Idiopathic ventricular fibrillation triggered by two distinct foci

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A man with idiopathic ventricular fibrillation (VF) and implanted cardioverter-defibrillator (ICD) was admitted for electrical storm. Baseline electrocardiogram (ECG) showed non-significant abnormalities. Episodes of VF preceded by short coupled ventricular premature beat (VPB) with LBBB morphology and superior left axis (Figure, asterisk) were recorded. Activation mapping localized the earliest activation during triggering VPB in the right ventricular lower septum. At this site, the Purkinje potential preceded local ventricular activation during VPB, confirming participation of the Purkinje network as the source of the arrhythmia trigger (Figure, endocardial signals). Applications of radiofrequency energy eliminated the ectopy and prevented subsequent episodes of VF. On the next day, another episode of polymorphic ventricular tachycardia was recorded and isolated VPBs reappeared. These ectopies with left inferior axis were different from the previously ablated ones (Figure, hash sign). The second ablation procedure was performed. The source of these triggers was localized into the right ventricular outflow tract (RVOT), approximately 4 cms remote from the previously mapped ectopy (Figure, CARTO). Radiofrequency energy delivery in this area abolished ectopic activity and arrhythmia episodes. To our knowledge, this is the first report documenting the trigger site both in the Purkinje network and in the myocardium of the RVOT in one patient with idiopathic VF.

The full-length version of this report can be viewed at: http://www.escardio.org/communities/EHRA/publications/ep-case-reports/ Documents/Idiopathic-ventricular-fibrillation.pdf.