TRENDS IN VENOUS THROMBOEMBOLISM EVENTS IN HOSPITALIZED MULTIPLE MYELOMA PATIENTS: A RETROSPECTIVE COHORT STUDY

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Introduction

Patients with multiple myeloma (MM) have a 20-fold higher risk of venous thromboembolism (VTE) than the general population, with most events occurring early in treatment.(1) VTE is a major driver of morbidity and mortality in MM, yet evidence on its predictors and outcomes in hospitalized patients remains limited

Aim

To evaluate the incidence, predictors, and impact on inpatient mortality of venous thromboembolism (VTE) in hospitalized patients with multiple myeloma (MM) in the United States.

Objectives

- Determine the incidence of VTE in hospitalized MM patients.
- Identify demographic (age, sex, race, region) and clinical (thrombophilia, comorbidities) predictors of VTE.
- Assess the effect of bone marrow transplant, chemotherapy, and immunotherapy on VTE risk.
- Evaluate factors associated with VTE-related inpatient mortality.
- Define high- and low-risk patient profiles to guide targeted prophylaxis.

Methods

- **Design & Data Source:** Retrospective cohort study using the National Inpatient Sample (2016–2021).
- **Population:** Patients with age >18, admitted with multiple myeloma (MM) and having VTE listed among the top three admission diagnoses, identified using ICD-10 codes.
- **Analysis:** Multivariate logistic regression (STATA-BE) to evaluate associations between MM, VTE, and inpatient mortality.
- **Covariates:** Adjusted for age, sex, race, obesity, smoking status, thrombophilia, chronic kidney disease (CKD), chemotherapy, immunotherapy, and bone marrow transplant (BMT) status.

Conclusion

- VTE affected a substantial proportion of hospitalized MM patients, though at a slightly lower rate than prior reports, likely reflecting the inpatient population studied.(2)
- Thrombophilia emerged as the strongest predictor, while Asian race remained protective, consistent with earlier risk models.(3) These results emphasize importance of screening for inherited/acquired thrombophilic states.
- ESRD presented a paradox of reduced incidence but increased mortality.
- Protective effects of BMT, chemotherapy, and immunotherapy further underscore the role of treatment setting.
- Future research should clarify the mechanisms behind the CKD/ESRD paradox, explore racial differences in VTE risk, and assess evolving therapies such as CAR-T and bispecific antibodies.

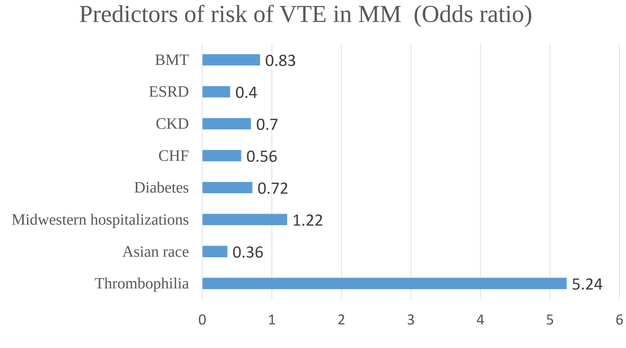
References

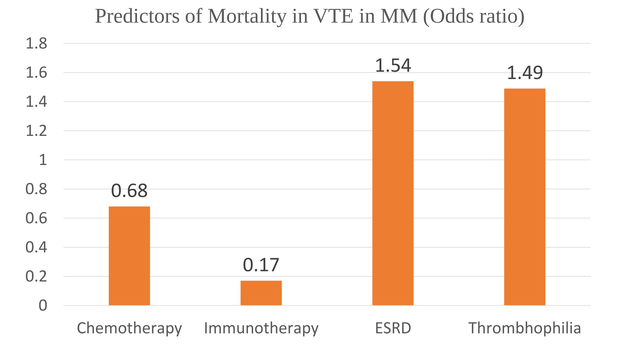
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Results

Population: 141,893 MM patients (mean age 69.6 ± 11.4 years; 44.2% female).
Incidence: 4,081 **(2.87%)** hospitalized with VTE.
Subtypes: Pulmonary embolism (60.5%), lower limb DVT (39.8%).
Remission status: Similar VTE rates in MM in remission vs not in remission (Odds ratio (OR) 1.17 vs 1.12).

VTE	Odds ratio	P ratio	[95% conf. interval]	
MM not in remission	1.126333	0.043	1.003629	1.264039
MM in remission	1.178017	0.034	1.012186	1.371016
AGE	1.002431	0.186	0.998834	1.00604
FEMALE	1.014964	0.653	0.951385	1.082792
RACE				
white	0.199966	0.198	0.017238	2.319598
black	0.381325	0.332	0.05429	2.678347
hispanic	0.377805	0.188	0.08859	1.611216
Asian	0.366546	0.046	0.136807	0.982083
Hospitalization region				
NE	1.090326	0.481	0.857292	1.386704
MW	1.222568	0.008	1.052645	1.419921
south	1			
west	1			
smoking	0.973842	0.49	0.903301	1.049891
alcohol	0.917168	0.638	0.63946	1.315482
obesity	1.075395	0.248	0.950728	1.21641
Diabetes	0.724666	0.003	0.584484	0.898469
Hypertension	0.994257	0.882	0.921212	1.073093
CHF	0.560777	0	0.481719	0.65281
CKD	0.701266	0	0.644051	0.763565
ESRD	0.40148	0	0.343616	0.469089
Hyperlipidemia	0.990059	0.775	0.924552	1.060207
thrombophilia	5.24668	0	4.421376	6.226037
Bone marrow transplant	0.837347	0.001	0.755925	0.927539
Chemotherapy	0.946902	0.292	0.855604	1.047941
Immunotherapy	0.429984	0.095	0.159659	1.15801





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