Comparative Effectiveness and Safety of Direct Oral Anticoagulants Versus Low-Molecular-Weight Heparin in Acute Myeloid Leukemia–Associated Venous Thromboembolism

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INTRODUCTION

- Management of venous thromboembolism (VTE) in acute myeloid leukemia (AML) is challenging because of thrombocytopenia, coagulopathy, chemotherapy-related toxicity, and bleeding risk.
- Although low-molecular-weight heparin (LMWH) has traditionally been preferred for cancer-associated thrombosis, evidence supporting direct oral anticoagulants (DOACs) in AML remains limited.

AIM

To compare the effectiveness and safety of DOACs versus LMWH in AML-associated VTE using a real-world database.

METHOD

- Retrospective cohort study using the TriNetX Global Collaborative Network.
- Adults with AML and VTE receiving DOACs within 1 month of VTE diagnosis were compared with those receiving LMWH.
- Cohorts underwent 1:1 propensity score matching for demographics, hematologic abnormalities, comorbidities, bleeding risk, chemotherapy exposure, and transplant-related factors.
- The primary outcome was all-cause mortality;
- Secondary outcomes included recurrent VTE, major bleeding, intracranial and gastrointestinal hemorrhage, and hospitalization at 90 days and 1 year.

CONCLUSIONS

- In this large propensity-matched real-world study of AML-associated VTE, DOAC therapy was associated with significantly lower short and long-term mortality, recurrent thrombosis, major bleeding, and intracranial hemorrhage compared with LMWH.
- These findings suggest that DOACs may be a safe and effective alternative in selected patients and warrants prospective validation.

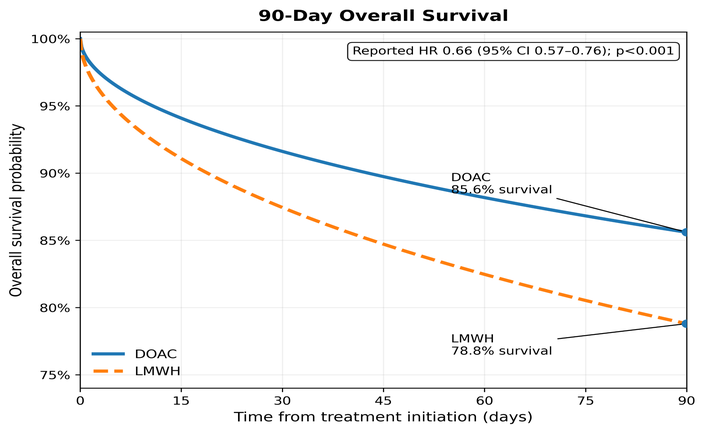
RESULTS

90 Day Outcomes After Propensity Score Matching

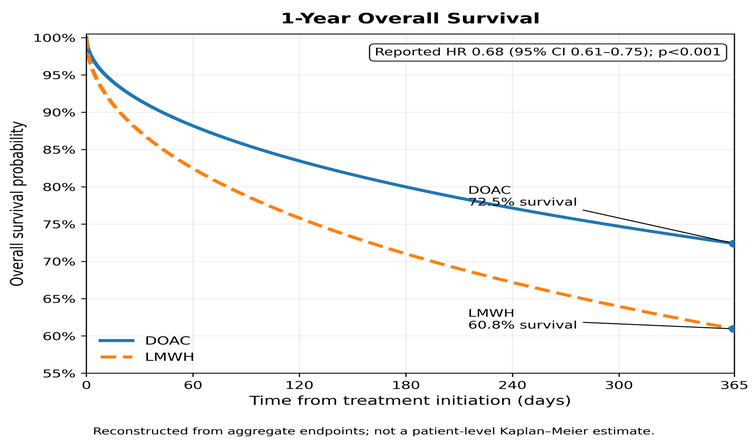
Outcome	DOAC	LMWH	Effect Estimate
All-cause mortality	14.4%	21.2%	HR 0.66 (95% CI 0.57–0.76); p<0.001
Pulmonary embolism	1.9%	2.3%	RR 0.84 (95% CI 0.52–1.36); p=0.476
Venous thrombosis	5.5%	9.2%	RR 0.60 (95% CI 0.37–0.97); p=0.035
Major bleeding	3.7%	5.6%	RR 0.65 (95% CI 0.48–0.89); p=0.007
Intracranial hemorrhage	1.0%	1.7%	RR 0.55 (95% CI 0.32–0.95); p=0.029
Gastrointestinal bleeding	1.6%	2.1%	RR 0.74 (95% CI 0.47–1.17); p=0.198
Hospitalization	11.2%	9.0%	RR 1.24 (95% CI 0.90–1.70); p=0.186

1 Year Outcomes After Propensity Score Matching

Outcome	DOAC	LMWH	Effect Estimate
All-cause mortality	27.5%	39.2%	HR 0.68 (95% CI 0.61–0.75); p<0.001
Pulmonary embolism	3.3%	3.4%	RR 0.99 (95% CI 0.68–1.45); p=0.966
Venous thrombosis	7.8%	12.9%	RR 0.61 (95% CI 0.41–0.91); p=0.013
Major bleeding	8.4%	11.1%	RR 0.76 (95% CI 0.62–0.94); p=0.010
Intracranial hemorrhage	1.9%	3.8%	RR 0.52 (95% CI 0.36–0.75); p<0.001
Gastrointestinal bleeding	3.2%	4.3%	RR 0.75 (95% CI 0.54–1.02); p=0.068
Hospitalization	14.3%	12.0%	RR 1.20 (95% CI 0.91–1.57); p=0.199



Reconstructed from aggregate endpoints; not a patient-level Kaplan–Meier estimate.



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