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Echocardiographic Evidence of Right Ventricular Outflow Tract Systolic Flow Notching in Atrial Fibrillation

Right ventricular outflow tract (RVOT) systolic notching represents systolic deceleration of flow on Doppler echocardiography and is a sign of pulmonary hypertension. While the cardiac cycle length might impact this finding, the presence of notching in patients with atrial fibrillation (AF) who have varying cycle lengths has not been studied. One prior study of 18 patients with AF found one patient who exhibited notching when the stroke volume was high, but not when stroke volume was low. Anecdotally, we have noted RVOT notching in some but not all beats of patients with AF. The objectives of this study were to evaluate the frequency of RVOT notching in patients with AF, determine if notching is associated with pulmonary systolic pressure (PASP) in AF patients, and investigate if an association exists between cycle length and RVOT notching.

22 consecutive echocardiograms of patients with AF were reviewed. 17 patients had no RVOT notching and 5 had at least one notch. In these 5 patients, 44% (7/16) of the RVOT beats imaged on echocardiography were notched. There was no difference between the groups in age (75±12 vs. 73±14 yrs; p= 0.7) or PASP (38±15.7 vs. 40±12.2 mmHg; p= 0.8). The notch group had lower left ventricular ejection fraction (LVEF) (53±11 vs. 39±19 %; p= 0.05). In the group with notching, the preceding cycle length was similar between the notched vs. no-notch complexes (769.1 ± 224.1 vs. 765.5. ± 177.6 ms; p= 0.9).

RVOT notching appears not uncommon in patients with AF. In AF, notching appears to be related to lower LVEF, but not to notching cycle length. We found no difference in the PASP between the notch and no-notch groups. Notching may be due to other mechanisms in patients with AF and not only the degree of PASP. The mechanism and clinical correlation of RVOT Doppler notching merit further study in a larger cohort.