

Supplementary Table 1. Univariate logistic regression analysis for LAT/SEC.

Variables	LAT/SEC	
	OR (95% CI)	P value
Demographics		
Age	1.039 (1.012, 1.068)	0.006
Gender		
Female	1 (Reference)	
Male	1.033 (0.646, 1.676)	0.894
Smoking status	1.419 (0.857, 2.309)	0.165
Alcohol consumption	1.050 (0.571, 1.845)	0.869
Paroxysmal AF	1.511 (0.954, 2.393)	0.078
SBP	1.010 (0.996, 1.023)	0.162
DBP	1.015 (0.997, 1.033)	0.105
BMI	0.969 (0.900, 1.042)	0.398
CHA ₂ DS ₂ -VASc score	1.643 (1.415, 1.922)	<0.001
Hypertension	1.882 (1.168, 3.099)	0.011
Diabetes mellitus	1.743 (1.053, 2.841)	0.028
Coronary heart disease	1.499 (0.874, 2.509)	0.131
Heart failure	1.742 (1.034, 2.880)	0.033
Stroke/TIA	1.064 (0.302, 2.937)	0.913
RBC	1.111 (0.708, 1.751)	0.647
WBC	1.096 (0.955, 1.255)	0.187
PLT	0.999 (0.994, 1.003)	0.623
Neutrophil	1.111 (0.708, 1.751)	0.647
Lymphocyte	0.838 (0.578, 1.202)	0.623
Monocyte	0.338 (0.063, 1.645)	0.192
Hb	1.000 (0.986, 1.015)	0.963
D-dimer	1.156 (0.802, 1.581)	0.375
ALT	1.009 (0.998, 1.020)	0.087
AST	1.024 (1.008, 1.041)	0.003
Creatinine	1.016 (1.002, 1.031)	0.087
TC	0.898 (0.715, 1.123)	0.349
TG	0.985 (0.736, 1.264)	0.911
LDL-C	0.937 (0.679, 1.287)	0.692
HDL-C	0.352 (0.144, 0.832)	0.020

FPG	1.068 (0.962, 1.176)	0.190
Antiplatelets	2.153 (1.137, 3.934)	0.015
Anticoagulants	0.492 (0.303, 0.810)	0.005
Statins	1.507 (0.950, 2.417)	0.084
β -blockers	1.014 (0.400, 2.245)	0.974
LVEF	0.002 (0.000, 0.026)	<0.001
LAD	1.106 (1.056, 1.160)	<0.001
LVEDD	1.065 (1.020, 1.112)	0.004
EDT	1.000 (0.994, 1.005)	0.895

Abbreviations: OR, odds ratio; CI, confidence intervals; AF, atrial fibrillation; SBP, systolic blood pressure; DBP, diastolic blood pressure; BMI, body mass index; TIA, transient ischemic attack; WBC, white blood cells; RBC, red blood cells; PLT, platelet count; Hb, hemoglobin; ALT, alanine aminotransferase; AST, aspartate aminotransferase; TC, total cholesterol; TG, triglyceride; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; FPG, fasting plasma glucose; LVEF, left ventricular ejection fraction; LAD, left atrial diameter; LVEDD, left ventricular end-diastolic dimension; EDT, E wave deceleration time.

Supplementary Table 2. VIFs and tolerance for covariates in logistic regression models of UAR and LAT/SEC.

Variables	Multicollinearity analysis	
	VIF	Tolerance
Age	1.259	0.794
Gender	1.790	0.559
BMI	1.176	0.850
Smoking status	1.207	0.828
Hypertension	1.167	0.857
DM	1.182	0.846
HF	1.462	0.684
CHD	1.131	0.884
Stroke/TIA	1.068	0.936
Paroxysmal AF	1.058	0.945
WBC	1.294	0.773
PLT	1.308	0.765
D-dimer	1.163	0.859
ALT	3.097	0.323

AST	3.202	0.312
Creatinine	1.547	0.646
HDL-C	1.245	0.804
LDL-C	1.205	0.830
LAD	1.279	0.782
LVEF	1.703	0.587
Anticoagulants	1.883	0.531
Antiplatelets	1.893	0.528

Abbreviations: VIF, variance inflation factor; UAR, uric acid-to-albumin ratio; LAT, left atrial thrombus; SEC, spontaneous echo contrast; DM, diabetes mellitus; HF, heart failure; CHD, coronary heart disease; TIA, transient ischemic attack; AF, atrial fibrillation; WBC, white blood cells; PLT, platelet count; ALT, alanine aminotransferase; AST, aspartate aminotransferase; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; LVEF, left ventricular ejection fraction; LAD, left atrial diameter.

