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

Analysis of Hospitalization Outcomes in Bone Marrow Transplant Patients with Graft-Versus-Host Disease: A Nationwide Study

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Background:

Graft-versus-host disease (GVHD) is a well-known complication in patients with bone marrow transplantation. There is a need for additional data on the in-patient outcomes of GVHD in patients who have undergone bone marrow transplantation. Our analysis aims to evaluate the outcomes of GVHD in hospitalized patients with bone marrow transplantation.

Method:

In this retrospective study, we utilized data from the National Inpatient Sample (NIS) database from 2016 to 2019. Using ICD-10 codes, we identified hospitalizations involving bone marrow transplantation and categorized them into two groups: those with GVHD and those without GVHD. To account for potential confounding variables, we considered a comprehensive set of factors, including age, sex, race, zip code-based income quartile, hospital region, hospital teaching status, hospital division, hospital bed size, insurance status, and the Charlson comorbidity index score.

We performed univariable logistic regression analysis to calculate unadjusted odds ratios. Subsequently, we conducted a multivariable logistic regression analysis to account for potential confounding effects and calculated adjusted odds ratios.(see Figure), where the model included only variables that were found to be associated with the outcome of interest in the univariable regression analysis at a significance level of P < 0.2.

Proportions were compared using the Fisher exact test for categorical variables, and continuous variables were compared using the Student t-test. All P-values were two-sided, and the significance level was set at P < 0.05, indicating statistical significance.

Results:

From 2016 to 2019, data were collected from 13,999 hospitalizations involving bone marrow transplants. Among these cases, 836 hospitalizations were linked to GVHD patients. A comparison of patient characteristics showed that individuals with GVHD had a mean age of 51.61 years, while those without GVHD had a slightly higher mean age of 55.55 years. There were slight variations in gender and race distributions between the two groups, with a higher percentage of males and whites observed in the GVHD group compared to the group without GVHD.

The analysis of outcomes between the two groups revealed significant differences. Patients with GVHD experienced notably longer mean lengths of stay (41.40 days vs. 21.31 days, P = 0.000) and incurred higher mean total hospital charges ($824,058 vs. $335,765, P = 0.000).

Furthermore, after adjusting for confounding factors, GVHD posed a substantial risk to patients undergoing bone marrow transplantation. The adjusted odds ratio (aOR) for mortality in those with GVHD was 7.20 (95% CI: 5.54 to 9.36, P = 0.000) compared to those without GVHD, indicating a considerably higher risk of death. The coefficient for the length of stay was 19.36 days (95% CI: 17.29 to 21.42), and the coefficient for total hospital charges was $453,733 (95% CI: $396,577 to $510,889) in patients with GVHD compared to those without GVHD hospitalizations.

Moreover, the presence of GVHD in patients was associated with elevated risks of various medical conditions. The adjusted odds ratios (aORs) for sepsis, pneumonia, acute respiratory failure, intubation and mechanical ventilation, Clostridium difficile

infection, and acute kidney injury (AKI) in patients with GVHD were 2.79 (95% CI: 2.28 to 3.41, P = 0.000), 3.30 (95% CI: 2.57 to 4.24, P = 0.000), 5.10 (95% CI: 4.01 to 6.49, P = 0.000), 4.88 (95% CI: 3.75 to 6.34, P = 0.000), 1.45 (95% CI: 1.13 to 1.86, P = 0.003), and 3.57 (95% CI: 2.97 to 4.29, P = 0.000), respectively (see Figure).

Conclusion:

Patients with GVHD in patients with bone marrow transplantation experience higher mortality rates, extended hospital stays, and increased hospital charges. Additionally, they are at a significantly higher risk of developing severe medical conditions, including sepsis, pneumonia, acute respiratory failure, Clostridium difficile infection, and acute kidney injury (AKI). These findings highlight the importance of closely monitoring and effectively managing GVHD to enhance patient outcomes and alleviate the burden of complications associated with bone marrow transplantation. Nevertheless, further prospective studies are necessary to gain a deeper understanding and more comprehensive evaluation of the outcomes in these hospitalized patients.

Disclosures Savani: *Takeda Development Center Americas, Inc. (TDCA):* Current Employment.

Outcomes associated with GVHD with adjusted analysis (Adjusted odds ratio/Coefficient)

Mortality	aOR=7.20 (95% CI: 5.54 to 9.36)	P= 0.000
Length of stay	Coefficient= 19.36 days (95% CI: 17.29 to 21.42)	P = 0.000
Total hospital charges	Coefficient= $453,733 (95% CI: $396,577 to 510,889)	P = 0.000
Sepsis	aOR=2.79 (95% CI:2.28 to 3.41)	P = 0.000
Pneumonia	aOR=3.30 (95% CI:2.57 to 4.24)	P = 0.000
Acute respiratory failure	aOR= 5.10 (95% CI:4.01 to 6.49)	P = 0.000
Intubation and mechanical ventilation	aOR=4.88 (95% CI: 3.75 to 6.34)	P = 0.000
Clostridium difficile infection	aOR= 1.45 (95% CI: 1.13 to 1.86)	P = 0.003
AKI	aOR=3.57 (95% CI: 2.97 to 4.29)	P = 0.000

Figure 1

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