Title: Impact of Left Atrial Volume Index on Atrial Fibrillation in Patients with Hypertrophic Cardiomyopathy

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Introduction:
Atrial fibrillation (AF) is commonly found in patients with hypertrophic cardiomyopathy (HCM). Markers of left atrial remodeling are seen in advanced stages of HCM. However, is unclear if all HCM types with AF succumb to the LA structural changes. Our aim was to evaluate the correlation between LAVI and presence of atrial fibrillation (AF) in all HCM patients and their subtypes.

Methods: This was a retrospective study of 88 HCM patients identified at our institution from 2016-2019, (23 apical variant and 65 SAM). Atrial Fibrillation was defined by history, event monitor or electrocardiogram. Left atrial volume index was determined by standard quantification using two-dimensional echocardiography. HCM subtypes were defined as obstructive (systolic anterior motion of the mitral valve—SAM), and non-obstructive (apical variant)

Results: Of 88 patients, 30% had AF. No difference in age, gender of BMI was found between those with AF and without AF. LAVI showed a correlation with AF in HCM patients (p<0.001) and in those with AF, LAVI was larger compared to those without AF (43.7±14.3 mL/m² vs.32.4± 10.8 mL/m², p<0.001). Each 1 mL/m² increase in LAVI corresponded to a 1.07 OR (95% CI 1.03-1.12) of having atrial fibrillation. ROC analysis showed a LAVI threshold of 26.1mL/m² for predicting AF in all HCM (sensitivity 89%, specificity 34%) (Figure). Sub analysis by HCM type showed only significant correlation between LAVI and SAM variant with a LAVI threshold of 31.2 mL/m² for predicting AF in SAM subjects (sensitivity 87%, specificity of 58%).

Conclusion: Atrial Fibrillation was commonly found in our cohort (30%) showing a correlation in those with larger LAVI size and incremental risk of AF for each 1 mL/m² added to LAVI size. A higher risk for predicting AF was found in those with obstructive HCM compared to non-obstructive within normal range of LAVI size. Further studies are needed to assess the impact of evolving changes in LAVI size within normal range in patients with HCM to predict AF.
Figure: ROC Curve for LAVI/AF