Supplementary Table 3. Analysis of threshold effect between UAR and LAT/SEC.

Outcome	effect	P
Model 1 Fitting model by standard linear regression	1.43 (1.25, 1.66)	<0.001
Model 2 Fitting model by two-piecewise linear regression		
Inflection point	12.11	
<12.11	1.61 (1.36, 1.92)	<0.001
≥12.11	0.82 (0.51, 1.31)	0.398
<i>P</i> for likelihood test		0.015

Notes: adjusted for age, gender, BMI, smoking status, hypertension, DM, HF, CHD, stroke/TIA, paroxysmal AF, anticoagulants, antiplatelets, WBC, PLT, D-dimer, ALT, AST, creatinine, HDL-C, LDL-C, LAD, LVEF.

Abbreviations: UAR, uric acid-to-albumin ratio; LAT, left atrial thrombus; SEC, spontaneous echo contrast; DM, diabetes mellitus; HF, heart failure; CHD, coronary heart disease; TIA, transient ischemic attack; AF, atrial fibrillation; WBC, white blood cells; PLT, platelet count; ALT, alanine aminotransferase; AST, aspartate aminotransferase; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; LVEF, left ventricular ejection fraction; LAD, left atrial diameter.

Supplementary Table 4. Predictive value of UAR, UA, and Albumin for LAT/SEC risk.

Index	AUC (95% CI)	Cut off	Accuracy (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)	NPV (95% CI)	PPV (95% CI)
UAR	0.712 (0.654, 0.769)	8.59	0.634 (0.592, 0.675)	0.742 (0.642, 0.821)	0.612 (0.565, 0.658)	0.919 (0.881, 0.945)	0.286 (0.231, 0.347)
UA	0.684 (0.625, 0.742)	360.50	0.617 (0.574, 0.658)	0.719 (0.618, 0.802)	0.595 (0.548, 0.641)	0.910 (0.871, 0.938)	0.271 (0.218, 0.331)
Albumin	0.612 (0.549, 0.675)	41.35	0.572 (0.529, 0.614)	0.629 (0.525, 0.722)	0.560 (0.512, 0.606)	0.878 (0.834, 0.912)	0.230 (0.182, 0.287)

Abbreviations: UAR, uric acid-to-albumin ratio; UA, uric acid; LAT, left atrial thrombus; SEC, spontaneous echo contrast; AUC, area under the curve; CI, confidence intervals; NPV, negative predictive value; PPV, positive predictive value.

Supplementary Table 5. Comparison of different risk prediction models.

Variables	C-index	P-value	NRI (95% CI)	P-value	IDI (95% CI)	P-value
CHA ₂ DS ₂ -VASc	0.708 (0.644, 0.771)	Ref	Ref		Ref	
UAR + CHA ₂ DS ₂ -VASc	0.766 (0.712, 0.821)	0.002	0.603 (0.371, 0.846)	<0.001	0.058 (0.026, 0.107)	0.006

