

# Left-dominant arrhythmogenic cardiomyopathy (ALVC) Electrocardiographic criteria

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- 1) Diagnostic Task Force Criteria (TFC) for arrhythmogenic cardiomyopathy (AC) exhibit poor performance for left dominant forms. TFC only include right ventricular (RV) dysfunction (akinesia, dyssynchrony, volumes and ejection fraction). Moreover, cardiac magnetic resonance imaging (CMRI) assessment of left ventricular (LV) dyssynchrony has hither to not been described.
- 2) The most common ECG finding is unexplained T-wave inversion or flattened in the left-lateral leads I, aVL, V5-V6 and in the inferior leads II, III and aVF: inferolateral T-wave inversion (**Sen-Chowdhry. J Am Coll Cardiol. 2008**) in the absence of diagnostic structural/functional alterations or obstructive coronary artery disease (**Protonotarios A., J Electrocardiol. 2013**)
- 3) Positive T-waves in aVR. SALVC with T-wave minimally positive.
- 4) T-axis located on right superior quadrant between  $-90^\circ$  and  $\pm 180^\circ$  when T-wave is negative in lead I and aVF
- 5) Sustained or non sustained VT of Right Bundle Branch Blok configuration documented on ECG or Holter monitoring or during exercise testing
- 6) Frequent PVCs (with RBBB morphology) from left ventricle: with PVCs from the base of the ventricles with very prolonged R-wave Peak time  $> 80\text{ms}$ . This correspond to epicardial VT. Over 75% of ALVC patients had ventricula rarrhythmia of RBBB morphology, although just over one-half had an additional LBBB-type focus. “Classic” ARVC is characterized by ventricular arrhythmia of LBBB morphology, as outlined in the task force criteria for ARVC; multifocal arrhythmia is less frequently reported, and pure LV arrhythmia occurs very seldom.
- 7) Positive PVCs across the precordial leads with pseudo delta wave at the beginning of the ascendant ramp of R wave of the PVCs: “Rosebaum’s Wolfian extrasystoles”. (**Rosenbaum MB., J Electrocardiol. 1969**).
- 8) In the ALVC, 30% had LV dilation and/or impairment in the presence of preserved right-sided volumes and function. In these cases the most common ECG

abnormalities are localized right QRS prolongation, poor r wave progression in the right precordial leads, incomplete right branch bundleblock, prolonged S-wave upstroke in V1 to V3, parietal block, ST-segment elevation in V1 to V3, inversion of T waves beyond V2, epsilon wave, and frequent low QRS voltages in the precordial leads (**Steriotis AK, et al . Am J Cardiol. 2009**)

9) Ventricular arrhythmias accompanied by unexplained infero-lateral T-wave inversion might be a morbid association underlying left-dominant arrhythmogenic cardiomyopathy. Delayed enhancement imaging on CMR and endocardial voltage mapping might provide additional clues with diagnostic and prognostic significance and also guide endomyocardial biopsy. LV involvement is considered positive in the presence of at least one of the following: negative T waves in left precordial leads V4–V6, LV wall akinesia or dyskinesia and/or DE in the LV on imaging studies, and LVEF<50%

10) In “classical “ ARVC/D Evidence of right ventricular parietal block is manifest by a QRS duration in V1  $\geq$ 110 msec and a longer QRS duration in the right than left precordial leads.(**Marcus FL.J Electrocardiol. 2000**).

11) Low QRS voltage (<0.5–mV) in limb leads is frequent in ALVC. Low QRS voltages in limb leads indicate the presence of late gadolinium enhancement/myocardial fibrosis of the left ventricular wall. The electrocardiographic pattern of low QRS voltages in limb leads, which was shown to be a more accurate predictor of left ventricular involvement than T–wave inversion in the inferolateral leads, should be included among the International Task Force criteria for diagnosis of biventricular arrhythmogenic cardiomyopathy. (**De Lazzari M., Et al. J Am Heart Assoc. 2018**)

## References

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