ARRHYTHMOGENIC SUBSTRATES ABLATED AT THE AORTOMITRAL CONTINUITY - POTENTIAL INVOLVEMENT OF THE CONDUCTION SYSTEM

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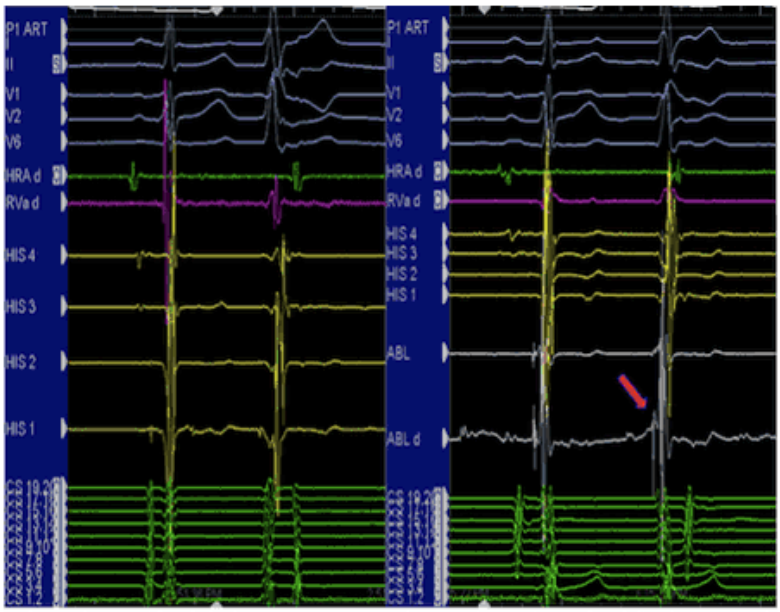
BACKGROUND**:** Although successful ablation of ventricular arrhythmias (VA) at the aortomitral continuity (AMC) has been described, arrhythmogenic substrates at this fibrous region remain undefined. We sought to characterize the electrophysiological properties of arrhythmogenic substrates involved in these arrhythmias.

METHOD**:** We reviewed 528 patients who underwent ablation of VA at our institution. We evaluated clinical and electrophysiological characteristics of VA successfully ablated at the AMC, as confirmed by fluoroscopy and intracardiac echocardiography.

RESULTS**:** Of the 21 patients (mean age 53.2±13.4 years, 52% male) identified, 16 (76.2%) presented with symptomatic premature ventricular complexes (PVC), 2 (9.5%) with heart failure, 2 (9.5%) with sustained ventricular tachycardia and 1 (4.8%) with PVC-triggered ventricular fibrillation. Mechanism of VA was triggered automaticity in 18 (85.7%) and indeterminate in 3 (14.3%) of them. Pre-potentials (P, Figure) were found at sites of successful ablation in 13 (61.9%) patients, with a mean P to local ventricular electrogram (VEGM) interval of 65.7±34.1ms. Compared to those without P, patients with P had higher PVC burden (26.1±10.9% vs 14.9±10.1%, p=0.03), lower pacemap score (8.7±1.6 vs 11.4±0.8/12, p=0.001), shorter VEGM to QRS interval (9.0±28.5 vs 33.1±8.8ms, p=0.03) and a trend towards shorter VH interval (32.1±38.6 vs 76.3±11.1ms, p=0.056) during VA. There was a strong correlation between VH interval and QRS duration during VA (r=0.99, p<0.001).

CONCLUSION**:** We present evidence that remnant conduction tissue, evidenced by pre-potential and short VH interval that correlated with QRS duration during arrhythmia, represents arrhythmogenic substrates in 61.9% of VA arising from the AMC. Clinicians should not only rely on the earliest VEGM or ideal pacemaps but specifically look for pre-potentials when targeting VA in this location.



Left panel: PVC with relatively narrow QRS. Note the negative VH interval and distal to proximal activation sequence of the His deflection. Right panel: P indicated by the red arrow, which is ahead of VEGM and the onset of surface QRS.