

Atrial Fibrillation in patients with COVID-19 infection: A single-center retrospective chart review

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Introduction

Atrial fibrillation (AFib) is the most common cardiac arrhythmia affecting the adult population, with over 454,000 estimated hospitalizations and 26,535 deaths annually in the U.S. Well known risk factors for AFib include age, hypertension, European descent, diabetes, heart failure, alcohol use, smoking, and chronic kidney disease. COVID-19 infection has emerged as an additional risk factor for AFib development. Both established and new-onset AFib have been found to independently predict in-hospital mortality and adverse outcomes in COVID-19 patients. The primary objective was to compare if patients admitted with COVID-19 positivity and no diagnosis of AFib experienced a different number of in-hospital events, readmissions, and worse disposition than those with either established (previously diagnosed) or new-onset AFib.

Methods



5,516 COVID-19 positive patients >18 years old admitted to SRHS-Church Street campus between March 2020 and March 2022 included



Variables collected: demographics, past medical history, in-hospital events, discharge disposition, and readmissions



Patients were grouped according to AFib status: No history of AFib, previous/established diagnosis of AFib, and new-onset AFib during current admission



2-way ANOVA with Bonferroni correction, Kruskal-Wallis with Dwass-Steel-Crichlow-Fligner (DSCF) correction, Chi-square, or logit regression analysis used for statistical analyses

Patients admitted w/ COVID-19 positivity
(N=5,516)

No AFib
(N=4,350)

Established AFib
(N=1,026)

New-Onset AFib
(N=140)

	No AFib	Established AFib	New-Onset AFib	p-value	
Sex	Female	50.2%	43.7%	39.3%	<.0001
	Male	49.8%	56.3%	60.7%	
Ethnicity	Caucasian	67.0%	79.6%	73.6%	<.0001
	African American	27.1%	17.1%	22.1%	
	Other	5.9%	3.3%	4.3%	

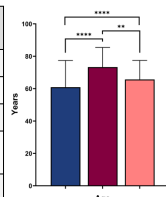


Figure 1. Demographics data (sex, ethnicity, age) of all groups as percentage of total. P-value calculated based on Chi-square analysis.

Results

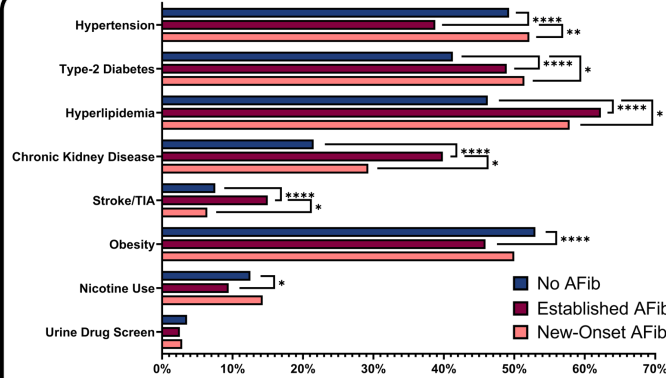


Figure 2. Past medical history analyzed between groups utilizing a 2-way ANOVA with post-hoc two-sample t-tests and Bonferroni correction. * $\alpha < 0.0167$, ** $\alpha < 0.0033$, *** $\alpha < 0.0003$, **** $\alpha < 0.0001$.

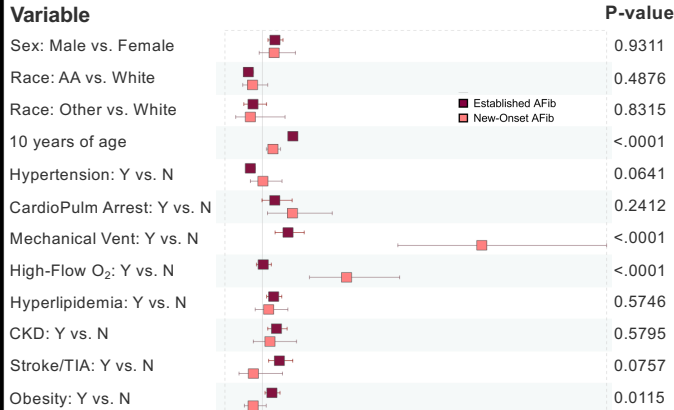


Figure 3. Forrest plot generated using Regression analysis on all statistically significant demographics, PMH, and in-hospital variables (mean +/- SD).

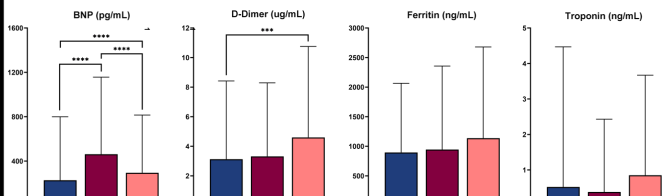


Figure 4. Lab values presented as mean +/- SD analyzed using Kruskal-Wallis with DSCF correction. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$

Results continued

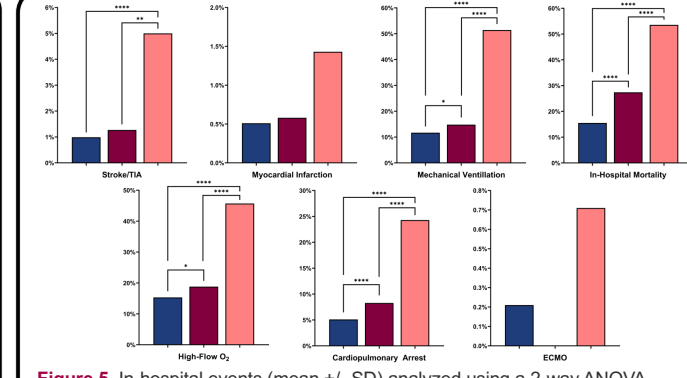


Figure 5. In-hospital events (mean +/- SD) analyzed using a 2-way ANOVA with Bonferroni correction. * $\alpha < 0.0167$, ** $\alpha < 0.0033$, **** $\alpha < 0.0001$.

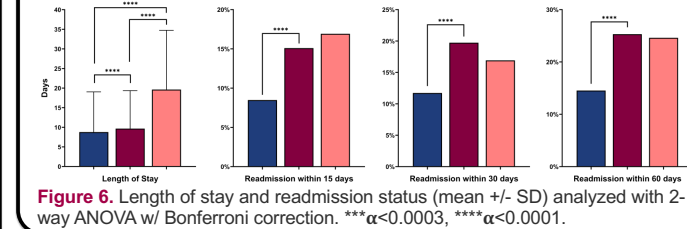


Figure 6. Length of stay and readmission status (mean +/- SD) analyzed with 2-way ANOVA w/ Bonferroni correction. *** $\alpha < 0.0003$, **** $\alpha < 0.0001$.

Discussion



COVID-19+ patients with pre-existing AFib had higher rates of type-2 diabetes, hyperlipidemia, chronic kidney disease, and stroke/TIA, but lower rates of hypertension and obesity



Patients with new-onset AFib had a worse clinical course of their COVID-19 infection compared to other groups, as demonstrated by higher rates of in-hospital events, length of average stay, and in-hospital mortality



Collectively, the data demonstrates that patients admitted with COVID-19 who either have established or new-onset AFib suffer worse outcomes than those with no history of AFib

References & Acknowledgements



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