

Rapid atrial fibrillation increases cardiac biomarkers: decision to perform coronary angiography based on novel high-sensitivity Troponin I peak

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Background: Since January 2018 the availability of high sensitivity Troponin I (hsTnI) has improved ischemia diagnosis. In patients with rapid atrial fibrillation (AF), the decision to undergo coronary angiography is usually due to elevated cardiac biomarkers. However, evidence to support the rentability of this approach is sparse.

Purpose: Evaluate if hsTnI in patients with rapid AF and elevated cardiac biomarkers has a good discriminative power to predict a positive coronary angiography.

Methods: We retrospectively studied consecutive patients admitted to the emergency department (ED) between January 2018 and December 2019 with rapid AF that underwent coronary angiography and had multiple hsTnI values obtained. We analysed risk factors, initial and peak hsTnI, time from ED admission to peak hsTnI and ST-T segment abnormalities (ST depression and/or T wave inversion). We evaluated the presence of significant coronary artery stenosis with the need of revascularization at coronary angiography. Univariable and multivariable analysis was performed to obtain the Odds Ratio (OR, 95% CI, p-value) for significant coronary artery disease (CAD).

Receiver operator characteristics (ROC) curve and area under the curve (AUC) were obtained to determine the discriminative power of peak hsTnI as predictor of a positive coronary angiography. Optimal cut-point value was obtained (Youden index) and patients were divided according to this value.

Results: From 1407 patients admitted to the ED with rapid AF, 30 patients, 60% male, median age 74 (IQR 61.25-80.75) years, were submitted to coronary angiography. Significant coronary artery stenosis was present in 17 (57%) patients.

Age, ST-T segment abnormalities and peak hsTnI were predictors of significant CAD, respectively 1.203, 1.064-1.361, 0.003; 25.00, 3.522-177.477, 0.001; and 1.000, 1.000-1.001, 0.015.

Optimal cut-point value for predicting the presence of significant coronary artery stenosis at coronary angiography was a peak hsTnI of 359 pg/mL (AUC 0.869, p-value 0.001, 95% CI 0.742-0.995). The two groups with hsTnI <359 and hsTnI >359 differed in age and ST-T segment abnormalities (see Table).

After adjustment, peak hsTnI >359 pg/mL was the only independent predictor of significant CAD (23.894, 1.310-435.669, 0.032).

Conclusion: In this group of patients with rapid AF, peak hsTnI >359 pg/mL was the only independent predictor of significant coronary artery disease. Therefore, those patients should undergo coronary angiography.

Abstract Figure.

| | Total sample n=30 | Peak hsTnI <359 pg/mL n=10 | Peak hsTnI >359 pg/mL n=20 | p-value |
|---|--------------------------------|----------------------------------|----------------------------------|---------|
| Peak hsTnI, median (IQR) | 1928.25 (66.28- 6005.78) | 36.25 (22.55- 66.27) | 5138.90 (1704.48- 8402.95) | <0.001 |
| Age in years, median (IQR) | 74 (61.25- 80.75) | 61 (57.50- 74.25) | 77 (67.25- 84.75) | 0.014 |
| Time from ED admission to peak hsTnI in hours, median (IQR) | 14.7 (5.285- 22.93) | 6.74 (2.63- 39.73) | 17.18 (12.06- 22.93) | 0.696 |
| Type 2 diabetes mellitus, n (%) | 10 (33.3) | 3 (33.3) | 7 (35.0) | 0.999 |
| Previous history of CAD, n (%) | 6 (20.0) | 2 (20.0) | 4 (20.0) | 0.999 |
| ST-T segment abnormalities, n (%) | 18 (60.0) | 2 (20.0) | 16 (80.0) | 0.004 |

Table