Electrocardiogram Parameters for Prediction of Ventricular Tachyarrhythmias

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Background: Ventricular tachyarrhythmia (VT) is one of the causes of death in many countries including Thailand. Electrocardiogram (ECG) parameters, such as QT interval, QT dispersion, QTc, T peak to T end interval, and Giant T-U wave have been proposed as an indicator of risk for VT in different clinical settings.

Objective: This study aimed to determined ECG parameters for the prediction of VT in patients with VT without prior myocardial infarction, idiopathic outflow tract VT, fascicular VT, and bundle branch reentrant VT.

Methods: We analyzed ECG parameters from 8 patients who met inclusion criteria and compared them with 8 patients who had no ventricular tachyarrhythmias.

Results: of 16 patients, 8 were in case group and 8 in control group. In the case group, 5 patients had ventricular tachycardia, while 2 patients had ventricular fibrillation (VF), and 1 patient had ventricular tachycardia and torsades de pointes (TdP). Mean age was 56.4 ± 13.7 years and 13 patients were females. Mean (msec) ± SD of dispersion of QRS, QT, and T peak to T end were not significantly different between the study and the control groups. QRS dispersion (QRSd), QT dispersion (QTd), and T peak to T end dispersion (Tped) (case vs control) were 34.3±15.4 vs 44.5±17.1, 105.6±59.6 vs 87.3±46.8, and 56.6±34.1 vs 55.4±26.4, respectively (all P value >0.05). Accordingly, QT interval max (QTmax) and T amplitude max (Tmax) were not significantly different between the two groups. Both of them were 528.7±207.3 vs 449.1±63.6 and 4.25 mm ± 2.67 vs 3.25 mm ± 1.86, respectively (all P-value >0.05). Thus, we calculated new sample size of each ECG parameter for further study. Sample size was calculated by using mean ± SD of each ECG parameter and power = 0.8. Sample sizes were 40 patients (QRSd), 135 patients (QTd), 10137 patients (Tped), 59 patients (QTmax), and 84 patients (Tmax).

Conclusion: This pilot study data could not detect the difference of ECG parameters between patients who had VT without prior myocardial infarction, idiopathic outflow tract VT, fascicular VT, and bundle branch reentrant VT, and the control group due to small sample size. Further study should be recommended.

Keywords: Dispersion, Ventricular tachyarrhythmias, T peak to T end