

As Opposed to Atrial Fibrillation, Presence or History of Atrial Flutter Does Not Impact Left Atrial Appendage Emptying Velocity Assessed by Transesophageal Echocardiogram



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Background

- Current stroke-risk stratification guidelines do not distinguish between atrial fibrillation (AF) and atrial flutter (AFL) as predictors of thromboembolism
- However, studies suggest that patients with AF face a higher risk of ischemic stroke than patients with AFL
- Left atrial appendage emptying velocity (LAAev) is a surrogate for propensity of LAA thrombus and cardioembolic stroke

Objective

- To evaluate the rhythm at the time of transesophageal echocardiogram (TEE) and history of atrial fibrillation (AF)/atrial flutter (AFL) as predictors of LAAev

Methods

- Reviewed TEE images, TTE reports, and medical charts from 2016-2022
- Assessed relationship between rhythm and LAAev using linear regressions
- Generated a multivariate model that included age, sex, and significant univariate predictors like general anesthesia, hypertension, coronary artery disease, left atrial size, and left ventricular ejection fraction

RESULTS

Population Characteristics

General Characteristics (n=838)	
Age	70.2 ± 13.1 years
Male, Female	61.3%, 38.7%
White, Non-White	88.8%, 11.2%
Average LAAev	42.2 ± 21.2 cm/s
Rhythm During TEE	
Normal Sinus Rhythm	63.8%
Atrial Fibrillation	30.9%
Atrial Flutter	5.3%
History of Arrhythmia	
Atrial Fibrillation	78.9%
Atrial Flutter	32.3%

LAAev Based on Rhythm During TEE

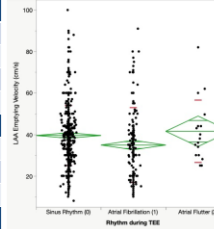


Figure 1: The average LAAev for patients in sinus rhythm was 39.5 ± 14.5 cm/s. The average LAAev for patients in atrial fibrillation was 34.9 ± 19.0 cm/s. The average LAAev for patients in atrial flutter was 41.5 ± 15.0 cm/s.

History of AF/AFL

- History of AF was associated with reduced LAAev in both univariate (-15.6 ± 1.7 cm/s, p=0.0001) and multivariate (-8.5 ± 2.3 cm/s, p=0.0003) analyses
- However, history of AFL was not associated with reduced LAAev (univariate p=0.4 and multivariate p=0.9)

Rhythm During TEE

- Compared to sinus rhythm, presence of AF during TEE was associated with reduced LAAev both in univariate (-6.4 ± 1.6 cm/s, p=0.0001) and multivariate (-4.9 ± 2.0 cm/s, p=0.01) models
- However, presence of AFL during TEE was not correlated with LAAev in univariate (p=0.2) or multivariate (p=0.4) models

CONCLUSIONS & DISCUSSION

- Expectedly, LAAev was reduced when the rhythm during TEE was AF as opposed to sinus rhythm
- LAAev was also reduced when there was a history of AF
- However, the presence or history of AFL is **not** associated with reduced LAAev
- Whether AFL in the absence of AF should be incorporated as a negative risk predictor in future stroke-risk stratification system needs to be further evaluated

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