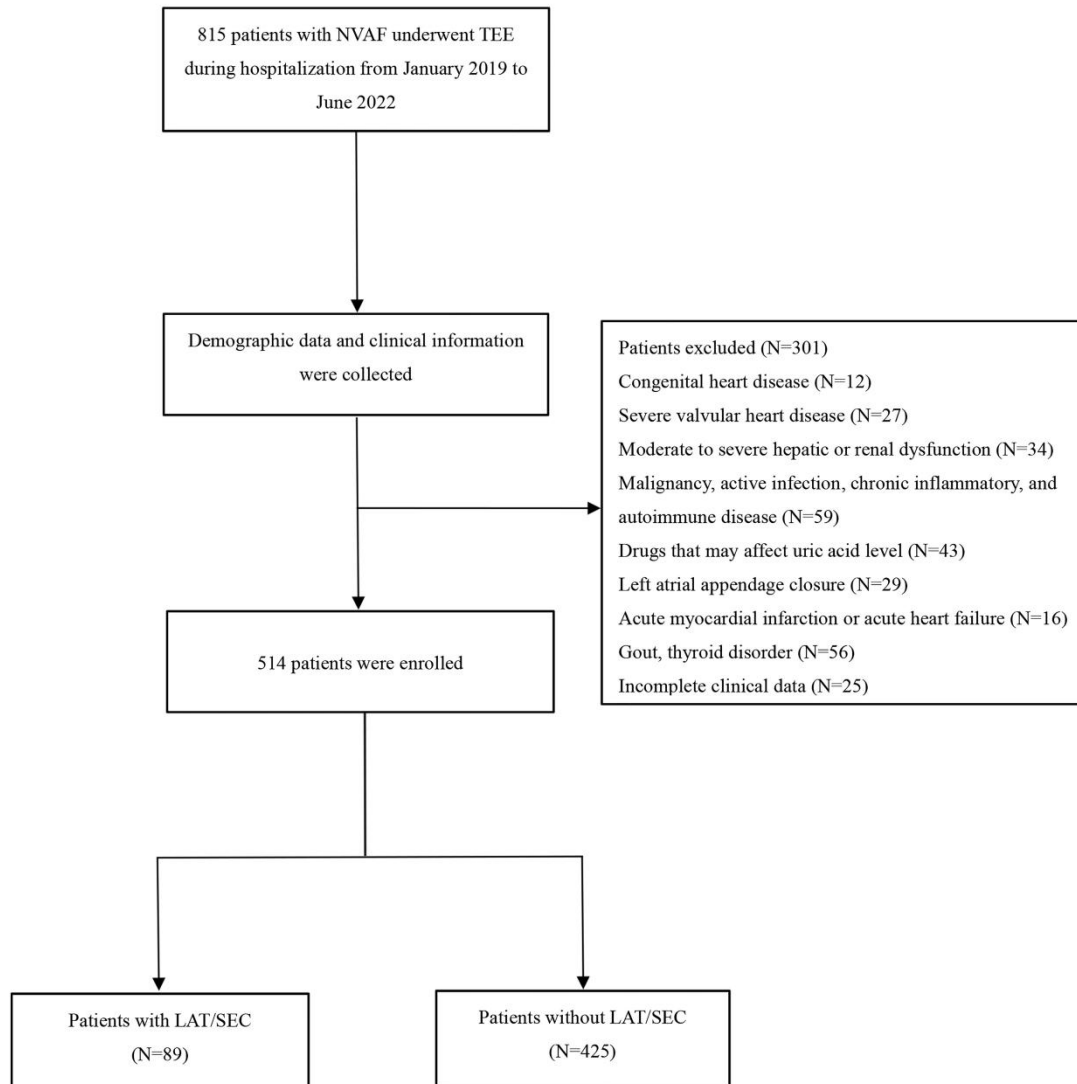
Abbreviations: UAR, uric acid-to-albumin ratio; C-index, Harrel's C-statistic; NRI, net reclassification index; IDI, integrated discrimination improvement.

Supplementary Table 6. Mediating relationship between the UAR and LAT/SEC.

