



Scoring System to Predict Reduced Left Atrial Appendage Emptying Velocity

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INTRODUCTION

- Left atrial appendage emptying velocity (LAAev) as assessed on transesophageal echocardiogram (TEE) is a surrogate for left atrial appendage thrombus formation and cardioembolic stroke¹.
- Identifying patients with decreased LAAev is important for risk stratification
- CHA₂DS₂-VASc score is currently used to stratify stroke risk in atrial fibrillation (AF) but does not incorporate rhythm, type of atrial fibrillation, or transthoracic echocardiography (TTE) findings^{2, 3, 4}.

OBJECTIVE

To create a composite scoring system using clinical and TTE variables to predict reduced LAAev.

METHODS

- We search TEE reports of unique patients from 2016-2022 at the University of Kansas Medical Center.
- Additional information was extracted from TEE imaging, TTE reports, and detailed medical chart review.

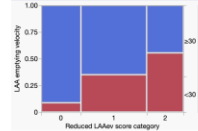
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RESULTS

Risk Factor	Odds Ratio	p-value	Points
Age ≥70 yr	1.34	0.0979	0.5
Female	1.32	0.0864	0.5
CHF	1.34	0.0626	0.5
CAD	1.73	0.0008	1
Currently in AF	1.77	0.001	1
Paroxysmal AF	3.32	0.0003	2
Persistent AF	5.02	<0.0001	3
Long-standing persistent/permanent AF	8.81	<0.0001	4
>Moderate mitral regurgitation	0.47	0.0786	-1.5
Reduced LAAev score			-1.5 to 7.5

- We included 995 patients (women 38.1%, men 61.9%, age 71.3±12.7 years, white 89.3%, LAAev 41.6 ± 21.0 cm/s).
- The derived score includes different points assigned for long-standing persistent/permanent AF, persistent AF, paroxysmal AF, current rhythm AF, coronary artery disease, congestive heart failure, female sex, age ≥ 70 and negative points for > moderate mitral regurgitation; categorized into high, intermediate, and low risk.



Risk Categories	Reduced LAAev Score	Risk of LAAev <30 cm/s
Low (0)	≤2.5	9.0
Intermediate (1)	3-4.5	35.2
High (2)	≥5	55.7

- The rate of reduced LAAev < 30 cm/s was 55.7%, 35.2%, and 9.0%; respectively, for high, intermediate, and low to total risk.

STATISTICS

- Significant univariate predictors of reduced LAAev (<30 cm/s) were added to a stepwise selection multivariate logistic regression model with significance level for entry and stay of 0.15.
- Based on their respective odds ratios, selected variables were assigned different point values to create a risk score.

CONCLUSION

Our scoring system was able to stratify risk of reduced LAAev and needs to be validated in independent datasets.

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