of <25 (hazard ratio 0.83, p = 0.69 and 0.94, p = 0.9, respectively).

Conclusions: Overweight and obesity were not associated with worse overall survival after autologous HSCT for multiple myeloma and amyloidosis. However, a BMI >25 was associated with more GI toxicity and a BMI >30 was associated with increased incidence of AKI. Further investigation is warranted to elucidate the cause(s) of the observed associations.

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