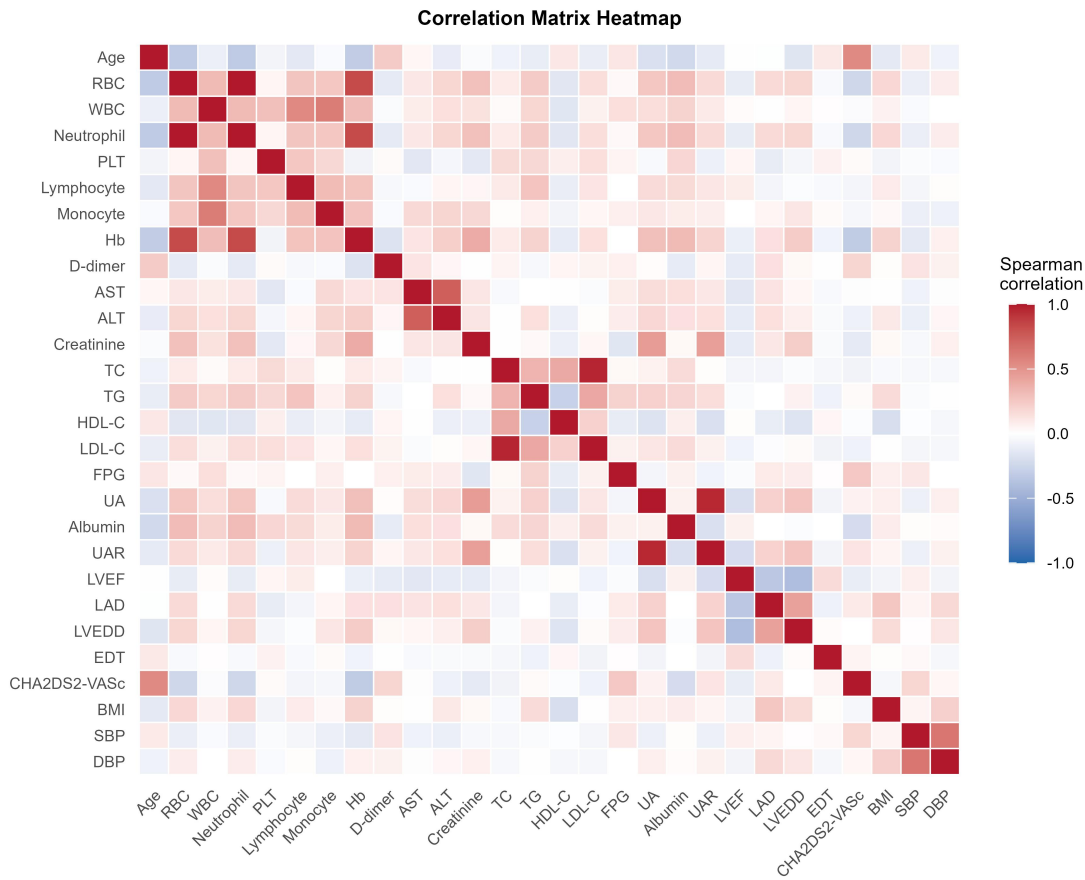
Mediators	ADE		ACME		Proportion mediated
	Coefficients (95% CIs)	<i>P</i> value	Coefficients (95% CIs)	<i>P</i> value	
WBC	0.00319 (0.00117, 0.01000)	<0.001	0.00003(-0.00004, 0)	0.450	0.00966
Neutrophil	0.00318 (0.00118, 0.01000)	<0.001	-0.00000 (-0.00012, 0)	0.940	-0.00082
Lymphocyte	0.00343 (0.00128, 0.01000)	<0.001	-0.00008(-0.00030, 0)	0.170	-0.02287
Monocyte	0.00330 (0.00116, 0.01000)	<0.001	-0.00001(-0.00015, 0)	0.790	-0.00409
PLT	0.00325 (0.00116, 0.01000)	<0.001	0.00000(-0.00011, 0)	0.990	0.00003
D-dimer	0.00325 (0.00116, 0.01000)	<0.001	-0.00002 (-0.00022, 0)	0.700	-0.00496
LAD	0.00287 (0.00109, 0.01000)	<0.001	0.00026 (0.00004, 0)	0.004	0.08263
LVEF	0.00318 (0.00116, 0.01000)	<0.001	0.00034 (0.00005, 0)	0.004	0.09754
LVEDD	0.00311 (0.00116, 0.01000)	<0.001	0.00016 (-0.00004, 0)	0.110	0.04838
EDT	0.00325 (0.00119, 0.01000)	<0.001	0.00000 (-0.00007, 0)	0.920	0.00104

Notes: adjusted for age, gender, BMI, smoking status, hypertension, DM, HF, CHD, stroke/TIA, paroxysmal AF, anticoagulants, antiplatelets.

