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The Site Of Origin Of Torsade de Pointes

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Introduction: The mode of onset of torsade de pointes (TdP) is well described. However, little is known about the site of onset of this arrhythmia.
Objective: To determine if arrhythmias in the long QT syndrome (LQTS) have a predominant site of origin and if this region is disease-specific (i.e., differs between congenital and acquired LQTS) or patient-specific (that is, if multiple episodes of TdP in the same patient share a site of origin).
Methods: Patients with LQTS and no structural heart disease, for whom electrocardiographic recordings of the onset of TdP were available in simultaneous 6-12 leads recording, were studied. The site of origin of QT-related arrhythmias was defined according to the morphology of the initiating ventricular complex.
Results: Multiple-lead recordings of 409 QT-related extrasystoles (impending TdP) and 110 episodes of TdP were available for 46 patients. The site of origin of TdP was not homogeneously distributed (p=0.01). Instead, most TdP (47%) originated in the outflow tract area. There was no correlation between site of origin and the etiology of LQTS. On a given patient, multiple episodes of TdP tended to originate from the same area and the site of origin of QT-related extrasystoles correlated with the site of origin of TdP.
Conclusions: The most frequent site of origin of TdP is the outflow tract. Further studies are needed to understand why this relatively small area of the ventricle is a predominant site of origin of diverse ventricular arrhythmias.