

# Electrocardiographic and Electrophysiological Characteristics of Idiopathic Ventricular Arrhythmias Ablated Through a Percutaneous Trans-pericardial Approach

Weizhu Ju<sup>1</sup>, jinlin zhang<sup>2</sup>, Linsheng Shi<sup>1</sup>, Kai Gu<sup>1</sup>, Ming Chu<sup>3</sup>, Hongwu Chen<sup>4</sup>, Gang Yang<sup>3</sup>, Mingfang Li<sup>5</sup>, Hailei Liu<sup>3</sup>, Fengxiang Zhang<sup>4</sup>, Bing YANG<sup>6</sup>, and Minglong Chen<sup>1</sup>

<sup>1</sup>Institution of Clinical cardiovascular center

<sup>2</sup>Wuhan Asian Heart Hospital

<sup>3</sup>the First Affiliated Hospital of Nanjing Medical University

<sup>4</sup>Jiangsu Province People's Hospital and Nanjing Medical University First Affiliated Hospital

<sup>5</sup>the First Affiliated Hospital of Nanjing Medical University

<sup>6</sup>Shanghai East Hospital

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## Abstract

Aims Idiopathic epicardial ventricular arrhythmias (VAs) are clustered in the areas of the summit and crux. This study was to report a group of idiopathic epicardial VAs remote from the summit and crux areas. Methods In total, 9 patients (6 males, mean age  $32\pm 13$  years) were enrolled. The locations were identified by epicardial mapping and ablation. The electrocardiographic and electrophysiological characteristics were compared to those of 9 patients who had VAs ablated at the opposite endocardial site. Results VAs were identified at the epicardium, with 4 patients had VAs located at the inferior wall, one at the anterior wall, one at the apex and 3 patients had VAs at the lateral wall. A “QS” type at the location-related leads was the only identified surface electrocardiogram indication suggesting epicardial origin (compared to that of the controls, 100% vs 0%,  $p<0.001$ ). Endocardial and epicardial mapping revealed pre-maturities of  $-11\pm 4$  ms and  $-25\pm 8$  ms, respectively (VS.  $-28\pm 8$  ms revealed by endocardial mapping in control patients,  $p<0.001$  and  $p=0.389$ , respectively). All of the study cases demonstrated an “rS” pattern in the endocardial unipolar electrogram. Acute and long-term successful ablation (a median of 11 months of follow-up) was achieved in all patients without complications. Conclusion A distinct group of idiopathic VAs remote from the summit and crux areas warranting ablation by a subxiphoid approach were identified. Morphological ECG features of a “QS” type among the location-related grouped leads combined with the mapping findings helped in the identification of the epicardial site of origin.

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