



Markers for Mortality in COVID 19 patients with Atrial Fibrillation or Flutter



Chan, KH, MD; Patel, B, MD; Farouji, I, MD; Suleiman, A, MD; Slim, J, MD
Saint Michael's Medical Center, New York Medical College, Newark, New Jersey

BACKGROUND:

- ✓ Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection can lead to many different cardiovascular complications.

AIM:

- ✓ we were interested in studying prognostic markers in patients with atrial fibrillation/flutter.

STUDY:

- ✓ Retrospective cohort study

INCLUSION CRITERIA:

- ✓ ≥ 18 years with confirmed COVID-19 and either with existing or new onset atrial fibrillation/flutter
- ✓ Admitted to our hospital between March 15, 2020 and May 20, 2020.

EXCLUSION CRITERIA:

- ✓ Does not fulfil above criteria
- ✓ Still in hospital on May 20, 2020

ANALYSIS:

- ✓ Demographic, clinical outcome and laboratory data were extracted from the electronic medical record and compared between survivors and non-survivors.
- ✓ Univariable analysis and multivariable logistic regression methods were employed to identify the prognostic markers associated with mortality in patients with atrial fibrillation/flutter.

	All Patients (n=37)	Survival (n=16)	Expired (n=21)	p-value
Clinical Characteristic and Demographics				
Age (Mean ± SD)	72.22 ± 15.75	71.69 ± 15.09	72.62 ± 16.60	0.8615
Gender				0.8897
Male	19 (51%)	8 (50%)	11 (52%)	
Female	18 (49%)	8 (50%)	10 (48%)	
Ethnicity				0.0370
Latino	7 (19%)	0 (0%)	7 (33%)	
Black	21 (57%)	11 (69%)	10 (48%)	
Caucasian	9 (24%)	5 (31%)	4 (19%)	
Comorbidities				
HTN	27 (73%)	14 (88%)	13 (62%)	0.0867
DM	15 (41%)	6 (38%)	9 (43%)	0.7507
CAD/CHF	10 (27%)	5 (31%)	5 (24%)	0.6253
Need of Mechanical Ventilation	8 (22%)	2 (13%)	6 (29%)	0.2394
Atrial fibrillation/Atrial flutter				0.9705
New onset	23 (62%)	10 (63%)	13 (62%)	
Existing	14 (38%)	6 (37%)	8 (38%)	

Table 1: Demographic Analysis of all COVID-19 patients with atrial fibrillation/atrial flutter
(HTN – Hypertension, DM – Diabetes mellitus, CAD – Coronary artery disease, CHF – Congestive heart failure)

	All Patients (n=37)	Survival (n=16)	Expired (n=21)	p-value
Laboratory Profile				
Complete Blood Profile				
ANC	7.23 \pm 0.72	6.45 \pm 1.11	7.82 \pm 0.94	0.3503
ALC	1.08 \pm 0.12	1.32 \pm 0.17	0.90 \pm 0.17	0.0962
AMC	0.62 \pm 0.06	0.76 \pm 0.11	0.51 \pm 0.05	0.0353
Platelets	243 \pm 15.88	286.5 \pm 22.19	209.9 \pm 19.78	0.0146
Inflammatory Markers				
Ferritin	1038 \pm 173.8	627.9 \pm 161.8	1351 \pm 263.7	0.0374
D-dimer	6825 \pm 3495	2333 \pm 941.4	10248 \pm 6072	0.2677
CRP	11.95 \pm 1.53	9.294 \pm 1.84	13.97 \pm 2.23	0.1305
LDH	388.4 \pm 25.54	321.8 \pm 35.92	439 \pm 32.15	0.0207
Cardiac Profile				
Troponin	0.1544 \pm 0.05	0.048 \pm 0.12	0.23 \pm 0.09	0.0995
BNP	508.8 \pm 162.2	434.5 \pm 133.6	560.8 \pm 262.2	0.67078
Miscellaneous				
NLR	13.67 \pm 2.45	5.76 \pm 1.09	19.32 \pm 3.69	0.0047
NMR	15.27 \pm 2.21	9.90 \pm 1.59	19.36 \pm 3.47	0.0315
LMR	2.04 \pm 0.25	2.10 \pm 0.33	1.99 \pm 0.37	0.8293
PLR	336.70 \pm 46.10	252.80 \pm 23.80	400.6 \pm 77.10	0.1132

Table 2: Non-parametric analysis of all prognostic markers (Mean \pm SEM)
(ANC - Absolute neutrophil count, ALC - Absolute lymphocyte count, AMC - Absolute monocyte count, CRP – C-reactive protein, LDH – Lactate dehydrogenase, BNP – Brain natriuretic peptide, NLR – Neutrophil-lymphocyte ratio, NLR – Neutrophil-monocyte ratio, LMR – Lymphocyte-monocyte ratio, PLR – Platelet-lymphocyte ratio)

Discussion and Conclusion:

- ✓ With multivariable logistic regression analysis, the only value that had an odds of survival was a low NLR (odds ratio [OR], 0.74; 95% confidence interval [CI], 0.53-0.93).
- ✓ This retrospective cohort study of hospitalized patients with COVID-19 demonstrated an association of increase NLR as risk factors for death in COVID-19 patients with atrial fibrillation/flutter.
- ✓ A high NLR has been associated with increased incidence, severity and risk for stroke in atrial fibrillation patients
- ✓ To our knowledge, we are first to demonstrate the utilization in mortality predictions in COVID-19 patients with atrial fibrillation.