PREDICTORS AND OUTCOMES OF MAJOR CARDIOVASCULAR EVENTS IN HOSPITALIZED MULTIPLE MYELOMA PATIENTS

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Introduction

Cardiovascular complications are increasingly recognized in patients with multiple myeloma (MM), yet limited data exist on the predictors and outcomes of major adverse cardiovascular events (MACE) in this population.

Aim

Identify demographic and clinical factors associated with MACE and their impact on outcomes among hospitalized MM patients in the United States

Methods

Retrospective cohort study performed using ICD 10 codes from the National Inpatient Sample (NIS) Database including MM patients admitted from 2016 to 2021 with MACE like myocardial infarction, stroke, heart failure, or cardiovascular death captured as one of the top three admission diagnoses. Multivariate logistic regression was performed using STATA-BE to control for confounding factors like age, gender, race, diabetes, hypertension, smoking history, dyslipidemia, and thrombophilia.

Results

Out of a total 141,893 multiple myeloma patients (mean age 69.57 ± 11.42 years; 44.23% females), 19,507 (13.74%) were hospitalized with MACE, while 122,386 (86.25%) were not. MACE in this cohort was significantly associated with inpatient mortality (OR 1.83; 95% CI 1.68-2.00).

Key: MACE (Major Cardiovascular Event), MM (multiple myeloma without remission), MMrem (MM with remission), HTN (Hypertension), CHF (Congestive heart failure), CKD (Chronic kidney disease), ESRD (End-stage renal disease), HLD (Hyperlipidemia), Thrombo (Thrombophilia), BMT (Bone marrow transplant), ChemoTh (Chemotherapy), Immunotherapy (Immunotherapy), OR (Odds ratio)

Logistic Regression Model

Variables	MACE		Mortality	
	OR	P value	OR	P value
MACE			1.834	<0.001
MM	1.098	0.038	0.749	<0.001
MMrem	1.436	<0.001	0.467	<0.001
Age	1.013	<0.001	1.032	<0.001
Female	0.891	<0.001	0.854	<0.001
White	0.541	0.53	0.212	0.072
Black	0.728	0.684	0.299	0.078
Hispanic	0.717	0.567	0.390	0.065
Asian	0.998	0.995	0.590	0.122
Smoking	0.894	<0.001	0.706	<0.001
Alcohol	0.963	0.772	0.937	0.655
Obesity	0.901	0.035	0.762	<0.001
Diabetes	0.865	0.04	0.751	<0.001
HTN	2.406	<0.001	0.566	<0.001
CHF	1	N/a	0.418	<0.001
CKD	1.192	<0.001	0.969	0.312
ESRD	1.271	<0.001	1.539	<0.001
HLD	1.233	<0.001	0.711	<0.001
Thrombo	1.986	<0.001	1.402	0.002
BMT	0.587	<0.001	1.030	0.47
ChemoTh	0.846	<0.001	0.693	<0.001
ImmunoTh	0.203	0.006	0.184	0.004

Summary

MACE occurred in a significant proportion of MM patients, with higher risk linked to comorbidities such as hypertension, renal disease, and thrombophilia. In contrast, anti-myeloma therapies like bone marrow transplant, chemotherapy, and immunotherapy were associated with reduced MACE incidence. These findings highlight the importance of cardiovascular risk stratification and integrated care in MM management.

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