T-peak to T-end interval and the risk of ventricular arrhythmia or sudden cardiac death in Brugada syndrome patients: a systematic review and meta-analysis

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Introduction: Brugada syndrome (BrS) is considered as an inherited arrhythmic disease associated with fatal ventricular arrhythmia (VA) leading to sudden cardiac death (SCD). Hence, risk stratification in BrS for prediction of VA in asymptomatic patient is very important. Previous studies reported that prolongation of T-peak to T-end interval (Tpe interval) in electrocardiogram may be associated with VA or SCD events. We aimed to assess the correlation of Tpe interval 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 Tpe interval and VA or SCD. Studies using cut-off value of Tpe interval were excluded since each study had different value. 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 2010 to 2018 were included in this meta-analysis involving 506 BrS patients (97 with VA or SCD and 409 without VA or SCD). The mean age was 44.5 ± 13.6 years. The patients were predominately men (86%). The prolongation of T-peak to T-end interval increased odds of VA/SCD events by 5% in each one msec prolongation of T-peak to T-end (pooled OR 1.05, 95% confidence interval: 1.02-1.08, p<0.001, I^2=59.8%).

Conclusion: Our study demonstrated that the prolongation of T-peak to T-end interval increased odds of VA/SCD events by 5% in each one msec prolongation. T-peak to T-end interval is a useful risk stratification tool in Brugada syndrome.