

表征心室复极不一致有效参数的仿真研究

杨中服、李川勇*
南开大学生物物理系

建立了从心内膜到心外膜的一维心肌几何模型, 采用心肌双域模型建立心电电位的仿真模型, 通过改变缺血程度构造不同的心室复极不一致状态, 利用有限差分法求解控制方程, 模拟了心电兴奋在心室复极不一致状态下形成的心电电位, 并从中提取QT离散度和兴奋恢复间期(activation-recovery interval, ARI)离散度。分析结果显示: 缺血区与正常区电位的QT间期没有明显差异, QT离散度接近于零, 不能有效地表征心室肌复极不一致; 缺血区ARI明显区别于正常区, ARI离散度与缺血程度有很好的对应关系, 可以用来表征心室复极不一致。

A SIMULATION STUDY ON EFFECTIVE PARAMETERS TO REPRESENT THE HETEROGENEITY IN VENTRICULAR REPOLARIZATION

A one-dimension model of myocardium from endocardium to epicardium was established. The heterogeneity of ventricular repolarization was produced by changing the ischemic degree, in which the electrogram was calculated by different method. The QT dispersion and ARI (activation recovery in-terval) dispersion was then obtained. It showed that there was no obvious difference in QT interval between ischemic region and normal region, thus QT dispersion was close to zero. It can not effectively represent the heterogeneity in ventricular repolarization. However, there was an obvious difference in ARI between ischemic region and normal region, and the ARI dispersion was proportional to ischemic degree. Therefore it can effectively represent the heterogeneity in ventricular repolarization.

关键词