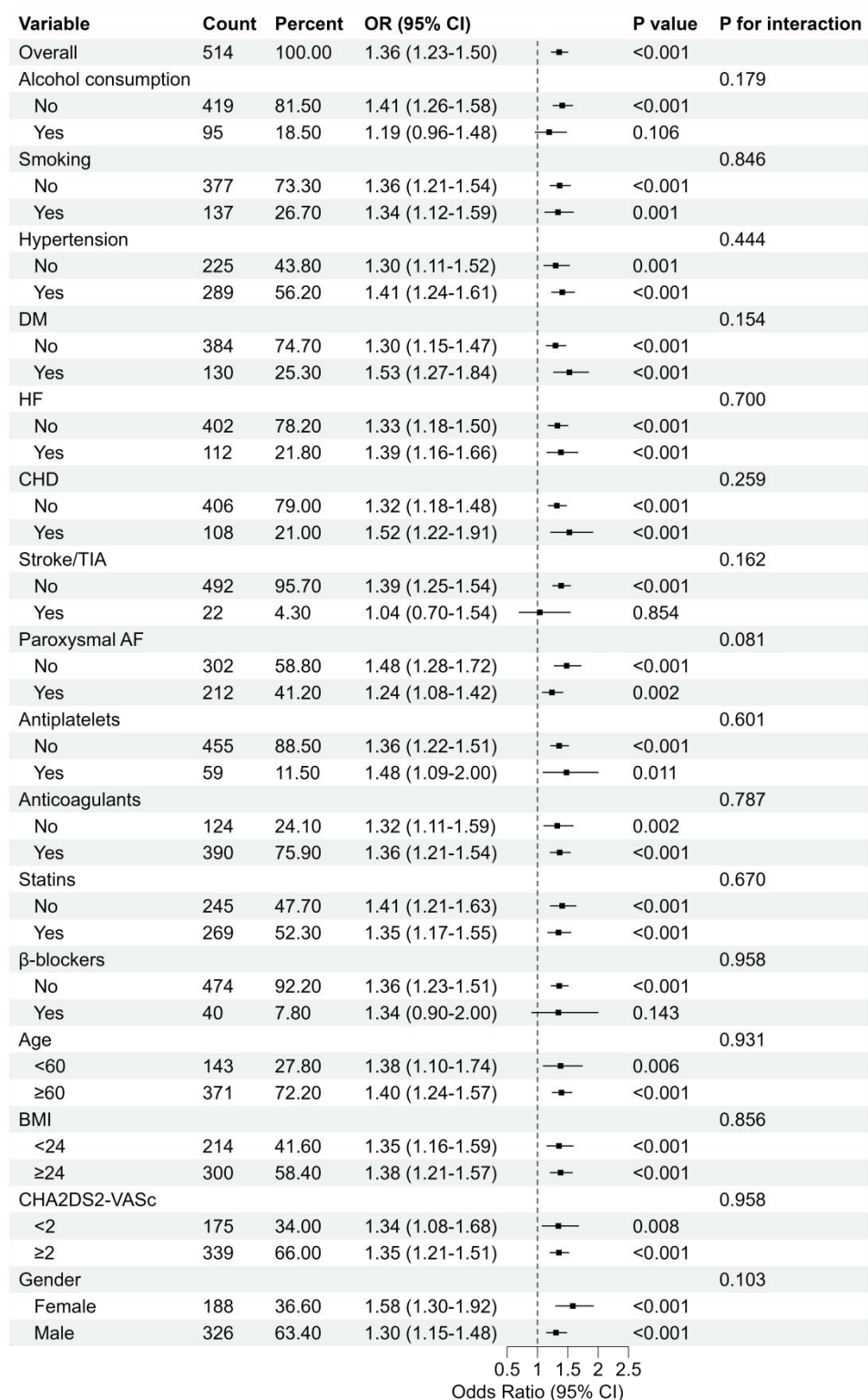
Abbreviations: ACME, average causal mediation effect; ADE, average direct effect; UAR, uric acid-to-albumin ratio; LAT, left atrial thrombus; SEC, spontaneous echo contrast; DM, diabetes mellitus; HF, heart failure; CHD, coronary heart disease; TIA, transient ischemic attack; AF, atrial fibrillation; WBC, white blood cells; PLT, platelet count; LVEF, left ventricular ejection fraction; LAD, left atrial diameter; LVEDD, left ventricular end-diastolic dimension; EDT, E wave deceleration time.



Supplementary Figure 1: Flow diagram for participants included in the study. Abbreviations: NVAF, non-valvular atrial fibrillation; TEE, transesophageal echocardiography; LAT/SEC, left atrial thrombus or spontaneous echo contrast.



Supplementary Figure 2: Spearman correlation analysis of demographic characteristics, laboratory parameters, and cardiac structural indicators in NVAf patients. Abbreviations: RBC, red blood cells; WBC, white blood cells; PLT, platelet count; Hb, hemoglobin; AST, aspartate aminotransferase; ALT, alanine aminotransferase; TC, total cholesterol; TG, triglycerides; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; FPG, fasting plasma glucose; UA, uric acid; UAR, uric acid-to-albumin ratio; LAD, left atrial diameter; LVEF, left ventricular ejection fraction; LVEDD, left ventricular end-diastolic diameter; EDT, E-wave deceleration time; BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure.



Supplementary Figure 3: Forest plot depicting subgroup analyses of the associations between UAR and LAT/SEC. Abbreviations: DM, diabetes mellitus; HF, heart failure; CHD, coronary heart disease; TIA, transient ischemic attack; AF, atrial fibrillation; BMI, body mass index.