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Outcomes Of Bone Marrow Transplant In ESRD vs Non-ESRD Patients

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BACKGROUND

Recent meta-analyses and studies from across the globe have established the increased risk of cancers, including bone marrow malignancies, in end-stage-renal-disease [ESRD] patients. This could be attributed to chronic inflammation and oxidative stress from uremic toxins, impaired renal excretion leading to accumulation of carcinogenic compounds, and maintenance dialysis leading to damaged DNA repair mechanisms and immune dysfunction.

AIM

The number of ESRD patients who underwent bone marrow transplantation (BMT) for bone marrow malignancies is on an upward trajectory. However, the outcomes of BMT remain unexplored in this population. In this retrospective study, we analyze the prevalence and outcomes of BMT in hospitalized ESRD patients compared to the general population using a national database.

METHODS

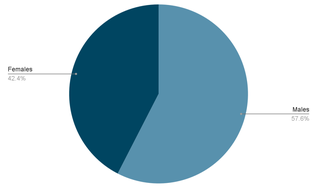
- The National Inpatient Sample database(2016-2020) was queried, and International Classification of Diseases-10th-Revision-codes were used to identify adults who underwent BMT.
- This population was stratified based on prevalence of ESRD.
- Multivariate regression analysis was performed to assess in-hospital mortality, resource utilization, and other secondary outcomes of BMT in ESRD vs non-ESRD patients after adjusting for relevant confounders and various hospital and patient characteristics.

RESULTS

66,923 BMT hospitalisations were identified of which, 3078 had ESRD (prevalence-4.6%). Mean age of BMT patients was 57.53 in the non-ESRD group and 59.74 in the ESRD group. 57.56% were males in the ESRD cohort. Among hospitalized patients who underwent BMT, ESRD status had a statistically significant impact on mortality [OR: 1.49, CI: 1.25-1.78, P<0.001] and secondary outcomes like septic shock [OR: 1.57, CI: 1.31-1.88, P<0.001] and circulatory-overload [OR: 3.31, CI: 2.78-3.93, P<0.001]. A higher odds of ARDS was found, but not statistically significant. ESRD patients who underwent BMT also had higher resource utilization marked by increased mean length of hospital stay by 1.25 days and increased hospital charges by $26,124.30 than non-ESRD patients (P:0.014).

Total BMT hospitalizations identified: 66,923

Prevalence of ESRD: 4.6% [N=3,078]



Outcomes of BMT in ESRD vs Non-ESRD patients	Adjusted Odds Ratio [OR]*	95% Confidence interval	P value
Mortality	1.49	1.25-1.78	<0.001
Septic Shock	1.57	1.31-1.88	<0.001
Circulatory overload	3.31	2.78-3.93	<0.001

*After adjusting for relevant confounders and various hospital and patient characteristics.

ESRD vs Non-ESRD	Increased length of stay	1.25 days
	Increase in total hospitalization charges	$26,124.30

CONCLUSIONS

- ESRD portends worse outcomes in BMT patients as evidenced by increased mortality, resource utilization and poor secondary outcomes.
- Further prospective studies are required for risk stratification and optimisation of treatment strategies in this vulnerable population.

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