

Supplemental material

This is an additional material of the research article titled “Development and validation of a novel predictive model for the early differentiation of cardiac and non-cardiac syncope”.

Table S1. The list of 36 candidate variables for the prediction of cardiac syncope.

Characteristics	Variables
Demographics	sex, age, body mass index (BMI), resting systolic blood pressure (SBP), resting diastolic blood pressure (DBP), heart rate (HR), smoking history, and drinking history
Syncopal event details	the number of syncopal episodes, duration of syncopal spell, presence of specific triggers, syncope while sitting or lying or exertion, chest symptoms preceding syncope, and family history of syncope
Comorbidities	hypertension, diabetes, dyslipidemia, heart disease, vascular disease, chronic obstructive pulmonary disease (COPD), and obstructive sleep apnea (OSA)
Laboratory tests	hemoglobin, albumin, creatinine, glycated hemoglobin, troponin >99th percentile of the normal population, N-terminal pro B-type natriuretic peptide (NT-proBNP), high-sensitivity C-reactive protein (hsCRP)
Echocardiography parameters	left atrial diameter (LAD), left ventricular end-diastolic dimension (LVEDD), interventricular septal thickness at diastole (IVSD), and left ventricular ejection fraction (LVEF)
Electrocardiogram findings	PR interval, QRS duration, corrected QT interval, and abnormal ECG

Table S2. Comparisons of baseline characteristics between patients with cardiac syncope and those with non-cardiac syncope.

Characteristics	Cardiac syncope (n = 521)	Non-cardiac syncope (n = 356)	P value
Demographics			
Female (%)	198 (38.0)	160 (44.9)	0.047
Age, y	59.3 ± 14.8	54.2 ± 14.8	<0.001
Body mass index, kg/m ²	24.8 ± 3.5	24.2 ± 3.5	0.009
SBP, mmHg	128.0 ± 16.7	127.2 ± 14.8	0.446
DBP, mmHg	74.6 ± 10.2	75.1 ± 9.9	0.533
HR, bpm	76.0 ± 36.9	73.7 ± 13.9	0.428
Smoking history (%)	186 (35.7)	113 (31.7)	0.253
Drinking history (%)	179 (34.4)	119 (33.4)	0.831
Event details			
No. of syncopal events	2.0 ± 1.5	2.5 ± 1.9	<0.001
Duration of syncopal spell (%)			0.256
≤ 1min	266 (51.1)	167 (46.9)	
1-5min	255 (48.9)	189 (53.1)	
Presence of specific triggers ^a (%)	207 (39.7)	187 (52.5)	<0.001
Syncope while sitting or lying or exertion (%)	184 (35.3)	83 (23.3)	<0.001
Chest symptoms preceding syncope ^b (%)	438 (84.1)	165 (46.3)	<0.001
Family history of syncope (%)	10 (1.9)	16 (4.5)	0.045
Comorbidities			
Hypertension (%)	255 (48.9)	162 (45.5)	0.351
Diabetes (%)	102 (19.6)	57 (16.0)	0.209
Dyslipidemia (%)	278 (53.4)	203 (57.0)	0.317
Heart disease ^c (%)	377 (72.4)	152 (42.7)	<0.001
Vascular disease ^d (%)	129 (24.8)	74 (20.8)	0.198
COPD (%)	12 (2.3)	11 (3.1)	0.617
OSA (%)	25 (4.8)	25 (7.0)	0.213
Laboratory values			
Hemoglobin, g/L	134.5 ± 19.9	134.6 ± 17.7	0.948
Serum albumin, g/L	41.6 ± 14.8	41.2 ± 5.2	0.606
Serum creatinine, μmol/L	86.1 ± 22.7	81.4 ± 19.2	0.001
Glycated hemoglobin, %	6.1 ± 0.9	6.0 ± 0.9	0.010
Troponin >99 th percentile of the normal	81 (15.5)	22 (6.2)	<0.001
NT-proBNP, pg/mL	212.0 [69.3, 844.0]	62.8 [33.1, 152.5]	<0.001
Log NT-proBNP ^e , pg/mL	5.5 ± 1.6	4.3 ± 1.2	<0.001
hsCRP, mg/L	2.3 [1.5, 4.0]	1.8 [1.3, 3.0]	<0.001
Echocardiography parameters			
LAD, mm	37.3 ± 5.8	35.3 ± 5.2	<0.001
LVEDD, mm	48.3 ± 7.8	46.5 ± 4.8	<0.001
IVSD, mm	10.8 ± 3.8	9.7 ± 2.4	<0.001
LVEF, %	57.6 ± 10.8	63.9 ± 5.8	<0.001
ECG parameters			
PR interval, ms	170.7 ± 36.7	163.2 ± 27.8	0.001
QRS duration, ms	104.9 ± 23.6	97.9 ± 17.2	<0.001
QTc interval ^f , ms	419.4 ± 33.4	411.0 ± 30.0	<0.001

Abnormal ECG ^g (%)	431 (82.7)	129 (36.2)	<0.001
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Notes: a. including coughing, laughter, pain, prolonged standing, distressful stimulus, or medical environment. b. including palpitations, chest pain, and chest tightness. c. including ischaemic or valvular heart disease, cardiomyopathy, congestive heart failure, congenital heart disease, documented history of arrhythmic disease (including atrial or ventricular arrhythmias, conductive system disorders, or a history of pacemaker implantation), and a history of sudden cardiac arrest or resuscitation. d. including transient ischemic attack, cerebrovascular accident, peripheral vascular disease or embolism. e. To minimize the absolute disparities among the data and counteract the impact of outlier values, we have calculated the logarithm of NT-proBNP and integrated it into our model development. f, corrected QT interval. g, including sustained bradycardia (HR<40bpm), atrioventricular block greater than first degree, bundle branch block, ischemic ST-T change, supraventricular or ventricular tachycardia, left or right ventricular hypertrophy, ventricular preexcitation, or a Brugada pattern.

