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Incidence, Predictors, and Outcomes of Atrial Fibrillation During Hospitalization for Mantle Cell Lymphoma

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INTRODUCTION

- Atrial fibrillation (Afib) is reported to complicate up to 16% of hospitalizations for B-cell malignancies.

AIM

- We assessed Afib's incidence rate, predictors, and outcomes in mantle cell lymphoma (MCL) hospitalizations.

METHODS

- The 2017–2020 NIS database was queried for all hospitalizations for MCL with or without using ICD-10-CM codes.
- Baseline characteristics were compared using $\chi 2$ tests and Student's t-test for categorical and continuous variables.
- Outcomes included mortality, LOS, mean hospital costs, and acute in-hospital complications.
- Predictors of Afib were assessed using stepwise multivariable logistic regression analysis.
- Illness severity, baseline mortality risk, and comorbidity burden were adjusted using all patient refined-diagnosis-related groups (APR-DRG) metrics, Charlson comorbidity index (CCI), and the Johns Hopkins frailty clusters.

RESULTS

Table 1: **Baseline sociodemographic characteristics of hospitalizations with mantle cell lymphoma**

Variable	Mantle Cell Lymphoma without Afib (N=7,955), n (%) unless otherwise specified	Mantle Cell Lymphoma with Afib (N=1,275), n (%) unless otherwise specified	P-value
Age (years), mean ± SD	66 ± 8.3	72 ± 4.3	<0.001
Female	2,148 (27)	275 (21.6)	0.071
Race			0.064
White Americans	6,054 (76.1)	1,074 (84.2)	
Blacks	430 (5.4)	22 (1.7)	
Hispanics	748 (9.4)	79 (6.2)	
Asians/Pacific Islanders	207 (2.6)	22 (1.7)	
Native Americans	16 (0.2)	0 (0.0)	
Others	501 (6.3)	79 (6.2)	
Elective admission	2,490 (31.3)	319 (25.0)	0.049
Primary Payer			<0.001
Medicare	4,200 (52.8)	937 (73.5)	
Medicaid	660 (8.3)	36 (2.8)	
Private Insurance	2,888 (36.3)	292 (22.9)	
Self-Pay	207 (2.6)	10 (0.8)	
Charlson comorbidity index *			<0.001
2	4,137 (52)	340 (26.7)	
≥ 3	3,818 (48)	935 (73.3)	
APR-DRG: Illness severity subclass			<0.001
Minor LOF	684 (8.6)	26 (2.0)	
Moderate LOF	2,323 (29.2)	235(18.4)	
Major LOF	3,222 (40.5)	530 (41.6)	
Extreme LOF	1,726 (21.7)	484 (38.0)	
APR-DRG: Risk of mortality subclass			<0.001
Minor LOD	2,569 (32.3)	140 (11.0)	
Moderate LOD	2,188 (27.5)	325 (25.5)	
Major LOD	2,092 (26.3)	450 (35.3)	
Extreme LOD	1,106 (13.9)	360 (28.2)	

SD, standard deviation; APR-DRG, all patient refined-diagnosis related groups; LOD, likelihood of dying; LOF, loss of function

* Sundararajan's adaptation of the modified Deyo's Charlson Comorbidity Index (CCI). This adaptation classifies the CCI into four distinct groups, each indicative of escalating comorbidity and mortality risk. A CCI score surpassing 3 is associated with an approximate 25% 10-year mortality rate, whereas scores of 2 or 1 correspond to 10% and 4% 10-year mortality rates, respectively.

Table 2: Outcomes of hospitalization for mantle cell lymphoma with and without atrial fibrillation

Outcomes	MCL without Afib (N=7,955), n (%) Unless otherwise specified	MCL with Afib (N=1,275), n (%) Unless otherwise specified	aOR** (95% CI)	P-value*
Primary outcome				
All-cause In-hospital mortality	585 (7.4)	175 (13.7)	1.24 (1.03-2.09)	0.043
Secondary outcomes				
Length of hospital stay (days), mean	10.1	11.2		0.263
THC (US$), mean ± SD	163,151 (6,785)	183,446 (18,740)		0.274
Prolonged hospitalization [a]	3,390 (42.6)	535 (42.0)	1.60 (1.32-1.73)	0.009
Sudden cardiac death	85 (1.1)	49 (3.8)	1.02 (0.19-5.54)	0.980
Acute heart failure	499 (6.3)	285 (22.4)	1.10 (1.05-2.23)	0.010
Acute ischemic stroke	20 (0.3)	99 (7.8)	1.08 (1.01-2.23)	<0.001
Thromboembolism	89 (1.1)	199 (15.6)	1.40 (1.27-3.90)	<0.001
Sepsis	239 (2.6)	137 (10.7)	1.15 (0.93-2.93)	0.754

MCL, mantle cell lymphoma; Afib, atrial fibrillation; aOR, adjusted odds ratio; US$, United States dollar; SD, standard deviation; CI, confidence interval

* Significant at values <0.05

** adjusted for sex, race, elective vs. nonelective admission, age, frailty, primary payer, hospital region and teaching status, Charlson comorbidity index, illness severity, and risk of mortality at admission.

[a] Hospitalization lasting ≥ 9 days

- 9,230 hospitalizations for MCL were analyzed.
- The cohort was mostly male (73.8%) and white Americans (77.2%), with a mean age of 66.8 ± 6.7 years.
- Afib incidence was 13.8% (n=1,275).
- Patients hospitalized with Afib were significantly older and had greater comorbidity.
- Predictors of Afib included age (aOR: 1.03; 95% CI: 1.01-1.05; P = .001), APR-DRG moderate risk of mortality (aOR: 1.96; 1.09-3.53; P = .025), coexisting congestive cardiac failure (aOR: 2.48; 1.65-3.72; P < .001), and chronic renal disease (aOR: 1.58; 1.02-2.45; P = .039).
- Hospitalizations for MCL complicated by Afib were correlated with greater mortality (13.7% vs 7.4%; P = .043) and higher incidence of acute heart failure (22.4% vs 6.3%; P = .010), acute ischemic stroke (7.8% vs 0.3% ; P < .001), and thromboembolism (15.6% vs 1.1%; P < .001).
- No significant difference was observed in the LOS or mean hospital costs.

CONCLUSIONS

Incidence of Afib was correlated with older age, greater comorbidities, congestive cardiac failure, and chronic renal disease. Afib incidence significantly increased mortality and the incidence of acute heart failure, ischemic strokes, and thromboembolism during hospitalization for mantle cell lymphoma.

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