Wide QRS complex and the risk of ventricular arrhythmia or sudden cardiac death in Brugada syndrome patients: a Systematic Review and Meta-analysis

Introduction: Brugada syndrome (BrS) is an inherited arrhythmic disease associated with fatal ventricular arrhythmia (VA) and sudden cardiac death (SCD). Primary prevention of SCD in BrS has been recognized as important; however, ventricular arrhythmia risk stratification remains challenging and controversial. Previous studies reported that QRS duration may be useful as a predictor of VA or SCD in BrS patients. We aimed to assess the correlation of wide QRS complex with the incidence of VA or SCD event by a systematic review and meta-analysis.

Methods: We comprehensively searched the databases of MEDLINE and EMBASE from inception to June 2019. Included studies were cohort (prospective or retrospective) and case control studies that reported the relationship between wide QRS complex (>120 msec) and VA or SCD. Data from each study were combined using the random-effects, generic inverse variance method of DerSimonian and Laird to calculate pooled odds ratio (OR) and 95% confidence intervals.

Result: Four studies from 2005 to 2014 were included in this meta-analysis involving 878 BrS patients (134 with VA or SCD and 744 without VA or SCD). The mean age was 45.2 ± 14.7 years. The patients were predominately men (84%). Wide QRS complex was an independent predictor of VA/SCD events. (pooled OR 2.26, 95 % confidence interval: 1.41-3.62, p<0.001, I²=2.9%).

Conclusion: Our study demonstrated that wide QRS complex is associated with 2.26 times higher risk of VA or SCD in BrS populations. Wide QRS complex is a useful risk stratification in prediction of VA or SCD events in patients with Brugada syndrome, especially when determining implantable cardioverter-defibrillator placement in asymptomatic patients.