Abbreviations: SBP, systolic blood pressure; DBP, diastolic blood pressure; HR, heart rate; COPD, chronic obstructive pulmonary disease; OSA, obstructive sleep apnea; NT-proBNP, N-terminal pro B-type natriuretic peptide; hsCRP, high-sensitivity C-reactive protein; LAD, left atrial diameter; LVEDD, left ventricular end-diastolic dimension; IVSD, interventricular septal thickness at diastole; LVEF, left ventricular ejection fraction; ECG, electrocardiogram.

Data were presented as numbers (%), mean \pm standard deviation, or median and interquartile range as appropriate. Groups were compared using the Student's t-test, Mann–Whitney U test, or Chi-square test as appropriate.

Figure S1. The ROC curve of the diagnostic score to predict cardiac syncope.

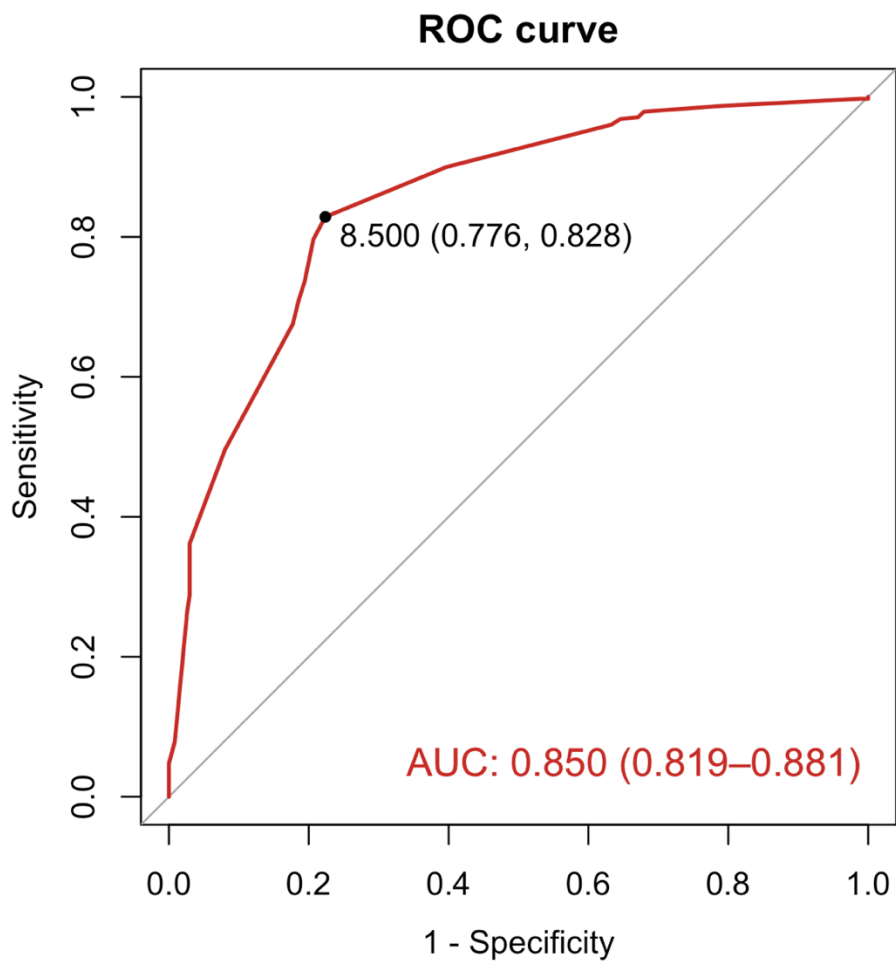


Table S3. The assessment of the diagnostic score to predict cardiac syncope.

Positive if Greater Than or Equal To	Sensitivity	Specificity	Youden Index
-3	1	0	0
-2	1	0.013	0.013
0	0.989	0.215	0.204
1	0.982	0.321	0.303
2	0.982	0.329	0.311
3	0.979	0.342	0.321
4	0.976	0.346	0.322
5	0.918	0.578	0.496
6	0.850	0.751	0.601
7	0.821	0.768	0.589
8	0.810	0.776	0.586
9	0.805	0.797	0.602
10	0.770	0.814	0.584
11	0.599	0.911	0.510
12	0.462	0.962	0.424
13	0.446	0.962	0.408
14	0.377	0.966	0.343
15	0.351	0.966	0.317
16	0.214	0.983	0.197
17	0.177	0.992	0.169
19	0.077	0.992	0.069
20	0.050	0.996	0.046
22	0.005	0.996	0.001