ECG and genetic testing are two main methods to evaluate sudden cardiac death. The genetic mutation that causes ion channels function obstacle can lead to abnormal electrical activity in the heart. Once it has the malignant arrhythmia, such as polymorphic ventricular tachycardia, torsades de pointes, ventricular tachycardia and ventricular fibrillation, sudden cardiac death occurs. Genetic mutations can be reflected in the ECG features in some cases. On the one hand, part of the gene phenotype characteristic performance can be observed in the ECG. For example, LQTS of three kinds of electrocardiogram feature are in line with the genetic diagnosis types, i.e., LQT1, 2, 3 indicate the mutation of KCNQ1, HERG and SCN5A, respectively. On the other hand, the risk of sudden death is different since the difference of genetic mutations, their ECG may be similar. In hypertrophic cardiomyopathy, for instance, Val606Met mutant is relatively good prognosis about 5% risk of sudden death before the age of 40, but Arg403Gln mutant is about 50%. Although gene regulation functions are associated with cardiac electrical activity, ECG is much more important as a clinical daily work for conventional risk assessment than gene testing. Not only the ECG features, but also the Holter indicators, such as extension of ventricular repolarization and increased dispersion, QT interval rate adaptive negative, heart rate variability and T-wave alternant, are widely used for risk stratification of SCD.

Keyword: ECG, genetic, assessment